

Orkney Island Council Harbour Authority (OICHA) Expansion of Hatston Pier and Harbour - EIA Scoping Report



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1 INTRODUCTION

1.1 Background

EnviroCentre Ltd has been appointed by Orkney Island Council Harbour Authority (OICHA) to undertake an Environmental Impact Assessment (EIA) in relation to the proposed expansion of Hatston Pier and Harbour, over 1 km to the north /northwest of Kirkwall (as demonstrated within Appendix A: Drawing No 673702-015). The purpose of this report is to seek a Scoping Opinion from the appropriate Regulatory Authority as required by the relevant Environmental Impact Assessment (EIA) legislation.

This report has been laid out as follows:

- Section 1 introduces the applicant, the project team and the regulatory background to which this Scoping Request is made;
- Section 2 sets out a description of the proposed development upon which to base potentially significant environmental effects upon. Please note: the development description may evolve as the engineering design progresses;
- Section 3 sets out the approach to EIA based upon the legislative context introduced within Section 1;
- Sections 4 – 8 discuss potentially significant environmental effects on a topic by topic basis.
- Section 9 draws together the conclusion reach for each topic considered in the scoping report.

1.2 The Applicant

OICHA is responsible for the safe and efficient operation of 29 piers and harbours, including Scapa Flow. It is owned by OIC, who are the Statutory Harbour Authority, and is one of the UK's most diverse commercial ports.

In August 2020, OICHA launched the Orkney Harbours Masterplan Phase 1, (after OIC approval in April 2020) a proposed and ambitious £230 million infrastructure vision to be completed over a 20 year period. Proposals focus on harbour infrastructure enhancements that will generate jobs, additional revenue and attract new business. It represents the first step in a review of Orkney Harbour Authority-owned infrastructure to create a base for innovation and secure the long-term future for the community.

The Masterplan embraces decarbonisation and transition away from fossil fuels. The infrastructure proposals have been designed to enable Orkney to manage this transition while continuing to generate social and economic benefit from ongoing oil and gas activity. Harbour users and key stakeholders were consulted from the outset to help gain an understanding of the issues, constraints and opportunities associated with the harbour infrastructure around Orkney through workshops and interviews. The range of stakeholders includes local communities, harbour users, potential funders and environmental bodies such as NatureScot.

Phase 1 of the Masterplan considers five main locations on the Orkney mainland, namely and in no priority

1. Scapa Deep Water Quay;
2. Hatston Pier and Harbour;
3. Scapa Pier;
4. Kirkwall Pier and Harbour; and
5. Stromness.

It is proposed that a future Phase 2 will develop smaller harbours and piers across the archipelago.

Full details of the Masterplan can be found at <http://www.orkneyharboursmasterplan.com/>.

1.3 Project Team

This Scoping Report has been prepared by EnviroCentre Ltd with input from other organisations shown in Table 1.1.

Table 1-1: The Project Team

Topic	Specialist
EIA, Ecology, Water, Noise and Other Assessments	EnviroCentre Ltd.
Landscape and Visual	Doug Harman Landscape Planning
Cultural Heritage and Archaeology	Orkney Research Centre for Archaeology (ORCA)
Engineering Design	Arch Henderson

1.4 The Legislative Context

The continued management and development of harbours in Orkney is subject to local, national and European legislation of which the following is the principal legislation relevant to the current development programme:

- Orkney County Council Act 1974: section 7 of this Act provides that “*The Council may construct, place, maintain and operate in and over a harbour area such works as are required for or in connection with the exercise by them of any of their functions under this Act and may alter, renew or extend any works so constructed or placed.*”
- The Harbours Act 1964 (when not contained within the Orkney County Council Act 1974);
- The Town and Country Planning (Scotland) Act 1997, as amended by the Planning etc. (Scotland) Act 2006 – for works on land and to the mean low water mark. An application for Planning Permission will be determined by OIC;
- The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (hereafter referred to as ‘the EIA Regulations’);
- The Marine (Scotland) Act 2010 (Marine Licences) – Under Section 20(1) of the Marine (Scotland) Act 2010 (from 0 -12nm) and Section 65(1) of the Marine and Coastal Access Act 2009 (from 12 – 200nm)¹, a marine licence from Scottish Ministers is required if organisations intend on carrying out certain acts in the Scottish marine area such as:
 - the deposit or removal of a substance or object;
 - Construction, alteration and improvement works,
 - Dredging, and
 - The deposit or use of explosives.

Marine Scotland stipulate that any associated dredging works taking place that involves disposal at sea, then a Marine Licence for Sea Disposal may also be required; and

- The Marine Works (Environmental Impact Assessment) Regulations 2017 (for works below the mean low water mark) (hereafter referred to as ‘the Marine EIA Regulations’).

1.5 Screening Opinion

As the proposed development contains elements which are above and below Mean High Water Springs (MHWS), which constitutes the dividing line between terrestrial and marine planning, consents

¹ Circular 1/2015 The Relationship Between the Statutory Land Use Planning System and Marine Planning and Licensing - <http://www.gov.scot/Publications/2015/06/5851/4>

will be required from both the Council (for any elements not covered under OICHAs' permitted development rights) and Marine Scotland.

A Screening Request was submitted to both OIC and MSLOT in July 2020 to confirm if the proposed development, as described in Section 2.1 and 2.2 of this document was deemed to fall within either Schedule 1 or 2 development as defined by the EIA Regulations and the Marine EIA Regulations.

OIC confirmed that the proposed development is considered to be EIA development. MSLOT confirmed in their Screening Opinion, dated 22 July 2020, that the proposed works are considered to constitute Schedule 1 development as it falls under paragraph 21 *"Any change to or extension of projects listed in this schedule where such a change or extension in itself meets the thresholds, if any, or description of projects set out in this schedule."*

Accordingly, an EIA will be prepared to cover both consents under both the EIA Regulations and Marine EIA Regulations.

1.6 Scoping under the EIA Regulations 2017

The general environmental topic areas to be considered within the context of EIA are summarised below:-

- Population / Human Health;
- Biodiversity (e.g. Fauna and flora);
- Land (e.g. land take) / Soil (e.g. organic matter, erosion, compaction, sealing);
- Water (e.g. hydromorphological changes, quantity and quality);
- Air Quality;
- Noise and Vibration;
- Climate (e.g. greenhouse gas emissions, impacts relevant to adaptation);
- Material Assets;
- Cultural Heritage (e.g. architectural and archaeological);and
- Landscape.

Both terrestrial and marine EIA Regulations state that a developer may ask the relevant regulatory body for their formal opinion on the information to be supplied in the EIA Report (a 'scoping opinion'). This provision allows the developer to be clear about what the regulatory authority considers the significant effects of the development are likely to be and, therefore, the topics on which the EIA report should focus."

Additional objectives of EIA Scoping are to:

- Establish the availability of baseline data;
- Request that statutory consultees provide any relevant environmental information relating to the site and surrounding area;
- Define a survey and assessment framework through which comprehensive impact assessment can be achieved; and
- Provide a focus for the planning authority and the consultees' considerations – in terms of:
 - Potential impacts to be assessed;
 - Assessment methodologies to be used;
 - Other areas which should be considered; and
 - Any other environmental issues of perceived concern.

Each regulation requires that any scoping request should be accompanied by:

- A description of the location of the development, including a plan to identify the land;
- A description of the proposed development, and of its likely significant effects on the environment; and
- Such other information or representations as the developer may wish to provide or make.

1.7 Consultation and Stakeholders

The Applicant recognises the importance of consultation and community involvement throughout the project development process in line with “PAN 3/2010 Community Engagement” (PAN 3/2010). PAN 1/2013 also reinforces the importance of public involvement in the Scoping process and makes it clear that the EIA process is intended to ensure that consultation bodies and the public have the opportunity to express their opinion on both the proposed development and the EIA Report (EIAR).

The Applicant has already held informal discussions with local stakeholders and has sought initial advice from OIC Planning and Marine Scotland Licensing Operations Team (MSLOT). This advice has been reflected in this Report and will be taken forward to the design of the proposed development as appropriate.

1.8 Report Usage

The information and recommendations contained within this report have been prepared in the specific context stated above and should not be utilised in any other context without prior written permission from EnviroCentre.

If this report is to be submitted for regulatory approval more than 12 months following the report date, it is recommended that it is referred to EnviroCentre for review to ensure that any relevant changes in data, best practice, guidance or legislation in the intervening period are integrated into an updated version of the report.

Whilst the Client has a right to use the information as appropriate EnviroCentre do not accept liability to any third party for the contents of this report unless written agreement is secured in advance, stating the intended use of the information.

EnviroCentre accept no liability for use of the report for purposes other than those for which it was originally provided, unless EnviroCentre have confirmed it is appropriate for the new context.

2 THE PROPOSED DEVELOPMENT

2.1 The Site and the Surrounding Area

Drawing No 673702-015 shows the site in context with its surrounds and is contained in Drawings Appendix A.

2.1.1 The Site

Hatston Pier and Harbour is located on the coast to the northwest of Kirkwall. It is Orkney's primary commercial terminal and link south to Aberdeen and north to Shetland. It is also Scotland's longest deep-water commercial berth with a total of 884 metres of quay side available for multi-purpose use. The longest berth is 385 metres, offering 10.5 metre draft. The original pier was built in 2002 and the 160 metre extension was completed in 2013.

This multi-purpose infrastructure has been hugely successful in accommodating a range of operational activities including the largest cruise ships, renewable energy, ferries, oil and gas and cargo/ livestock.

Currently Hatston Pier and Harbour comprises an area of land used for short/long term parking, freight, marshalling area and storage. There are a number of commercial / industrial buildings situated adjacent to the access road. A causeway edged with rock armour extends out towards a 'T'-shaped pier formed from piles topped by a concrete slab. On the eastern arm of the pier is the passenger reception facility and associated infrastructure.

2.1.2 The Surrounding Area

The facility is located on a section of coastline which has commercial industrial use, within grazing land with a number of isolated residential properties located at the closest point approximately 750m south-southwest of the site. The surrounding area is noted to be rich in archaeology. Access is from the A965 Grainshore Road which connects the site to Kirkwall in the southeast and Finstown in the west.

2.2 The Proposed Development

The drawings listed below present illustrative layouts of the planned development:

- Phase 1: South Side Reclamation (Drawing No 202043 / FS-10 Rev P1, dated 26/02/2021);
- Phase 2: Pier Extension and North Side Reclamation (Drawing No 202043 / FS-20 Rev P1, dated 26/02/2021);
- Phase 2: Dredging Layout (Drawing No 202043 / FS-21 Rev P1, dated 26/02/2021); and
- Phase 3: Ship Lift and Reclamation Layout (Drawing No 202043 / FS-30 Rev P1. Dated 26/02/2021).

2.2.1 Introduction

The plan for Hatston is focussed on reducing conflicts between users and operational activity as well as enabling growth across a range of economic sectors. Currently the seasonal lack of availability of berths due to cruise activities results in a year round constraint on other vessel use. To alleviate this pressure on site operations, core proposals comprise a significant extension to the existing pier and

expansion of the landside area through phased reclamation. This will allow freight and traffic to be handled more efficiently and effectively while accommodating expansion and economic growth.

2.2.2 The Need for Development

As mentioned above, the aspiration is that the increase in operational land will reduce conflicts between different users and uses. It is also intended that the design of the new infrastructure is future proofed so as to accommodate future provision and storage of alternative (less polluting/carbon-free) fuels and provision of shore power to smaller vessels where viable.

With the additional space and quay length current operations could co-exist with new activities. The current thought on the types of activity that could be introduced to the site as a result of the proposal are:

- With the additional quay length and laydown area, and an ex-pipe fuel supply and storage facility, Hatston would be able to accommodate oil and gas supply operations;
- To enable offshore wind activities, such as Operations & Maintenance, complementing activities at Scapa Deep Water Quay.
- A facility in close proximity to the quay could be developed for handling renewable energy devices as well as sufficient laydown area;
- A boatyard with an undercover facility could be developed: this could be a small scale facility handling the smaller leisure, fishing and aquaculture boats (e.g. up to 100 tonnes) or a larger commercial facility incorporating a boatlift adjacent to the new pier infrastructure capable of handling vessels up to 800 tonnes;
- Storage of alternative fuels. It is noted in this instance that careful consideration will be required regarding the location of such a storage facility and any potential negative impacts on harbour-related operations and activity, particularly the lifeline ferry services which operate out of Hatston;
- Areas for car and freight marshalling will be reconfigured and there will be better defined pedestrian routes to and from the quayside: for example, to the long stay car park and the main road; and
- There is also potential for the reconfigured pedestrian access within the harbour area to connect to the proposed coastal path identified within the Kirkwall Urban Design Framework (KUDF).

Options to promote sustainable transport will be explored at the feasibility stage, such as the provision of electric vehicle charging points, electric bicycles, electric vehicles as part of car-pooling schemes and linkages with existing and future walking and cycling networks.

In the future there may also be a need to refurbish and/or extend the existing passenger reception facility that caters for both ferry and cruise passengers on the quayside.

2.2.3 Outline Design Principles

It is proposed to extend the existing outer quay by 300m (with water depth of -10m CD) which would also form a 125m inner berth. This would create substantially more quayside which would be available for both current and future operations.

In addition to the above, circa 7.7 hectares of additional land extending from the current shoreline outwards would be made available for harbour-related operations through reclamation. It should be noted that as a design principle it will be attempted to balance any dredging or cut into the land with construction and/or reclamation requirements. In addition disposal of dredging material will be avoided as far as practically possible.

The development is designed to be built in three phases as noted below.

Phase 1

- Reclaim the shoreline by depositing appropriate material to form a platform on the southeastern side of the current pier causeway and thereby create an additional 2.96Ha which would increase the area used for marshalling, parking and storage; and
- Place rock armour along the eastern edge of the infill area.

Phase 2

- Extend the current quay to the west by circa 300m and form a deck slab to provide an additional 1.73 Ha of concrete deck area;
- Dredging to -10.0m CD to allow a safer approach onto the new extended berths.
- Reclaim the shoreline by depositing appropriate material to form a platform on the southwestern side of the current pier causeway to create an additional 1.73Ha to be used as a multi-use laydown/work area as well as establish a separate access road to the new quay extension; and
- Place rock armour along the western edge of the infill area.

Phase 3

- Reclaim the shoreline by depositing appropriate material to form a platform on the southwestern side of the current pier causeway to produce an additional 1.47Ha to be used as a multi-use laydown/work area as well as create a Travel Lift Dock; and
- Place rock armour along the western edge of the infill area.

2.2.4 Reclamation Material Volumes

The developments infill requirements will be substantial with an estimated total of 1.46M tonnes of rock material needed to reclaim the shoreline of all three phases. There are currently 3 options to source the rock infill, these are:

- Crusiter Quarry which is approximately 7km to the west of the development site;
- Heddle Quarry which is approximately 9.5km to the west of the development site; or
- A quarry (e.g. Glensander Quarry, Oban) on the Scottish mainland and brought to the development site by sea.

The infill volume for each phase of the works along with the estimated duration of infilling is provided in Table 2-1. Should the infill material be imported from either Crusiter or Heddle Quarry, Table 2-1 also provides an estimation on the number of HGV movements envisaged transporting the material from the quarries to the development site per hour and per day. The HGV routes from both quarries are shown on Existing Commercial Quarries Location Plan (Drawing No 202043 / FS-04 Rev P1, dated 26/02/2021, Appendix A).

Table 2-1: Estimated Rock Fill Quantities and HGV Movements

Construction Phases	Est. Total (Tonnes)	Est. Duration (Months)	No. HGV / Hr over a 10 hr day	No. HGV / Day
Phase 1	394,000	10	6 to 7	66
Phase 2	880,000	22	6 – 7	67
Phase 3	183,000	10	3 - 4	31

2.2.5 Construction

It is intended that the contract for construction of the facility will be awarded as a design and build. Therefore until the preferred contractor is identified the exact construction methodologies cannot be

confirmed at this stage in the development process. However, based on professional advice from the project engineers the following construction activities are anticipated.

South-east Reclamation Area

- Prior to work commencing a silt boom will be moored out from the foreshore;
- On the eastern perimeter a bund will be formed from suitable materials extending from the shoreline outwards to the existing pier causeway;
- The advancing head of the perimeter core bund will be protected by the silt boom which shall advance in front of the work.
- As the bund progresses, geotextile will be placed on the eastern slope to mitigate the migration of fines
- Secondary armour and primary armour stone to be placed on top of the geotextile
- As the eastern bund extends out from the foreshore suitable reclamation fill would be deposited in the area between the newly formed bund and the existing shoreline.
- Once reclamation works are completed the area will be capped and compacted with graded hard core with the surface falling to a V ditch and French drains.

(Note: it is envisaged that the majority of armour stone and infill will be brought to site either by road or sea.)

South-west Reclamation Area

- Prior to work commencing a silt boom will be moored out from the foreshore;
- On the western perimeter a bund will be formed from suitable materials extending from the shoreline outwards to the proposed pier extension;
- The advancing head of the perimeter core bund will be protected by the silt boom which shall advance in front of the work.
- As the bund progresses, geotextile will be placed on the eastern slope to mitigate the migration of fines
- Secondary armour and primary armour stone to be placed on top of the geotextile
- As the western bund extends out from the foreshore suitable reclamation fill would be deposited in the area between the newly formed bund and the existing shoreline.
- Once reclamation works are completed the area will be capped and compacted with graded hard core with the surface falling to V ditch and French drains.

Pier Extension

- Sheet piles will be installed as follows
 - Drill rigs to work over water from temporary piling platforms from the existing pier or a jack up barge to install sheet piles
 - Sheet piles to be installed by vibro-hammer to required depth
 - Tie rods installed and secured between the front face and rear sheet pile wall and a concrete cope formed.
 - Quay infill to be vibro-treated to compact and reduce future consolidation and settlement
 - Concrete deck immediately behind the quay face shall be placed no less than 6 months after fill takes place

Dredging

- Dredging to required depth to west of quay extension to provide a deeper approach channel to the quay.
- Depending on suitability, dredged material may be used for fill or disposed at a suitably licensed marine site if absolutely necessary.

Prior to dredging a Site Investigation (SI) will be carried out to determine the Best Practicable Environmental Option (BPEO) for the dredging spoil. This will determine whether the dredge material will be suitable for use as infill material.

3 APPRAISAL OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

3.1 Introduction

Both OIC Planning and MSLOT have confirmed that the proposed development will fall under Schedule 1 of the 2017 EIA Regulations. It is therefore appropriate to request a Scoping Opinion from each regulatory body under the EIA and Marine Regulations. As required, sufficient baseline information has been provided regarding the proposed development and the surrounding and receiving environment upon which to base a decision.

This Scoping Report is submitted to OIC Planning and MSLOT with the intention that it should form the basis of their Scoping Opinion.

The information contained in this document is based on our current understanding of the nature of the site and the proposed development and preliminary assessment of the potential environmental impacts of the proposed development.

3.2 Topic Areas to be Included

Our current thinking in the terms of the topics which fall within the scope of the EIA and subsequent EIAR are listed below:

- Water Environment and Coastal Processes;
- Ecology;
- Archaeology and Cultural Heritage;
- Landscape and Visual; and
- Airborne Noise.

The approach to the scoping appraisals of each of these topic areas is outlined in Sections 4 - 8 with the inclusion of baseline data where available. The scoping appraisals will consider the potential environmental impacts related to both the construction and operational phases, where applicable, and either scope in or out the need for further assessment through the EIA process.

3.3 Other Assessments

This section describes those issues which are relevant to the proposed development however do not in our view merit or justify a full chapter within the EIAR.

On the basis of professional judgement and review of baseline conditions, full impact assessment is not considered necessary for the following topics:

- Climate Change;
- Air Quality;
- Accidents and Natural Disasters; and
- Population and Human Health.

The justifications for our intended discounting the above environmental topics from inclusion as full chapters in the EIAR are provided below.

3.3.1 Climate Change

Climate change has taken a prominent position within policy and legislation at a national level, with the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 setting a target date of net-zero emissions of all greenhouse gases by 2045. The Climate Change Plan update published in December 2020 provides a pathway for Scotland to meet the emissions reduction targets through to 2032. It identifies that public bodies have a part to play in decarbonising Scotland through leading by example.

As mentioned in Section 1.2, OICHA have developed a Masterplan which provides a framework for improving and expanding existing harbours and assets so that Orkney becomes a world leading maritime hub providing world class facilities. Decarbonisation of shipping and ports as well as the transition of fuels from hydrocarbons to carbon free are central to the Masterplan proposals and will allow new opportunities and diversification of existing ones to continue for future generations.

It is therefore considered at the Scoping stage that the proposed development would not result in a significant effect upon climate given the nature of the development (Refer to Section 2.2.3). Any increase in emissions created during either construction or operation is likely to be negligible, and for the construction phase pollution and emissions control would be discussed within a detailed Construction Environmental Management Plan (CEMP).

Discussion of the vulnerability of the project to climate change is primarily concerned with the water environment, including flood risk and wave overtopping due to increases in sea level. This effect is considered within Section 4 Water Environment and Coastal Processes of this document.

3.3.2 Air Quality

The development site is located within a relatively rural area influenced by maritime weather conditions. In order to inform the Scoping Report, the relevant 1km background air quality concentration maps were obtained from the Scottish Air Quality and DEFRA websites. The 2019 measured annual average concentrations of NO₂, PM₁₀ and PM_{2.5} for Orkney indicates that air quality is good with the pollutant concentrations being well below the relevant National Air Quality Objectives of 40µg/m³, 18µg/m³ and 10µg/m³ respectively. The 2019 Air Quality Annual Progress Report for OIC (the most up-to-date report available) does not identify any Air Quality Management Areas (AQMAS) within the council area. In addition OIC does not currently operate any automatic air quality monitoring stations within their boundary.

The development however, has the potential to impact local air quality in a number of ways with the key issues in relation to this environmental topic being traffic emissions from the local road network both surrounding and accessing the site and dust emissions during the construction phase.

It is noted that the primary goal of the proposals is to reduce conflicts between current operations/users in relation to available space. It is also intended that the development design will include energy efficiency and sustainable transport options, where possible. As such there should be a negligible increase in pollutant emissions after the development is operational. Although future operations may include alternative fuel storage etc, but the full details of this are currently unknown. Air Quality will be a consideration when contemplating any future operational proposals.

Construction of the proposed development is considered to be a temporary impact and can be controlled through developing a site-specific Dust Management Plan as part of a Construction Environmental Management Plan (CEMP). The dust impact assessment requires specific information on site operations during construction, including preparatory earthworks, general construction and the potential for trackout. Currently this information is still being finalised.

There are currently 3 options to source the infill material for land reclamation works. Should the infill material be sourced from either of the quarries located on Orkney then HGV movements will be a

consideration within the CEMP. Sea importation of infill material is not considered to be a significant impact in relation to construction dust generation.

It is therefore proposed to defer the construction dust assessment and formulation of a construction dust management plan until such time as details on construction activities and source of infill material have been finalised.

Accordingly, it is proposed to discount Air Quality from further EIA assessment.

3.3.3 Accidents and Natural Disasters

Similar to other ports, there is potential for accidents to occur, however OICHA operate a Marine Safety Management System / Standard Operating Procedures to promote safe and efficient harbour operations and is compliant with the Port Marine Safety Code. The OIC Marine Services division of OICHA ensures that all operations under their jurisdiction are done in such a manner so as to keep safe its users, the public, the harbour area and the environment.

The proposed development is not located within an area of significant seismic activity, nor is climatic factors prone to creating disasters such as tsunamis, hurricanes or catastrophic flooding.

Accordingly consideration of accidents and natural disasters is scoped out of the EIA.

3.3.4 Population and Human Health

The proposed development is an extension to an existing operational site in which a Safety Management System / Standard Operating Procedures promote safe and efficient harbour operations (as noted in Section 3.3.3.). During its construction and operational phases it is therefore considered there will be no significant direct or indirect impact on either population or human health as a result of the development subject to other assessments (i.e. Air Quality etc).

3.4 Cumulative Assessment

It is acknowledged that the proposed development is part of a larger Masterplan for the area which has been promoted by the Applicant. However, it is not proposed to incorporate a section within the EIA report dedicated to cumulative assessment. Instead, the chapter for each environmental discipline will consider the potential for cumulative impacts within their individual impact assessments.

4 WATER ENVIRONMENT AND COASTAL PROCESSES

4.1 Introduction

The water environment is considered to encompass hydrology, hydrogeology and water quality, whilst coastal processes are considered to encompass tides, waves and sediment transport processes. This section of the Scoping Report will therefore address all of these subject areas, in addition to geology. The associated interactions between the water environment, ecology and fisheries will be considered within the ecology section of this document.

The Water Framework Directive (WFD) (Council Directive 2000/60/EC) aims to protect and enhance water bodies within Europe and covers all estuarine and coastal waters out to 1 nautical mile. This requires that there is no deterioration in the quality of surface or groundwater bodies and aims to achieve good ecological status or potential. The implications of the WFD must be considered when assessing this project and the details of how compliance will be achieved provided in the EIA.

The development proposals for construction, and associated dredging, have the potential to cause changes to the baseline hydro(geo)logical conditions and the ongoing coastal processes at the site, and in the wider area. Given the importance of water as a valued resource, coastal processes to the surrounding environment, and of ensuring sustainable development, an initial assessment of the water environment and coastal processes is considered essential.

4.2 Proposed Development

The proposed development is located on the eastern shore of the Orkney mainland, approximately 1.9km west of Kirkwall. It is located on the Hatston coastline within the Bay of Kirkwall, 1.7km northwest of the Peerie Sea and 1.8km west of the Bay of Weyland. The proposed development does not lie within any Marine Protected Areas (MPA), Special Areas of Conservation (SAC) or Special Protection Areas (SPA). The closest SPA is the Orkney Mainland Moors located around 3.8km south west of the proposed development, along with the Keelyland Hill and Swartaback Burn SSSI.

4.3 Baseline Conditions

4.3.1 Geology and Soils

The online British Geological Survey (BGS) 1:50,000 map identifies that the development site is underlain by Upper Stromness Flagstone Formation of siltstone, mudstone and sandstone².

The BGS 1:50,000 map identifies that eastern and western areas of the site are underlain by Till Devension – Diamicton with no superficial deposits mapped within the centre of the site.

The site is underlain by a moderately productive aquifer of sandstone, siltstones, mudstones and conglomerates yielding small amounts of groundwater.

² British Geology Survey 1:50,000 (Geology of Britain Viewer- <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>)

4.3.2 Tidal Water Levels

The closest port referenced in Admiralty tide tables is Kirkwall (standard port). Tidal water levels at the Kirkwall Standard Port as presented within the Admiralty tide tables are shown in Table 4-1³. The mean tidal range at Kirkwall is 2.4m during spring tides and 1.1m during neap tides.

Table 4-1: Tidal range at Kirkwall Standard Port

Tide Condition	Chart Datum (mCD)	Ordnance Datum (mAOD)
Highest Astronomical Tide (HAT)	3.5	2.1
Mean High Water Spring (MHWS)	3.0	1.6
Mean High Water Neap (MHWN)	2.4	1.0
Mean Low Water Neap (MLWN)	1.3	-0.1
Mean Low Water Spring (MLWS)	0.6	-0.8

*Chart datum correction for Ordnance datum is -1.4 (relative to OD at Newlyn)

Extreme sea levels have been predicted around the whole UK coastline and published by the Environmental Agency / Department for Environmental Food and Rural Affairs report⁴. These extreme levels include the effects of both tides and storm surge but not the effect of amplification within estuaries or sea lochs. In order to provide better estimates around the Scottish coastline, SEPA have updated the original estimates. The SEPA derived extreme sea levels, predicted at a point within Kirkwall, are 2.83m Above Ordnance Datum (AOD) for the 1 in 200 year return period event and 2.95mAOD for the 1 in 1,000 year return period event. SEPA recommend a 2100 climate change uplift of 0.93m for coastal levels. Therefore the 1 in 200 year return period plus climate change event has a level of 3.76mAOD and the 1 in 1000 year return period plus climate change event has a level of 3.88mAOD.

4.3.3 Coastal Processes

Tidal Currents along the nearshore within the Bay of Kirkwall near to Hatston are insignificant. The fetch lengths are restricted so the wave conditions tend to be locally generated wind-waves. Within the Bay of Kirkwall waves lose their directional nature due to refraction effects within the bay. Much of the coastline near to Hatston is fronted by a rock platform with shingle and sand beaches. There is little littoral transport other than erosion caused by extreme events⁵. The European Nature Information System (EUNIS) seabed habitat map shows the dominant seabed habitat around the Hatston Pier to be infralittoral coarse sediment, present within a low energy environment⁶.

Sandy gravel is shown immediately north and east of the existing pier⁷, no seabed sediment is indicated to the west of the existing pier, whilst bedrock outcrop is visible on the surrounding shoreline. Due to the nature of the seabed substrate in the vicinity of the development site, and the lack of fine sediment, it is not anticipated that there are significant local active sediment transport processes.

Analysis of historical coastline alignments show that the major changes to the coastline since 1890 have been the addition of manmade structures such as Kirkwall pier and Hatston pier, whilst there has been no significant erosion observed⁸.

³ UK Hydrographic Office, 2020 (Admiralty Tide Tables – Volume 1B)

⁴ McMillan et al, 2011. Coastal Flood Boundary Conditions for UK Mainland and Islands. Environment Agency.

⁵ Ramsay and Brampton, 2000. Coastal Cells in Scotland: Cell 10 – Orkney.

⁶ EUNIS 2017 (<https://emodnet.eu/en>).

⁷ Marine Scotland (<https://marinescotland.atkinsgeospatial.com/nmpi/>)

⁸ Dynamic coast online map available at: <http://www.dynamiccoast.com/webmap.html>

4.3.4 Hydrology

The Burn of Hatston is an open watercourse that flows through the west of the proposed site. It is culverted to the Bay of Kirkwall at approximately 250m south west of the existing Hatston Pier and has a catchment size of 1.36km² upstream of the point of discharge.

There is an unnamed watercourse which is present approximately 1.6km east of the Hatston Pier which has a catchment of 3.29km². This watercourse discharges into the Peerie Sea and in turn into the Bay of Kirkwall.

Within 5km of the proposed development the Easdale Burn is located approximately 3.05km south east, Papdale Burn located approximately 3.4km east and an unnamed water course located 2.72km west of the site.

There are likely other small inflows discharging into the bay around Hatston and Kirkwall, as well as piped drainage. The inflow of freshwater remains insignificant relative to the much larger volume of seawater exchanged within the Bay of Kirkwall.

4.3.5 Water Quality

The coastal waters of Kirkwall are classified under the Water Framework Directive (WFD) monitoring programme as a coastal waterbody. The waterbody is classified as being of overall 'Good' status in 2018, with a hydromorphological status of 'High'. There are no watercourses large enough to be classified under the WFD.

4.3.6 Flood Risk

The SEPA flood maps do not indicate any fluvial flood risk from the watercourses identified in the vicinity of the development site. Isolated areas of pluvial flood risk are identified within low lying areas.

A review of the SEPA online flood maps identifies that the lower coastal edge and the existing pier of the proposed development site are at high risk of coastal flooding⁹. This prediction does not account for the potential effects of climate change, local bathymetry or wave action.

4.4 Potentially Significant Effects (Construction)

The proposed development will involve construction activities within, or in close proximity to, the water environment (particularly coastal) including extending the existing pier, capital dredging works, land reclamation and the creation of a new parking, storage and fuel tank farm. The key potential environmental impacts on the water environment during construction are detailed below:

- Potential impact to coastal processes including wave action, tidal currents and sediment transport;
- Potential changes in infiltration rates, flood risk and drainage;
- Potential contamination of the water environment (coastal, fluvial and groundwater) from spillages, runoff and/or sediment transfer (oil, fuel, suspended solids and potential contaminants in soil); and
- Potential interaction between the water environment and ecology.

⁹ SEPA, 2020 (<http://map.sepa.org.uk/floodmap/map.htm>)

4.5 Potentially Significant Effects (Operation)

The completed development will be within the existing water environment and may result in the following potential impacts on the water environment once constructed:

- Potential impact to coastal processes including wave action tidal currents and sediment transport;
- Potential contamination of the water environment from wastewater, site discharge and or traffic; and
- Potential interaction between the water environment and ecology.

4.6 Inclusion or Exclusion from EIA

The construction activities involved within the proposed development including dredging, pier extension and land reclamation all have the potential to impact the coastal processes within Kirkwall Bay. However, the development site has already been subject to significant modification as a result of the existing pier infrastructure, whilst the coastal environment of Kirkwall Bay is considered to have low energy without significant sediment transport, with an absence of fine sediment. In this context it is considered that the impact of the proposed development on coastal processes, including wave action, tidal current and sediment transport should be scoped out of further assessment.

Dredging is proposed to take place in an area to the immediate northwest of the proposed pier extension. However, given the limited dredge extent proposed, the low energy nature of the coastal environment, and the general absence of fine sediment and significant sediment transport it is proposed to scope out the further assessment of dredging impacts.

SEPA flood maps show no risk of fluvial flooding from watercourses within the vicinity of the site, it is therefore proposed to scope out the assessment of fluvial flood risk.

The proposed development is noted to be water compatible for operational reasons. It is considered that the proposed land reclamation works would have negligible impact on local sea levels. The development design will take account of extreme sea levels and future sea level rise predictions, as appropriate. Therefore it is proposed to scope out the further assessment of coastal flood risk.

The construction of the site has the potential to generate pollutants/contaminates which could impact the water quality of the nearby water environment. The prevention of pollution during construction and operation of the plant will be a key focus of the EIA. It is considered that best practise is implemented following appropriate guidance, creation of a pollution prevention plan, surface water management plan, and installation of sustainable urban drainage measures that will not be detrimental to the existing environmental conditions.

Taking the above into account we propose the EIAR will include a section on the Water Environment and Coastal Processes instead of being included as a full EIA.

5 ECOLOGY

5.1 Introduction

The assessment of ecology will consider the geographical area potentially affected by the proposed development at Hatston Pier. Particular attention will be given to:

- Terrestrial habitats and species;
- Birds; and
- Marine habitats, fish and mammals.

The proposed development has the potential to affect ecology in the development footprint in terms of direct habitat losses. It is also envisaged that a range of other effects on terrestrial and marine ecology in the wider area could occur.

The potential impacts of the proposed development on the water environment, including hydrology, hydrogeology, water quality and coastal processes, will be considered in the Water and Coastal Processes section of the scoping report; however any impacts on the water environment will be taken into consideration in the ecological scoping appraisal.

5.2 Baseline Conditions

5.2.1 Designated sites

There are three designated sites within 5km of Hatston.

Orkney Mainland Moors Special Protection Area (SPA) comprises four areas of moorland on Mainland; at its closest point, it lies within 5km of Hatston Pier. The predominant habitats include extensive areas of blanket bog, heaths and mires, with these upland areas supporting 5.9% of the UK's breeding and 2% of the UK's overwintering Hen Harrier (*Circus cyaneus*) population, 2% of the UK's breeding Short-eared Owl (*Asio flammeus*) population. In both cases one of very few sites to support such dense and significant numbers. The area also supports 2% of the UK's breeding Red-throated Diver (*Gavia stellata*) population. This site's boundaries also correspond to **Keelylang Hill and Swartaback Burn Site of Special Scientific Interest (SSSI)** which is designated for breeding Hen Harrier.

The **North Orkney proposed SPA (pSPA)** is afforded the same level of protection as a designated site. This pSPA is located to the north of Mainland and encompasses 227km² of waters between the islands of Shapinsay, Rousay, Egilsay and Wyre including Deer Sound, Shapinsay Sound and Wide Firth. Hatston Pier is therefore included within the boundaries of the North Orkney pSPA. The area included within the pSPA supports a population of European importance of the following Annex 1 species: Great Northern Diver (*Gavia immer*), Slavonian Grebe (*Podiceps auritus*) and Red-throated Diver. It also supports migratory populations of European importance of the following species: Common Eider (*Somateria mollissima*), Long-tailed Duck (*Clangula hyemalis*), Velvet Scoter (*Melanitta fusca*), Red-breasted Merganser (*Mergus serrator*) and European Shag (*Phalacrocorax aristotelis*).

The **Scapa Flow proposed SPA (pSPA)** comprises a total area of 371km² located within Scapa Flow - an enclosed sea area, sheltered by Orkney Mainland to the north, Hoy, South Walls and Flotta to the west and south and Burray and South Ronaldsay to the east. The Flow is linked to the Pentland Firth on the south through the Sound of Hoxa, and to the Atlantic Ocean on the west through Hoy Sound. The site also includes nearshore waters to the east of Orkney, extending from South Ronaldsay to Deerness and including the sheltered shallow waters of Holm Sound, between Burray and East Mainland. Prior to construction of the Churchill Barriers in World War II, there were openings between

Scapa Flow and Holm Sound to the North Sea. The area included within the pSPA supports a population of European importance of the following Annex 1 species: Great Northern Diver, Red-throated Diver, Black-throated Diver (*Gavia arctica*), and Slavonian Grebe. It also supports migratory populations of European importance of the following species: European Shag, Common Eider, Long-tailed Duck, Common Goldeneye (*Bucephala clangula*) and Red-breasted Merganser. The Scapa Flow pSPA lies approximately 4km south of Hatston Pier at its closest point.

It is noted there is one designated site which is out with the 5km radius as detailed below:

Faray and Holm of Faray Special Area of Conservation (SAC) is located approximately 23km north of Hatston, at its closest point, and is designated for its breeding colony of Grey Seal (*Halichoerus grypus*), which produces 9% of UK Grey Seal pups. There are also numerous designated seal haul-outs on Orkney, the closest of which to Hatston are Damsay and Holm of Grimbister on Mainland Orkney approximately 4km around the coast to the west of Hatston, and Heliar Holm North and Elwick, approximately 5.5km north-east of Hatston on Shapinsay.

5.2.2 Habitats and Species

The following list includes all terrestrial and intertidal habitats and species afforded legal protection and those included within the UK Biodiversity Action Plan (UK BAP) and the Orkney Local Biodiversity Action Plan (LBAP) that are considered to have the potential to suffer negative effects from the proposed development:

- Coastal vegetated shingle
- Maritime cliff and slopes
- Otter (*Lutra lutra*)
- Golden Plover (*Pluvialis apricaria*)
- Herring Gull (*Larus argentatus*)
- Lapwing (*Vanellus vanellus*)
- Curlew (*Numenius arquata*)
- Black-headed Gull (*Chroicocephalus ridibundus*)
- Common Gull (*Larus canus*)
- Great Black-backed Gull (*Larus marinus*)
- Oystercatcher (*Haematopus ostralegus*)
- Redshank (*Tringa totanus*)
- Shag (*Phalacrocorax aristotelis*)
- Turnstone (*Arenaria interpres*)
- Sanderling (*Calidris alba*)
- Dunlin (*Calidris alpina*)
- Purple Sandpiper (*Calidris maritima*)
- Ringed Plover (*Charadrius hiaticula*)
- Bar-tailed Godwit (*Limosa lapponica*)
- Cormorant (*Phalacrocorax carbo*)
- Common Tern (*Sterna hirundo*)
- Arctic Tern (*Sterna paradisaea*)
- Sandwich Tern (*Thalasseus sandvicensis*)

The Priority Marine Feature (PMF) Maerl Beds is present on Shapinsay, approximately 5km north-east of Hatston.

5.2.3 Marine Mammals

All species of dolphin, porpoise and whale are European Protected Species (EPS). The marine mammal species most often encountered in the waters around Orkney, and therefore the most likely

to suffer negative effects from the proposed development are listed below. All appear on the UKBAP (other than Grey Seal) and the Orkney LBAP.

- Harbour Porpoise (*Phocoena phocoena*)
- Minke Whale (*Balaenoptera acutorostrata*)
- Bottle-nosed Dolphin (*Tursiops truncatus*)
- Risso's Dolphin (*Grampus griseus*)
- White-beaked Dolphin (*Lagenorhynchus albirostris*)
- Atlantic White-sided Dolphin (*Lagenorhynchus acutus*)
- Common Dolphin (*Delphinus delphis*)
- Killer Whale (*Orcinus orca*)
- Grey Seal (*Halichoerus grypus*)
- Common Seal (*Phoca vitulina*)

5.2.4 Fish

The Orkney coastline is well known for its Sea Trout fishing and there are many commercial sea fish caught in the area. Sea Trout is a UK BAP species. There are no rivers designated for fish on Mainland Orkney but the development site may be on or close to a fish migratory path. Further baseline data on fish will be collated for the EIAR.

5.3 Potentially Significant Effects (Construction)

The following potential negative impacts on ecology could occur during the construction phase of the proposed development:

- Terrestrial habitat loss which will lead to a loss of potential foraging, roosting, commuting and nesting opportunities for a range of species;
- Accidental spills from vessels, plant and on-site storage of fuels and chemicals leading to pollution of habitats and potential harm to a range of species and habitats;
- Increased noise through construction activities (dredging, piling, blasting, plant movement, etc.) leading to disturbance and displacement of foraging, roosting or nesting species;
- Increased visual stimuli through construction activities (personnel and plant movement, etc.) leading to disturbance and displacement of foraging, roosting or nesting species;
- Increased, un-natural lighting leading to disturbance and displacement of foraging, roosting or nesting species;
- Presence of temporary new structures creating potential collision risk for a range of bird species;
- A potential change of hydrological flow which may alter the composition of the habitats present;
- Direct loss of intertidal and subtidal habitat over the footprint of the development;
- Underwater acoustic noise and shock during piling leading to altered behaviour, this could include lethal and sub lethal impacts on marine mammals and their prey species;
- Seabed excavation works during construction leading to disturbance of and potential loss of benthic communities and marine species, which in turn could lead to a reduction in or dispersal of prey items for a range of marine mammals and bird species;
- Temporary increase in suspended sediment and/or deposition from dredging and construction creating physical disturbance in the marine environment; and
- Increased vessel numbers causing disturbance in the marine environment.

5.4 Potentially Significant Effects (Operation)

The following potential negative impacts on ecology could occur during the operational phase of the proposed development:

- Accidental spills from vessels, plant and on-site storage of fuels and chemicals leading to pollution of habitats and potential harm to a range of species and habitats;
- Increased noise through operational activities (plant movement, etc.) leading to disturbance and displacement of foraging, roosting or nesting species;
- Increased visual stimuli through operational activities (personnel and plant movement, etc.) leading to disturbance and displacement of foraging, roosting or nesting species;
- Increased, un-natural lighting leading to disturbance and displacement of foraging, roosting or nesting species;
- Presence of new structures creating potential collision risk for a range of bird species;
- A potential change of hydrological flow which may alter the composition of the habitats present;
- Dredging activity may lead to potential disturbance of and potential loss of benthic communities and marine species, which in turn could lead to a reduction in or dispersal of prey items for a range of marine mammals and bird species
- Temporary increase in suspended sediment and/or deposition from dredging and construction creating physical disturbance in the marine environment; and
- Increased vessel numbers post construction causing disturbance in the marine environment.

5.5 Design and Mitigation

5.5.1 Terrestrial Habitats and Species

Habitat loss impacts on terrestrial habitat will be mitigated by design. Good practice mitigation measures will be recommended to minimise the impacts of construction and specific operation activities on terrestrial habitats and species. These will include a pre-construction otter survey.

5.5.2 Birds

The proposed area of works is adjacent to busy industrial areas, and contains limited foraging opportunities for a low range of species.

However, to better understand the usage of the proposed site and to ensure any disturbance or displacement to foraging or roosting birds at Hatston is minimised during construction and operation, a calendar year of low-tide count bird surveys is recommended to ascertain the locations of bird aggregations, numbers of birds present, and the species which frequent the area of proposed development.

5.5.3 Marine habitats, fish and mammals

Underwater noise modelling for construction activities will be carried out, focussing on the key species above (including fish species). Potential impacts on marine mammals and their prey will be designed out where possible. Any additional mitigation will be designed to be site and species specific, taking into account the additional noise producing activities occurring in the Wide Firth.

The Joint Nature Conservation Committee (JNCC) *Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise* (2010)¹⁰ will be consulted to design a site specific mitigation protocol, if required.

Mitigation proposals will be agreed through discussion with NatureScot and Marine Scotland to ensure they provide the appropriate protection for marine mammals during construction, and it may be necessary to apply for an EPS licence from the licensing authority, Marine Scotland, prior to commencing construction works.

5.6 Inclusion and Exclusion from EIA

5.6.1 Terrestrial Habitats and Species

Terrestrial habitats and species will be scoped out of the EIA process. Potential impacts will be mitigated by design and a pre-construction survey will be undertaken for otter (Refer to Section 5.5.1).

5.6.2 Birds

The Orkney Mainland Moors SPA will not be included for assessment in the EIA, as the Hatston site does not constitute optimal habitat for its qualifying species, and there is no likely significant effect (LSE) on the integrity of the designation as a result of the proposed development.

Bird species that nest and forage on the terrestrial habitats adjacent to the proposed development and those species that forage on the water of the Wide Firth have not been considered for assessment within the EIAR as neither assemblage will suffer habitat loss or will lose important roosting or foraging grounds as a result of the proposed development.

Low tide counts are currently being undertaken, as outlined in Section 5.5.2, and initial findings indicate that with the successful implementation of mitigation measures, it is considered unlikely that there would be any significant effects on the bird populations as a result of the proposed development. However, in line with NatureScot comments¹¹ on the Appropriate Assessment (AA) of the Draft Orkney Harbour Masterplan Phase 1¹², it is suggested that a Habitats Regulations Appraisal (HRA) is undertaken to assess any potential LSE on the qualifying species of the North Orkney pSPA and the Scapa Flow pSPA.

5.6.3 Marine habitats, fish and mammals

Marine mammals and their prey will be included in the EIA. The PMF Maerl Beds will also be included.

The EIA will include an assessment of impacts on Faray and Holm of Faray SAC, Damsay and Holm of Grimbister Seal Haul-out, and Helliars Holm North and Elwick Seal Haul-out.

5.7 Assessment Methodology

The assessment of predicted impacts will be undertaken against a baseline and the significance of effects assessed using standard EIAR criteria (i.e. as developed by the Institute of Environmental Management and Assessment (IEMA)).

¹⁰ JNCC Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise (2010) available online: http://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Piling%20protocol_August%202010.pdf

¹¹ Letter Ref CDM158120 dated 24/02/2020

¹² Draft Orkney Harbours Masterplan Phase 1, Habitats Regulation Appraisal Screening Assessment, Report No P2214_RN4683_Rev1, dated 19 July 2019.

The methodology for the Ecological Impact Assessment (EclA) will follow the Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, Version 1.1 (CIEEM, 2018 (updated 2019)). The British Standard for Biodiversity: Code of Practice for Planning and Development (BS 42020:2013) cites the CIEEM EclA Guidelines as the acknowledged reference on ecological impact assessment. The guidelines are consistent with the British Standard, which provides recommendations on topics such as professional practice, proportionality, pre-application discussions, ecological surveys, adequacy of ecological information, reporting and monitoring.

The assessment will include all direct and indirect, lethal and non-lethal impacts on ecology that could reasonably occur as a result of piling activities during construction.

6 ARCHAEOLOGY AND CULTURAL HERITAGE

6.1 Introduction

This chapter provides an overview of the existing archaeological and cultural heritage baseline in the immediate area of the proposed development. It identifies potential effects on this baseline by the proposed development during construction and operation. Any potentially significant effects that are predicted will be recommended for scoping into an impact assessment. An overview of appropriate methodology for the assessment of these potentially significant effects is identified. An overview of possible mitigation, avoidance or enhancement measures that could be implemented is also provided.

This chapter takes account of consultation responses to the Strategic Environmental Assessment (SEA), HRA and AA for the Orkney Harbours Masterplan Phase 1, which included:

- There is the potential for reclamation works to damage or destroy unknown or undesignated marine historic environment assets. A survey to identify potential assets may be required and further mitigation if assets are identified.
- There are records of wrecks in the surrounding area and therefore mitigation in the form of survey work and potentially further mitigation may be required.
- Historic Environment Scotland note there are a large number of wrecks recorded around the Orkney Islands which have not been designated as scheduled monuments, protected areas or controlled sites, as well as undesignated terrestrial archaeology should be included.

In addition to the legislative context outlined in Section 1.4 above, key legislation and policy relevant to the historic environment includes:

- The Protection of Military Remains Act 1986 (PoMRA) has the principal concern to protect the sanctity of vessels and aircraft that are military maritime graves. HMS Royal Oak is protected under this Act, with a 200m radius exclusion zone around it. Any aircraft lost while in military service is automatically protected under this Act;
- The Historic Environment Policy Statement for Scotland (HEPS) 2019 includes policies that decisions affecting any part of the historic environment require understanding of its significance and consideration of avoiding or minimising detrimental impacts;
- Historic Environment Scotland Designation Policy and Selection Guidance 2019 stands alongside HEPS 2019 and outlines the principles and criteria that underpin the statutory designation of historic assets; and
- The Pentland Firth and Orkney Waters Marine Spatial Plan (PFOW MSP, 2016) and the Orkney Local Development Plan (2017) policies concerning the protection of and approaches to the historic environment.

6.2 Baseline Conditions

The key reference sources reviewed for the baseline overview were:

- The Historic Environment and Cultural Heritage section on the Marine Scotland Information website, <https://marine.gov.scot/themes/historic-environment-and-cultural-heritage> [accessed 16-17/01/2021];
- Statutory lists, registers and designated areas, including List of Designated Wrecks and Historic Marine Protected Areas;
- UK Hydrographic Office (UKHO) wreck register and relevant nautical charts; and
- The National Record of the Historic Environment via the Canmore and Pastmap online databases (<https://canmore.org.uk/>; <https://pastmap.org.uk/> [accessed January 2021]).

The importance of identified historic environment receptors has been evaluated to inform the assessment of potential effects for scoping in or out of an EIA. The level of importance assigned depends on a number of factors, including intrinsic, contextual and associative characteristics (HES Designation Policy and Selection Guidance 2019) and general guidelines used by statutory authorities and agencies such as the Scottish Government and HES.

The study area comprised a 600m radius from the centre of the proposed development, although some assets outwith this were also considered due to their importance (see Figure 6.1, Appendix A).

6.2.1 Marine

There are no marine cultural heritage statutory designations within the study area, although there are plane wrecks that would fall under PoMRA. There are two UKHO charted wrecks (including a plane wreck) within the study area.

Hominids and humans have occupied the UK continental shelf (UKCS) at various times for more than 700,000 years but finds showing this are incredibly rare. Submerged landscapes are where human beings and early hominids previously lived or hunted on terrain which was at that time dry land, or where they exploited fish and shellfish on the coast which is now submerged.

Some 12,000 years ago, at the end of the last Ice Age, relative sea levels around Orkney may have been 30-40m lower than present only reaching current levels approximately 2,000 BC (Dawson & Wickham Jones, 2007¹³; Dawson et al, 2017¹⁴). There are no known submerged paleoenvironmental remains in the shallow margins of this part of Kirkwall Bay (Timpany et al, 2017¹⁵), and it is unlikely that there is any potential for such remains at the proposed development.

Canmore has fourteen losses listed at the location of Canmore Wrecks on Figure 6.1, Appendix A. This is because the location of almost all of these wrecks is not known, so they have been placed at the southwest corner of a 1km grid square that contains the name 'Bay of Kirkwall' in 1:25000 OS mapping, even though it is recorded that some were saved and towed away. These are listed in full in Appendix B. There is negligible likelihood that these vessels are in the proposed development footprint, because they would have been discovered during the construction of the current Hatston Pier and Ferry Terminal. However, it is possible that the remains of some wrecks survive in the wider area.

Military aircraft went missing in and around Kirkwall Bay, partly due to Hatston being a wartime airfield, and there is a moderate possibility of finding one in the general area (see Table 6-1). Any aircraft would automatically fall under PoMRA. Two of the three aircraft originally listed by Canmore at the Canmore Wrecks location on Figure 6.1, Appendix A have been found (Grumman Wildcat and Grumman Avenger). The Grumman Avenger is located some 4km to the northwest in Wide Firth. Spitfire BL253 is recorded as having crashed into the sea some 500 yards north of Hatston, killing the pilot. Although his body was recovered, the aircraft has not yet been located (<http://crashsiteorkney.com/kirkwall-spitfire-bl253.html>¹⁶). The aircraft is of high importance, and falls under PoMRA, meaning that it is an offence to disturb (even unknowingly) the aircraft without a licence.

¹³ Dawson, S., Wickham-Jones, C.R. (2007). 'Sea level change and the prehistory of Orkney.' In: *Antiquity* 81, 312.

¹⁴ Dawson, S., Bates, R., Wickham-Jones, C. & Dawson, A. (2017). 'Northern North Sea and Atlantic Northwest Approaches. In Flemming, N.C., Harff, J., Moura, D., Burgess, A. & Bailey, G.N. (eds.) *Submerged Landscapes of the European Continental Shelf: Quaternary Paleoenvironments*. Chichester: John Wiley & Sons Ltd. 187-209.

¹⁵ Timpany, S., Crone, A., Hamilton, D. & Sharpe, M. (2017). 'Revealed by Waves: A Stratigraphic, Palaeoecological and Dendrochronological Investigation of a Prehistoric Oak Timber and Intertidal Peats, Bay of Ireland, West Mainland, Orkney'. In: *Journal of Island and Coastal Archaeology* 12.4, 515-539.

¹⁶ ARGOS. <http://crashsiteorkney.com/index.html> [accessed January 2021]. Aviation Research Group of Orkney and Shetland.

The marine historic environment assets with known locations or of high importance are listed in Table 6-1 and shown on Figure 6.1, Appendix A.

Table 6-1: Overview of identified marine historic environment assets

Name	Canmore ID	UKHO No	Description	Date lost	Source	Importance
Unknown 3	324290	69750	Sailing vessel. Barque? Shoreline wreckage	Unknown	3,4,5	Low
Grumman Avenger:	270117, 286838, 324221	69279	Grumman Avenger: FN899 832 Sqn.	16/11/194 3	1,3,4,5, 8,9	High
Grumman Wildcat	324499, 330866	74628	Grumman Wildcat JV526	17/05/194 4	1,3,4,5, 8,9	High
Supermarine Spitfire	270118	-	Vickers Spitfire BL253 899 Sqn. Crashed into sea 500yds north of Hatston	20/01/194 3	1,5,8,9	High
Canmore Wrecks	various	-	See Appendix B	various	5	Negligible- Moderate

Source: 1 = Whittaker (1998)¹⁷; 3 = UKHO; 4 = Wrecksite.eu¹⁸; 5 = Canmore Maritime (Project Adair); 8 = ARGOS; 9 = Lamb (2007)¹⁹

Unknown 3 is the closest located shipwreck to the proposed development. It is wreckage from an unknown vessel, probably dating to the late 19th century, beached in shallow water, maximum 3m deep. The wreckage covers an area of 30 by 20m, and a small cannon, possibly a signal gun, has been observed amongst other items.

6.2.2 Onshore

There are no cultural heritage statutory designations within the proposed development area and none in the wider study area. There are potential historic environment assets within the onshore footprint of the proposed development. The onshore historic environment assets with known locations are listed in Table 6-2 and shown on Figure 6.1, Appendix A.

The known sites in the study area fall into two broad categories:

- Prehistoric settlement remains, including a souterrain (earth-house) and a burnt mound, which are likely to be of at least moderate importance, and a possible cairn that does not appear to be extant; and
- WW2 remains associated with Hatston airfield. Most no longer survive, but those that do are of low-moderate importance. These survivors are located outwith the development footprint, except for a crop mark representing the blast bank that surrounded an aircraft hangar in the area where the bunkering tanks are to be placed.

There is potential for unknown prehistoric remains to be found, reflected by the presence of a burnt mound (Site 2574) and the records of a cairn, a prehistoric settlement and a souterrain (Sites 2563, 2585 and 306645). None of these three are visible and it is not certain if they still exist, having been destroyed by 20th-century developments, or if they survive buried below, or in the less disturbed margins near the shore. Three of the watching briefs conducted at Hatston (see Site 363940) did not identify any deposits of prehistoric origin. However, the watching brief by the burnt mound (Site 2574) identified that the surrounding ground surface to be the result of considerable modern makeup, with

¹⁷ Whittaker, I.G. (1998). *Off Scotland: a comprehensive record of maritime and aviation losses in Scottish waters*. Edinburgh: C-Anne Publishing.

¹⁸ Wrecksite.eu. <https://www.wrecksite.eu/Wrecksite.aspx> [accessed January 2021].

¹⁹ Lamb, G. (2007). *Sky over Scapa 1939-1945*. 2nd edn. Kirkwall: Bellavista Publications.

the old ground surface surviving undisturbed below. The mound proved to be considerably larger than previously thought, extending up to 3.6–4.7m beyond its visible surface area and occupying a natural knoll in a low-lying and waterlogged landscape, with the old ground surface up to 1.70m below the modern surface (Mamwell, 2008)²⁰. It is unlikely that there are any unknown medieval, post-medieval and modern remains within the development footprint.

²⁰ Mamwell, C. (2008). 'Hatston, Kirkwall, Orkney (Kirkwall and St Ola parish), evaluation'. *Discovery and Excavation Scotland*. New series vol. 9, 2008. Tisbury: Cathedral Communications Ltd.

Table 6-2: Overview of identified onshore historic environment assets

Name	Canmore ID	Type	Description	Period	Importance
Saverock	2563	Souterrain	Subterranean chamber discovered near the shore. Excavated in the mid 19th-century but left in situ. The actual location is not known, and nothing is visible. Potentially of moderate importance if reasonably intact.	Prehistoric	Low-Moderate
Saverock	2574	Burnt Mound	This mound is 2.0m. high, is extant. It is grass covered and appears to be undisturbed except for a shallow trench that has been dug across it showing the surface of the mound to be composed of fire blackened earth and small burnt stones.	Prehistoric (Bronze Age?)	Moderate
Saverock	2585	Cairn	Denuded cairn noted. No longer visible, possibly destroyed. No longer visible.	Prehistoric	Low
Hatston Airfield	269625	Pillbox	Site of a pillbox. No longer extant	WW2	Negligible
Hatston Airfield	269626	Pillbox	Site of a pillbox. No longer extant	WW2	Negligible
Hatston Airfield	269624	Aircraft Hangar, Dispersal Bay	One aircraft hangar bay surrounded by an earth bank with traces of concrete bases of at least two other hangar bays along with the base of a dispersal bay	WW2	Low
Hatson	306645	Settlement	When making road improvements there were found and noted 'buildings, corbelled with straight walls and rounded corners; Skaill knives etc. - typical of Skara Brae'.	Prehistoric	Unknown
Hatston Airfield	269623	Aircraft Hangar	Various hangar bays, mostly removed by Hatston Enterprise Park development. One survives as a crop mark in the area, another as a bank around a laydown area. Subject to watching brief Canmore entry 363940	WW2	Low
Hatston Airfield	269622	Bomb Store, Dispersal Bay	Remains of bomb store and six concrete dispersal bays for Hatston airfield. Still visible.	WW2	Moderate
Kirkwall, Hatson, Galt View	363940	Watching Brief	Three separate watching briefs for geotechnical pits, laydown area, services and road installation identified and recorded parts of concrete bases and blast bank Canmore 269623) before removal. Geotechnical survey pits identified no material of archaeological significance	N/A	N/A
Hatston	365611	Aircraft Hangar	Site of an aircraft hangar, no longer extant after development. Subject to watching brief Canmore entry 363940	WW2	Negligible

6.3 Potentially Significant Effects (Construction)

6.3.1 Marine

“Construction or infrastructure installation works have the potential for both direct and indirect impacts to historic assets located ... on the seabed, either as direct damage to historic features or through seabed disturbance, or secondary effects such as changes to coastal processes and sediment dynamics” (PFOW MSP 2016).

There are no marine heritage assets within the development footprint to be impacted and so these can be scoped out of an EIA.

There will be a small amount of dredging to the north/northwest of the proposed pier extension and beside the pier footprint in order to level the seabed out and down to -10 CD for the approach and berthing pocket (see Drawing No 202043 / FS-21 Rev P1, dated 26/02/2021, Appendix A). These locations fall within the areas subject to regular marine surveys in order to ensure that the approach to the current pier is kept clear. Therefore, no impacts are predicted on any heritage assets on the seabed, and can be scoped out of an EIA.

Table 6-3: Potential impacts and mitigations for marine historic environment receptors

Impact	Description	Potential Significance (prior to mitigation)	Scoping	Mitigation
Geotechnical coring for construction engineering	Seabed disturbance resulting in loss or damage of submerged prehistoric deposits	Not Significant	Out	Negligible likelihood that there are deposits of interest identified within the proposed development footprint.
Dredging / seabed clearance for construction	Seabed disturbance resulting in loss or damage to heritage assets on the seabed	Not Significant	Out	There are no known identified seabed heritage assets in the development footprint or the small areas identified that require dredging.
Deposition of dredged material	Compression of heritage assets on the seabed	Not Significant	Out	Any dredged material is to be used for infill at the development site where there are no assets to compress.
Deepened access channels outwith development footprint	Seabed disturbance resulting in loss or damage to heritage assets on the seabed	Not Significant	Out	Dredging will only be within the current approach channel, which is surveyed on an annual basis.
Construction vessel anchoring	Seabed disturbance resulting in loss or damage to heritage assets on the seabed	Not Significant	In	No anchoring will be required because the works are to extend the existing pier and infill behind it.

Direct impact of any kind on the unlocated Spitfire would be of high significance, and contravene PoMRA, even if accidental. However, due to the regular sidescan sonar surveys conducted around the pier and the approach to it, it can be stated that the Spitfire is not present here and will not be affected by the development.

6.3.2 Onshore

“Construction or infrastructure installation works have the potential for both direct and indirect impacts to historic assets located in coastal areas... either as direct damage to historic features or through secondary effects” (PFOW MSP 2016).

One known historic asset lies within the footprint of the onshore development footprint as shown on Figure 6.1, Appendix A, (crop mark of a blast bank and hangar, Site 269623). The removal of the remains of an upstanding blast bank and hangar floor surface 150m to the east (Site 365611) were monitored during the creation of a laydown area located off Galt's View (ORCA 2018²¹). The concrete of the hangar floor and nature of the blast bank were recorded. Otherwise, if the footprint (assumed to include laydown areas and construction areas) is not changed then no other known heritage assets will be directly impacted onshore, and can be scoped out of the EIA.

However, there are reports of a souterrain (Site 2563) and a prehistoric settlement (Site 306645) that could survive below ground or in the less developed coastal margin of Hatston, including the slight mound on the north side of the road opposite the existing water tanks, where the location of the souterrain has been placed in Canmore (Site 2563), the undisturbed strip of land between Galt View and the coastal edge and in the apparently less disturbed area where the new bunkering fuel tanks are to be built (although watching briefs conducted for the construction of Galt View and around the latter area noted no prehistoric remains or deposits (ORCA 2015²²; ORCA 2018).

At this stage the intention is to place fill material over the existing foreshore, heightening the ground level and creating further reclaimed land, and install the gas oil line in this new infill material. However, the project design is iterative and still developing; therefore if ground-breaking (intrusive) works are required, including intrusion into the slight mound opposite the existing water tanks, then it is possible there could be a significant impact, which is therefore scoped into an EIA.

In consultation with the OIC Planning Archaeologist (phone call 16th February 2021, confirmed in email 17th February 2021), the mitigation strategies of intrusive archaeological evaluations prior to construction and during construction could reduce or eliminate such effects. If such strategies are agreed prior to the EIA process then there would be no requirement to include impacts on the souterrain and any associated prehistoric settlement in an EIA process, because the necessary mitigations to reduce/eliminate impacts would already be in place. This management of the risk is likely to be part of planning consent conditions.

Table 6-4: Potential impacts and mitigations for onshore historic environment receptors

Impact	Description	Potential Significance (prior to mitigation)	Scoping	Mitigation
Ground excavation and clearance for construction footprint	Ground-breaking disturbance resulting in loss or damage to unknown heritage assets	Significant	In (Unless mitigation agreed prior to EIA).	Intrusive evaluation, Watching brief.

²¹ ORCA. 2018. *Hatston Laydown Area, Kirkwall, Orkney. Watching Brief Data Structure Report*. Unpublished project report (ORCA Project 751).

²² ORCA. 2015. *Hatston Enterprise Area, Kirkwall, Orkney. Watching Brief Data Structure Report*. Unpublished project report (ORCA Project 531).

Impact	Description	Potential Significance (prior to mitigation)	Scoping	Mitigation
Ground excavation and clearance for construction footprint	No ground-breaking disturbance resulting in loss or damage to known heritage assets due to quantity of infill being placed and bunkering line being placed into it.	Not Significant	Out	None required.
Deposition of excavated material if outwith development footprint	Disturbance resulting in loss or damage to known and unknown heritage assets	Not Significant	Out	No excavated material will be deposited out with the development footprint.

6.4 Potentially Significant Effects (Operation)

“Inappropriate development has the potential to affect the setting of historic assets located in both coastal and marine areas” (PFOW MSP 2016).

There are potentially significant direct and indirect effects of the proposed development on both marine and onshore heritage assets during the operation of the proposed development. A worst-case scenario has been assumed, summarised in Table 6-5. Mitigations are suggested that could result in some impacts being scoped out of an EIA if these are agreed prior to such an assessment.

Table 6-5: Potential impacts and mitigations for historic environment receptors

Impact	Description	Potential Impact (prior to mitigation)	Scoping	Mitigation
Scouring of seabed from propeller wash	Scouring of any seabed deposits to expose and damage heritage assets (including airplanes)	Not Significant	Out	Vessels will use established approach routes that are monitored. There are no assets present in these routes
Effect of the built installation on the setting of heritage assets	The proposed development is an extension of what is already present and so will not affect the understanding, appreciation and experience of any historic assets, and thus a historic asset's cultural significance.	Not Significant	Out	None

Effect of accessing the built installation on the setting of heritage assets	The proposed development is an extension of what is already present and so will not affect the understanding, appreciation and experience of any historic assets, and thus a historic asset's cultural significance.	Not significant	Out	None
Cumulative effect	The proposed development is an extension of what is already present and so will not further affect historic environment assets	Not Significant	Out	None

No indirect impacts on any seabed assets have been identified, especially because of the regular seabed inspections of the approaches to the pier, and can be scoped out of an EIA.

The proposed development is a simple extension to the facilities and buildings that already exist at Hatston. Therefore, no significant impacts on the setting of historic environment assets are predicted, and have been scoped out of an EIA.

There is no potential for a significant cumulative effect on heritage assets, or on the setting of assets from the proposed development at Hatston Pier, because it will be a simple extension to what is

6.5 Assessment Methodology

All potential impacts on the marine historic environment have been considered and scoped out of an EIA. However, it is understood that the project design is an iterative process and still developing. If there are any significant changes to the project design, then these will need to be reassessed. Similarly, onshore impacts will require reassessment if there are any significant changes to the project design.

On the basis of the potentially significant impact identified, it is possible that an EIA of the proposed development is required for this impact, if mitigations are not agreed beforehand. For the potential impact scoped in, the assessment will be conducted based on analysis of existing desk-based sources. This will provide the basis for a robust EIA, and for the statutory authorities to be satisfied that they are making an informed decision

The Desk-based assessment (DBA) should be conducted to appropriate professional standards (CIfA 2014, and as revised²³).

The importance of onshore historic environment receptors would be evaluated to inform the assessment. The level of importance assigned depends on a number of factors, including intrinsic, contextual and associative characteristics (HES Designation Policy and Selection Guidance 2019 and Annexes) and general guidelines used by statutory authorities and agencies such as the Scottish Government and HES.

Where avoidance of impact cannot be embedded in the project design, assessment of the significance of direct impact will be made in the EIA, based on standard guidance (HES 2016²⁴; HES & SNH

²³ CIfA. (2014). *Standard and guidance for historic environment desk-based assessment*. Reading: Chartered Institute for Archaeologists.

²⁴ HES. (2016). *Managing Change in the Historic Environment: Setting*. Edinburgh:HES.

2018²⁵). The preparation of onshore heritage Written Schemes of Investigation (including intrusive evaluations and watching briefs) and Protocols for Accidental Discoveries could be produced as part of the EIA, or later as part of the project management, to avoid or mitigate accidental impacts and manage any accidental discoveries of archaeological interest. These would be based on standard professional guidelines. An evidence-based approach will be used to design suitable mitigation strategies in consultation with HES, OICHA and OIC.

²⁵ HES & SNH. (2018). *Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland*. v5. Edinburgh:HES; Inverness: SNH [now naturescot].

7 LANDSCAPE AND VISUAL

7.1 Introduction

This section addresses the potential significant adverse effects of the proposed development on the landscape and visual resources of the site and surrounding area. These resources are defined respectively within paragraph 3.21 of the Guidelines for Landscape and Visual Impact Assessment (GLVIA)²⁶ as:

“...the constituent elements of the landscape, its specific aesthetic or perceptual qualities and the character of the landscape” and “...the people who will be affected by changes in views or visual amenity at different places”.

To help determine the need for, and to ascertain the potential scope of a Landscape and Visual Impact Assessment (LVIA) as part of an EIA, an initial landscape and visual appraisal has been undertaken, informed by a site visit, to identify the following:

- The landscape/seascape character of the site and surrounding area;
- The coverage of any landscape designations across the site and surrounding area;
- Important views and viewpoints towards the site from the surrounding landscape;
- Any potentially significant landscape and visual effects during construction and post-completion; and
- Recommendations for mitigating any potentially significant adverse effects.

7.2 Baseline Conditions

The purpose of this baseline assessment is to identify the existing landscape and visual resource of the site and surrounding landscape, against which any potential significant effects of the proposed development would be predicted. Although significant effects are very unlikely to be experienced beyond 5 km from the site, the assessment of the following landscape and visual receptors has been identified within an indicative study area of 15 km:

- The site and its setting;
- Landscape character;
- Coastal character;
- Landscape designations; and
- Key views and visual receptors.

7.2.1 The Site and Its Setting

The site lies on the western side of the Bay of Kirkwall with the Wide Firth beyond. Kirkwall town centre is located approximately 2 km to the south-east of the site, separated by the nearby Hatston Industrial Estate. The site is accessed off the Grainshore Road where a cluster of light industrial units (with a large wind turbine) lead towards the pier. Other than the nearby industrial estate and an airfield to the west of the site, the surrounding landscape has prevailing pastoral appearance.

²⁶ Landscape Institute and the Institute of Environmental Management and Assessment (2013). *The Guidelines for Landscape and Visual Impact Assessment*, version 3.

7.2.2 Landscape Character

As detailed in the Landscape Character Assessment²⁷ (LCA), the site of the proposed development is located within the *Coastal Basin* Landscape Character Type (LCT). On Orkney, this LCT has a smooth relief falling gently from adjoining higher ground to the concave curve of the coastline, and contains many of the archipelago's lowland burns and wetlands. The basins occur on six islands: Eday, Rousay, Burray, South Ronaldsay, with the largest basins found on West and East Orkney Mainland and its key characteristics are:

- Wide, basin-shaped landform open to the sea, with smooth relief falling from surrounding hills and cliffs to a concave, curved coastline;
- Wetland and small lochs on lower ground and along watercourses and 'ouse' waterbodies behind the coastline, with associated semi-natural vegetation;
- Productive agriculture with improved grazing, cultivated grass and arable crops in rectilinear, stone-walled fields;
- Woodlands and tree groups are very small scale, scarce but prominent features, associated with buildings;
- Many estate farms, resettled crofts and a few small settlements;
- Kirkwall is Orkney's main settlement, its townscape around the harbour and historic St Magnus' Cathedral forming a dominant feature in Eastern Mainland and in views from nearby bays;
- Mature trees within the urban area of Kirkwall;
- Minor and major roads which follow mid-level ground and provide good access to lower ground and beaches; and
- Rich in archaeology and built heritage including mills, estate farms and Word War II defence sites.

7.2.3 Coastal Character

Considering the coastal location of the site, the coastal (or seascape) character is also an important factor to consider. As defined by NatureScot²⁸ (formerly SNH), coastal character is made up of physical characteristics of the hinterland, coastline and sea, as well as visual aspects and perceptions.

As detailed in the *Orkney and North Caithness Coastal Character Assessment*²⁹, the site of the proposed development is located within *The Pier to Craigiefield* coastal character area (CCA) and is described as follows:

Location and extent: This coast extends from The Pier in the west (north of Hatston) to Craigiefield in the east and includes the Bay of Weyland;

Maritime influence: This moderately small, semi-enclosed, extent of tidal water from Hatston to Kirkwall, is known as the Bay of Kirkwall and has framed views north across Wide Firth towards the Mainland, Gairsay and Shapinsay. It is animated by wind action and is seldom completely calm. A strong maritime influence exists from the frequent passage of boats and ferries to and from the numerous piers and slipways around the harbour plus associated navigational aids. The smells and sounds of the sea, harbour and fishing trade are prevalent around the bay and experienced at close range often by members of the public and tourists;

Character of coastal edge: The low lying, generally north facing, subtly indented coastline comprises fragmented rock platforms and skerries, stretches of rock, shingle and sand, and man-made edges such as piers, slipways and retaining walls;

²⁷ Scottish Natural Heritage (2018). *National programme of Landscape Character Assessment* (LCT 301).

²⁸ Scottish Natural Heritage (2018). *Guidance Note: on Coastal Character Assessment*.

²⁹ Scottish Natural Heritage (2016). *Orkney and North Caithness Coastal Character Assessment*.

Character of immediate hinterland: Rolling pasture and arable land rises to the west, beyond the urban edge, and backed by steeply rising moorland hills. To the east pasture and arable landforms a low-lying horizon line beyond the urban edge. There is a degree of shelter and semi containment provided by the built urban edge of Kirkwall and the rising agricultural land to the east and west including moorland hills to the west and distant west;

Extent of human influence: Settlement is concentrated at Kirkwall and has a typical urban character consisting of hard surfaces, highway elements, street lighting and commercial and light industrial development. Settlement is dispersed thereafter along roads and scattered throughout the urban fringe areas of the hinterland to the west, south and east. Access to the coast is readily available from Kirkwall and surrounding coastal roads; and

Views: Views are largely focused on harbour activity and the passage of boats and ferries from both the shoreline and from the sea. Sea users experience views focused on Kirkwall.

7.2.4 Landscape Designations

There are 40 National Scenic Areas (NSAs) in Scotland, with their outstanding scenery, represent Scotland's finest landscapes. The Planning etc. (Scotland) Act 2006 gives a statutory basis to NSAs and describes them as an area "*of outstanding scenic value in a national context.*" The purpose of the NSA designation is both to identify our finest scenery and to ensure it is protected from inappropriate development.

There are no landscape designations in close proximity to the site although the *Hoy and West Mainland* NSA is located approximately 9 km to the west.

Hoy and West Mainland NSA Special Qualities

As described by Nature Scot (formerly SNH)³⁰, the NSA exhibits the following Special Qualities:

- A palimpsest of geology, topography, archaeology and land use;
- An archaeological landscape of World Heritage Status;
- The spectacular coastal scenery;
- Sandstone and flagstone as an essence of Orkney;
- A long-settled and productive land and sea;
- The contrast between the fertile farmland and the unimproved moorland;
- A landscape of contrasting curves and lines;
- Land and water in constantly changing combinations under the open sky;
- The high hills of Hoy;
- The townscape of Stromness, its setting and its link with the sea; and
- The traditional buildings and crofting patterns of Rackwick.

7.2.5 Key Views and Visual Receptors

Important views from the site are focused towards the sea and associated harbour activity including the passage of boats and ferries in the Bay of Kirkwall. There are also framed views north across Wide Firth towards the Mainland, Gairsay and Shapinsay.

The existing pier and associated infrastructure form a focal point in local views and from the site. A nearby industrial estate to the south east is relatively prominent in view, as is a large wind turbine. Landward views are focused on Wideford Hill to the south-west.

³⁰ Scottish Natural Heritage (2010). *The Special Qualities of the National Scenic Areas.*

Nearby visual receptors are largely restricted to workers of the terminal and industrial estate and in the wider landscape, residents of mostly scattered dwellings, recreational users (coastal and inland) and road users along Grainshore Road and the A965. From the sea, boat and ferry passengers would also experience views towards the site.

7.3 Potentially Significant Effects (Construction)

In the locality, construction activity would be noticeable and effects would primarily result from activity associated with piling and the construction of laydown areas. This is likely to include views of a crane, construction infrastructure, storage of materials, noise, activity and movement of large vehicles.

In assessing the likelihood of potentially significant effects, it is important to consider that any construction activity would be experienced in the context of the busy port and nearby industrial estate and although there would be some localised conspicuous views of activity, the magnitude of both landscape and visual effect would be notably restricted by the existing industrial character of the local area. As such, it is very unlikely that any significant effects would be experienced.

7.4 Potentially Significant Effects (Operation)

In considering the preceding assessment of Baseline Conditions, this section identifies any potential significant effects predicted during the operational phase.

7.4.1 Landscape and Coastal Character

Once operational, the proposed development would result in an increase in vessel activity with additional areas on the pier used for storage with associated noise, activity and movement of large vehicles. In assessing the magnitude of potential effect, this would be notably restricted by the following factors:

- A strong working maritime influence already exists from the frequent passage of boats and ferries to and from the numerous piers and slipways around the Bay of Kirkwall;
- Existing on-site infrastructure and activity and the presence of a nearby industrial estate would limit any effects on the rural character of surrounding farmland and pockets of semi-natural character found along the coastal edge; and
- From the centre of Kirkwall, settlement is dispersed thereafter along roads and scattered throughout the urban fringe areas of the hinterland to the west, south and east.

In considering these factors, it is very unlikely that any significant effects on the local landscape/seascape would be experienced.

7.4.2 Landscape Designations

Given the relatively long distance from the site to the NSA and that any visual changes resulting from the operation of the proposed development would be experienced in the context of an existing operational port, it is very unlikely that any significant effects on NSA Special Qualities would be experienced.

7.4.3 Visual Receptors

Although no detailed analysis of the zone of theoretical visibility has been undertaken at this stage, it is evident that apart from relatively long views across open sea, landward views to and from the site are relatively localised.

Given that receptors in close proximity to the site are largely workers at the existing port and other industrial workers nearby, it is very unlikely that the relatively limited visual changes resulting from the proposed development would be significant. From scattered dwellings and roads in the wider landscape, and those undertaking recreational activity on land or sea, the operation of the proposed development would be experienced in context of a busy working seascape and the important views over the Bay of Kirkwall and across Wide Firth towards the Mainland, Gairsay and Shapinsay would be largely unaffected. As such, it is very unlikely that any significant visual effects would be experienced.

7.5 Design and Mitigation

As no long-term significant effects are predicted, it is not considered necessary at this stage to embed any landscape related mitigation measure in the design process. Nonetheless, it is important that any subsequent assessment of effects considers landscape design measures to ensure any adverse effects are mitigated as far as possible.

7.6 Inclusion or Exclusion from EIA

Based on the preceding appraisal of potentially significant effects, it is recommended that landscape and visual interests should not be subject to assessment as part of an EIA. As already alluded to, this is primarily due to the proposed development taking place within the context of an existing operational port facility and a wider partly industrialised landscape/seascape setting. Although there would be a notable increase in the length of the pier, the proposed development would be characteristic and the extent of any adverse landscape and visual effects are likely to be relatively localised.

If however the Council would welcome some further information to help understand any effects, a Landscape and Visual Appraisal (LVA) could be undertaken. This would be undertaken in accordance with Guidelines for Landscape and Visual Impact Assessment and although not as detailed as an LVIA (as part of an EIA) would be, it would however provide a proportionate examination of effects to a similar scope where relevant.

8 AIRBORNE NOISE

8.1 Introduction

The proposed development has the potential to impact the ambient airborne noise environment on surrounding residential properties during the construction and operational phases. The effects of construction noise on marine life shall be considered as part of the ecological appraisal (Refer to Section 5.6.3).

8.2 Baseline Conditions

Hatston Pier is currently operational with activities associated with cruise ships, renewable energy, ferries, cargo (including livestock) and oil and gas. Hatston Industrial Estate is located circa 400m to the south of the existing pier. Industrial noise is therefore present in the current acoustic environment at the site as well as the surrounding area. Existing operations at Hatston Pier take place over a 24 hour period; therefore certain noise generating activities are carried out at sensitive times when background noise is typically low.

There is a small hamlet which, due to elevated topography, has views of the existing harbour. The closest residential property within this hamlet is approximately 750m to the south-southwest of the site. There are also two farmhouses located circa 800m to the southwest of the site with views of the current harbour.

The town of Kirkwall is located to the southeast of both the existing harbour and industrial estate, and the hamlet of Craigiefield is located to the east of the existing harbour. Both the town and hamlet have views across the bay towards these industrial activities. The distance between the existing harbour and Kirkwall or Craigiefield frontages is greater than 1km.

8.3 Potentially Significant Effects (Construction)

The noise from certain construction activities has the potential to impact existing noise sensitive receptors. Construction activities are temporary in nature, with the degree of impact during each phasing stage depending upon;

- The nature of construction activities being carried out; this includes the type and size of machinery / plant involved, combinations of activities occurring simultaneously and HGV routes in and around the site;
- Location of construction activities relative to the closest noise sensitive receptors;
- Duration of proposed activities;
- Construction site operating times; and
- Extent of noise mitigation measures in place.

Noise generating activities during the construction phase are understood to include;

- Dredging of area around proposed quay;
- Piling of structure for quay wall;
- Infilling of material to form reclaimed land;
- Delivery and tipping of materials; and
- HGV and plant movements in and around the site.

As discussed in Section 8.2 the closest residential properties to the proposed development are located in the hamlet circa 750m to the south-southwest, with the majority of sensitive receptors being located in Kirkwall over 1km to the southeast. Due to the distance between construction activities and receptors, only the most significant noise generating construction activity of piling and any activities occurring concurrently with piling are considered to be of concern during daytime working hours.

The majority of construction works are anticipated to be carried out between the hours of 07:00 to 19:00hrs Monday to Friday and 07:00 to 13:00hrs on Saturdays. Construction activities scheduled to occur outside of these periods have a greater potential to impact on residential receptors due to them occurring during more sensitive periods, and background noise levels are typically lower.

8.4 Potentially Significant Effects (Operation)

During the operational phase, additional noise generating activities have the potential to increase the day and night-time existing baseline noise levels (which includes current operational activities) at surrounding noise sensitive receptors. The types of noise generating activities as a result of the operational phase are also currently carried out as part of existing operations at Hatson, and include;

- Ship berthing and mooring;
- Ship loading / unloading activities, including operation of cranes;
- Movement of materials between ships and laydown area;
- Plant and HGV movements within quay and laydown area;
- Loading / unloading of HGVs;
- Pumping of fuel between pier and storage areas;
- Boat lifting and transport between pier and storage areas; and
- Maintenance activities.

During the operational phase, there shall be an increase in vessel movements and associated harbour activity over that of the existing baseline which was established in 2016. Current baseline vessel movements comprise circa 2292 total movements per year, which comprise predominantly ferries (42%), cruise ships (11%), pilot boats (31%) and cargo vessels (8%). There are also a smaller percentage of oil supply (2%), renewables (3%), tugs (2%) and other vessels (2%).

The proposed development shall increase the number of oil supply vessels by circa 120 movements per year initially, rising to 400 per year (circa 1 extra vessel per week, rising to 3 to 4). It is estimated that there would be 4 additional HGV movements associated with each extra supply vessel, which equates to circa 2 extra HGVs arriving/departing per week, rising to 6 to 8.

The use of Hatston as a base for operations and maintenance activities associated with offshore wind farm development is anticipated to commence from 2028 onwards. There shall be an increase of circa 24 vessel movements initially, rising to 48 by 2032. There is not anticipated to be a significant increase in HGV movements associated with operations and maintenance of offshore wind farms, with the majority of supplies arriving to / from the harbour via vessels.

There shall also be an increase in other types of vessel, such as boat repair, renewables and cargo, the numbers of which will increase based on demand, with exact numbers not known at this stage. The number of associated HGVs will depend on the type of vessel, however, it is anticipated that most materials will arrive to / from the port via vessels so significant increases are unlikely.

8.5 Inclusion or Exclusion from EIA

Taking the above discussed vessel increases into account, plus an additional (high level) assumed increase of 100 other types of vessel movement, rising to 200, the percentage change in vessel

movements over existing baseline is circa 15% initially, rising to circa 28%. Allowing also for the increased operational activities such as loading / unloading associated with the vessels within the harbour, the overall change in noise level at source within the harbour is predicted to be less than 1dB(A) initially rising to less than 2dB(A). Any change in noise levels would be less significant at the noise sensitive receivers than at source, as the sound is likely to be less than or similar to the existing background noise at most locations. The increase in noise generated by additional operations within the harbour is therefore considered unlikely to be of sufficient magnitude to significantly increase noise at residential receptors in the surrounding area. It is therefore proposed to scope out the assessment of operational noise.

Additional road traffic generated by the proposed development will increase flows on the surrounding road network. The main transport routes to/from the site are noted to be the A965, and Grainshore Road which currently has several existing industrial/commercial premises located along it. There is therefore currently a mixture of vehicle classes including HGVs using these routes during the day and night-time. As discussed in Section 3.3.2 there shall be a focus on the use of public and sustainable transport where practicable as part of the proposed development. Any increase in road traffic flows, including HGV movements, attributed to the development is considered unlikely to be of sufficient magnitude to significantly increase noise at residential receptors in the surrounding area. It is therefore proposed to scope out the assessment of operational traffic noise.

It is proposed that an operational noise assessment shall not be carried out as part of the EIA.

As mentioned in Section 2.2.4, it is intended that the contract for construction of the facility will be awarded as a design and build. Therefore until the preferred contractor is identified the exact construction methodologies cannot be confirmed at this stage in the development process. The construction noise assessment will be deferred until this point when information on assumed schedules and associated plant shall be used in the assessment, informed by discussions with the marine engineers. Baseline noise data shall be collected as part of the construction noise assessment.

9 CONCLUSIONS

The conclusions of the detailed scoping appraisals identified that the topic areas listed below are considered to merit a full impact assessment and thereby documented within an EIAR.

- Marine Ecology – the risk to marine mammals associated with piling activities during the construction phase.

In addition to the above, a Habitats Regulations Appraisal (HRA) will be undertaken to assess any potential LSE on the qualifying species of the North Orkney pSPA and the Scapa Flow pSPA.

Currently there are a couple of options to source the rock infill material to form the reclamation areas. The preferred option is unlikely to be confirmed until post tender stage at which point the detailed design will be finalised and the construction contract awarded. At this point in time, should it be confirmed that the rock infill source will be from a quarry on Orkney mainland then consideration will be given to undertaking a Construction Dust and Construction Noise Assessments to inform appropriate mitigation measures to reduce the potential for impacts on the environment along the haul route.

On the basis of professional judgement and the findings of the scoping appraisal, full EIA's are not considered necessary for the following topics, however supporting statements and information will be provided for each topic within the introductory chapters of the EIAR:

- Accidents and Natural Disasters (both phases);
- Airborne Noise (Operational Phase and depending on the material source the construction phase);
- Air Quality (Operational Phase and depending on the material source the construction phase);
- Archaeology and Cultural Heritage (both phases as long as mitigation measures are agreed);
- Climate Change (both phases);
- Ecology (Both phases apart from the risk associated with marine mammals in relation to piling activities);
- Landscape and Visual (Both Phases);
- Population and Human Health (Operational phase and depending on the material source the construction phase); and
- Water Environment (Both phases).

The Highland Council Guidance Note – Construction Environmental Management Process for Large Scale Projects³¹ sets out a robust Environmental Management Process that incorporates the findings of the ES as well as other requirements from consents, licenses, legislation and best practise. It is proposed that a Construction Environmental Management Document and Plans (CEMD and CEMPs) be developed in accordance with this Guidance Note so as to provide site specific practical mitigation measures to ensure that during the construction phase the environment is protected. The CEMD and associated CEMP's would be a working document which would be updated throughout the construction phase of the project. It would also provide a clear roadmap of the key roles and responsibilities during construction works. An Environmental Manager would be identified who would be responsible for the implementation of the CEMD and associated CEMPs, ensuring that all agreed measures are applied and adhered to.

Note: The CEMD and associated CEMPs would be finalised on receipt of Planning / Marine Consent and would aid discharge of planning/marine license conditions. It would also form part of the tender documents during the contracting phase of the development.

³¹ The Highland Council Guidance Note – Construction Environmental Management Process for Large Scale Projects, dated August 2010.

APPENDICES

A DRAWINGS

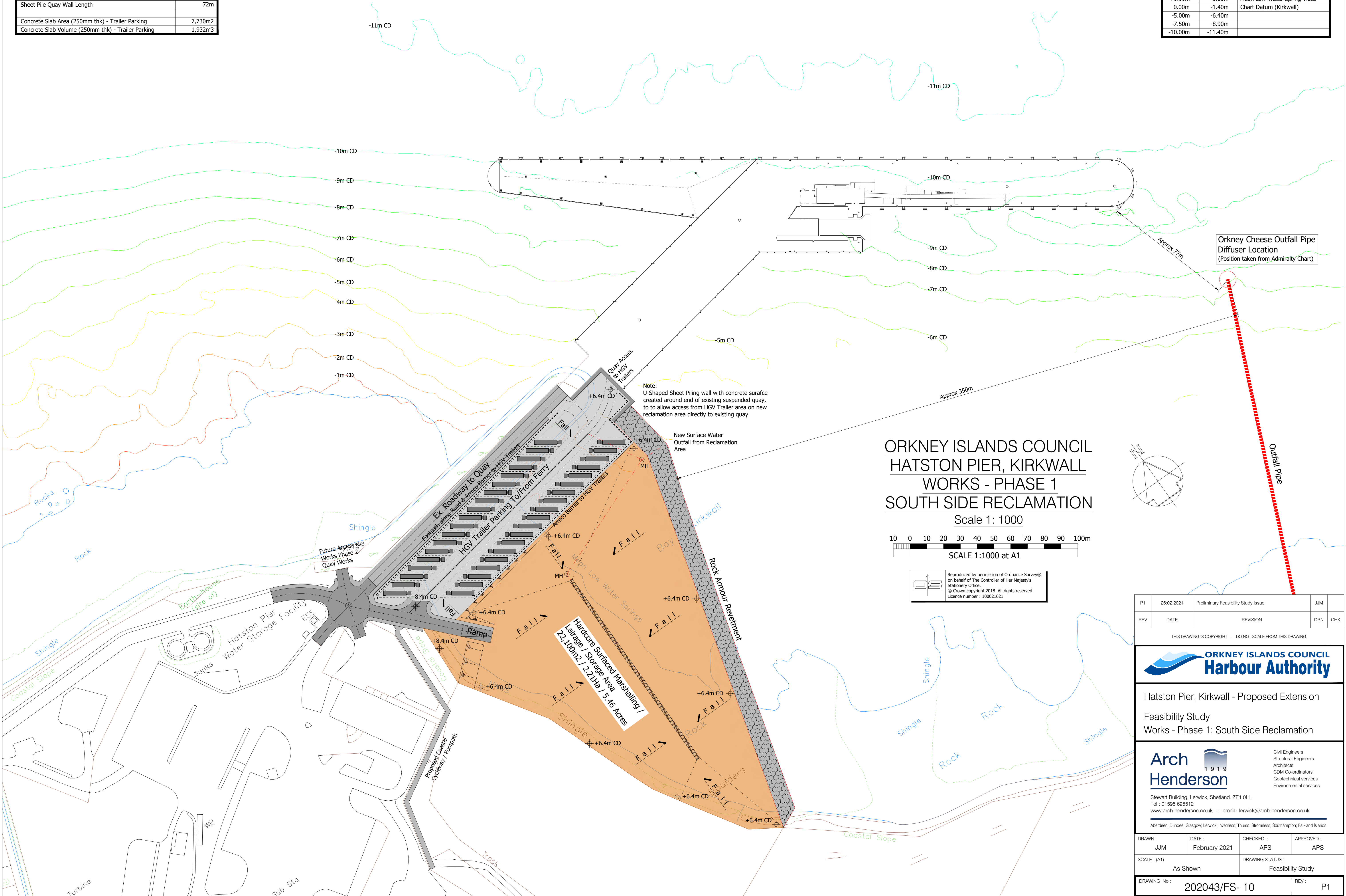


Client Orkney Island Council Harbour Authority (OICHA)
Project Hatston Pier Expansion
Title Location Plan - Hatston Pier
Scale 1:10,000 @A3

Status FINAL			
Drawing No. 673702-015	Revision -	Date 10 Feb 2021	
Drawn EQ	Checked EC	Approved EC	
Rev -	Date -	Amendment -	Initials -
 Craighall Business Park, Eagle Street, Glasgow, G4 9XA T: 0141 341 5040 E: info@envirocentre.co.uk W: www.envirocentre.co.uk			

Works- Phase 1: South Side Reclamation	Quantities
Reclamation Infill Quantity	156,463m3
Rock Armour Revetment Area	5,238m2
Sheet Pile Quay Wall Length	72m
Concrete Slab Area (250mm thk) - Trailer Parking	7,730m2
Concrete Slab Volume (250mm thk) - Trailer Parking	1,932m3

Chart Datum (Kirkwall)	Ordnance Datum (Newlyn)	Quay Heights and Tide Data Hatston Pier, Kirkwall
+6.40m	+5.00m	Quay Edge Level
+3.00m	+1.60m	Mean High Water Spring Tides
+1.40m	0.00m	Ordnance Datum (Newlyn)
+0.60m	-0.80m	Mean Low Water Spring Tides
0.00m	-1.40m	Chart Datum (Kirkwall)
-5.00m	-6.40m	
-7.50m	-8.90m	
-10.00m	-11.40m	



ORKNEY ISLANDS COUNCIL
HATSTON PIER, KIRKWALL
WORKS - PHASE 1
SOUTH SIDE RECLAMATION

Scale 1: 1000
10 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 at A1

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REV	DATE	REVISION	DRN	CHK

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Hatston Pier, Kirkwall - Proposed Extension
Feasibility Study
Works - Phase 1: South Side Reclamation



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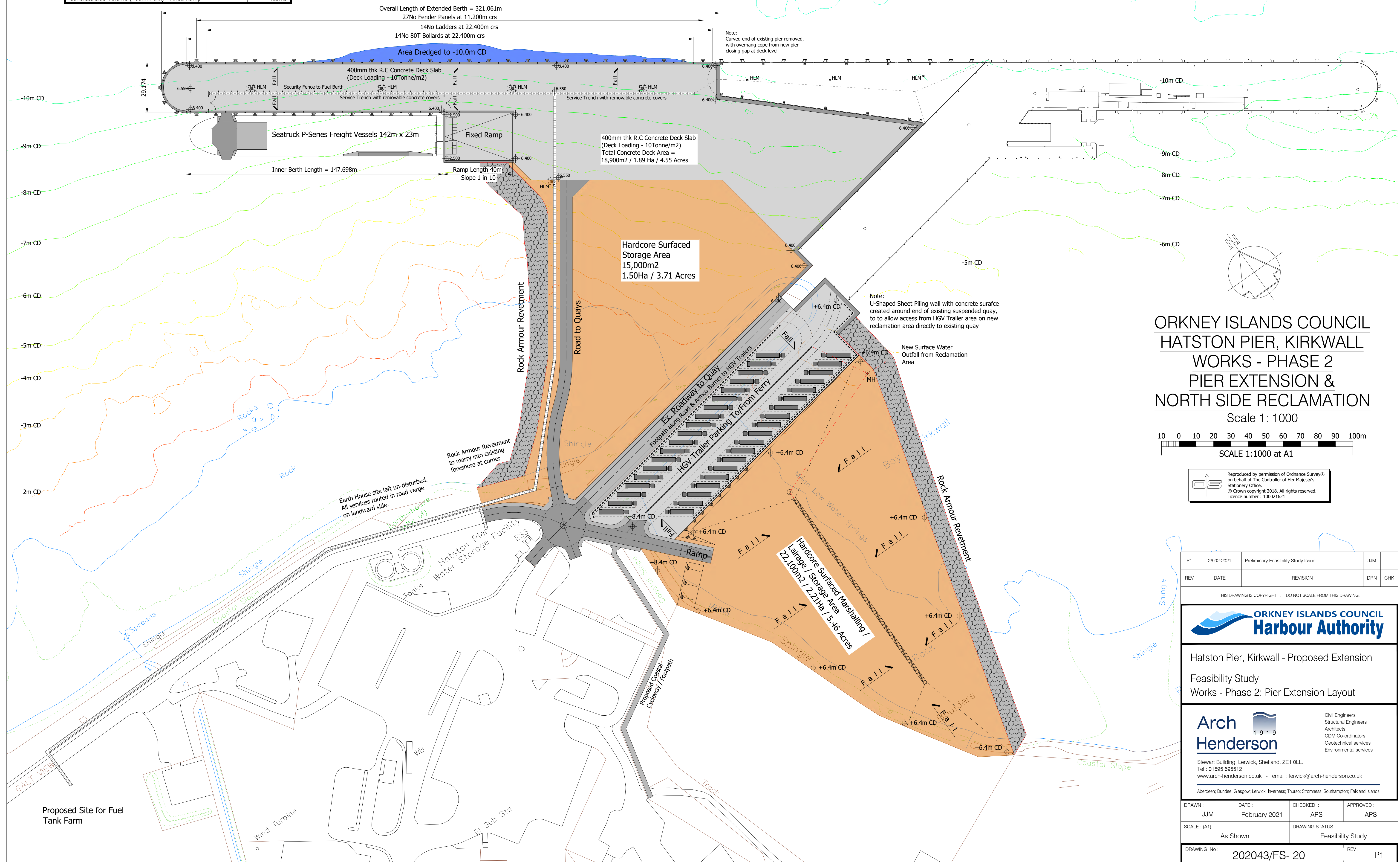
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SCALE : (A1) As Shown	DRAWING STATUS : Feasibility Study		
DRAWING No : 202043/FS- 10	REV : P1		

Area
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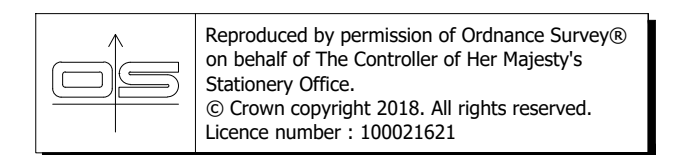
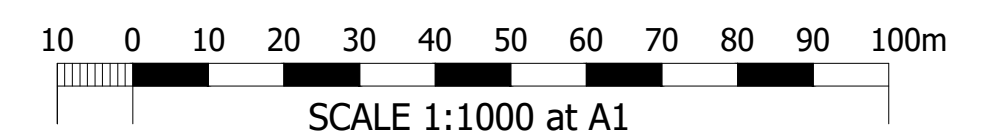
Works - Phase 2: Pier Extension & Reclamation	Quantities
Phase 2 Reclamation Infill Quantity	217,219m3
Quay Infill Quantity	221,065m3
Fixed Ramp Infill Quantity	11,663m3
Total Phase 2 Infill Quantity	441,027m3
Rock Armour Revetment Area	5,613m2
Concrete Slab Area (400mm thk) - Quay	18,125m2
Concrete Slab Volume (400mm thk) - Quay	7,250m3
Concrete Slab Area (400mm thk) - Fixed Ramp	1,062m2
Concrete Slab Volume (400mm thk) - Fixed Ramp	425m3

Chart Datum (Kirkwall)	Ordnance Datum (Newlyn)	Quay Heights and Tide Data Hatston Pier, Kirkwall
+6.40m	+5.00m	Quay Edge Level
+3.00m	+1.60m	Mean High Water Spring Tides
+1.40m	0.00m	Ordnance Datum (Newlyn)
+0.60m	-0.80m	Mean Low Water Spring Tides
0.00m	-1.40m	Chart Datum (Kirkwall)
-5.00m	-6.40m	
-7.50m	-8.90m	
-10.00m	-11.40m	



ORKNEY ISLANDS COUNCIL
HATSTON PIER, KIRKWALL
WORKS - PHASE 2
PIER EXTENSION &
NORTH SIDE RECLAMATION

Scale 1: 1000



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Hatston Pier, Kirkwall - Proposed Extension
Feasibility Study
Works - Phase 2: Pier Extension Layout



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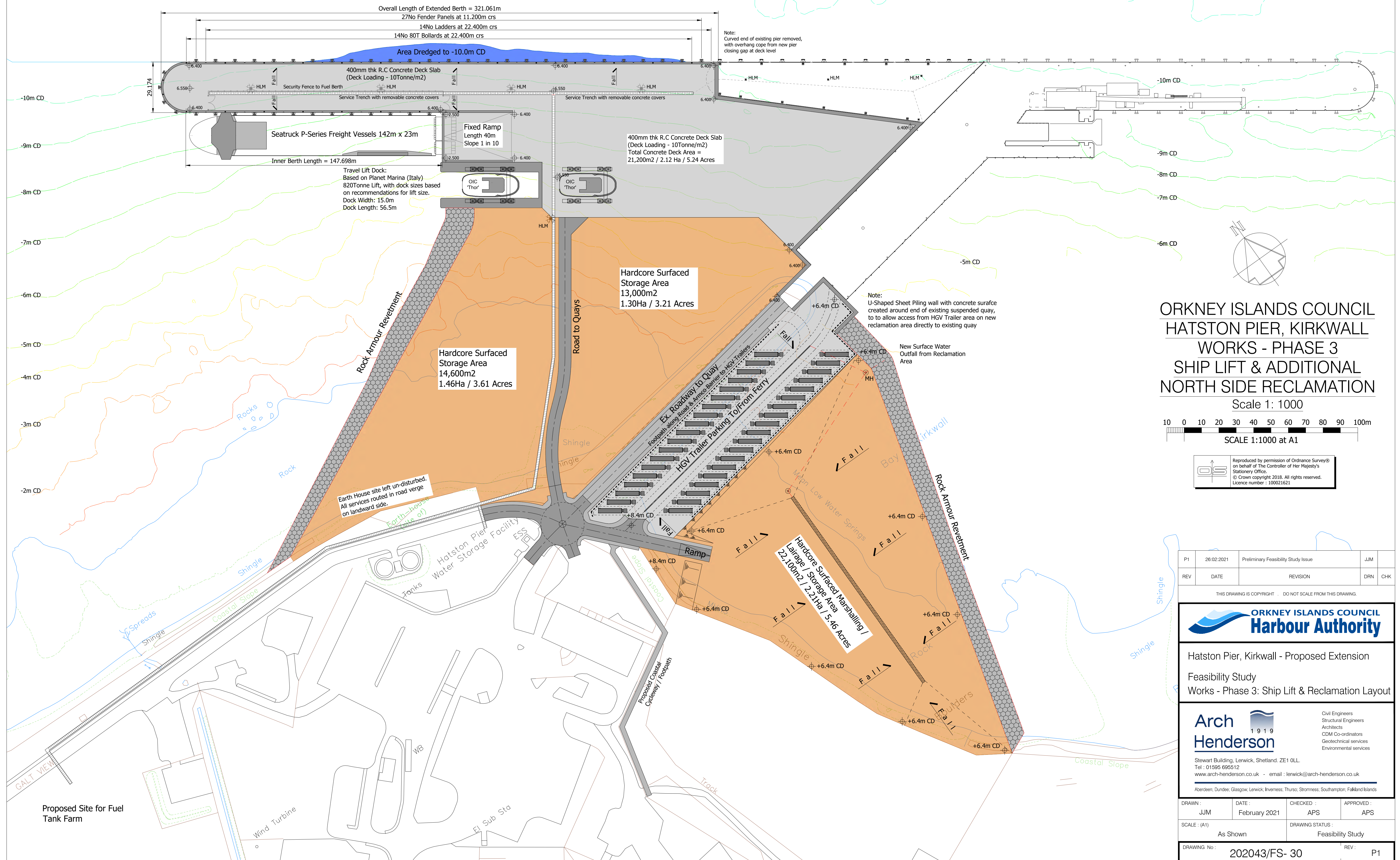
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Area
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to
-10.0m
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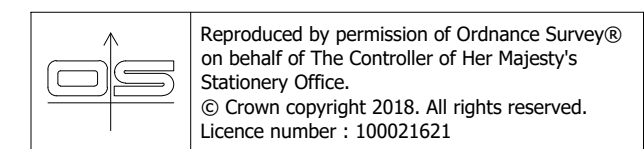
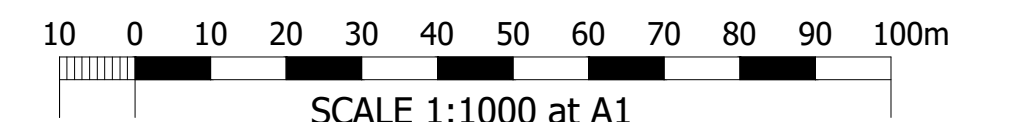
Works - Phase 3: Ship Lift & Additional Reclamation	Quantities
Phase 3 Reclamation Infill Quantity	91,585m3
Phase 3 Rock Armour Revetment Area (All Armour recovered from Works - Phase 2 revetment)	3,685m2
Concrete Slab Area (400mm thk) - Additional	2,300m2
Concrete Slab Volume (400mm thk) - Additional	920m3

Chart Datum (Kirkwall)	Ordnance Datum (Newlyn)	Quay Heights and Tide Data Hatston Pier, Kirkwall
+6.40m	+5.00m	Quay Edge Level
+3.00m	+1.60m	Mean High Water Spring Tides
+1.40m	0.00m	Ordnance Datum (Newlyn)
+0.60m	-0.80m	Mean Low Water Spring Tides
0.00m	-1.40m	Chart Datum (Kirkwall)
-5.00m	-6.40m	
-7.50m	-8.90m	
-10.00m	-11.40m	



ORKNEY ISLANDS COUNCIL
HATSTON PIER, KIRKWALL
WORKS - PHASE 3
SHIP LIFT & ADDITIONAL
NORTH SIDE RECLAMATION

Scale 1: 1000



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REV	DATE	REVISION	DRN	CHK

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Hatston Pier, Kirkwall - Proposed Extension
Feasibility Study
Works - Phase 3: Ship Lift & Reclamation Layout

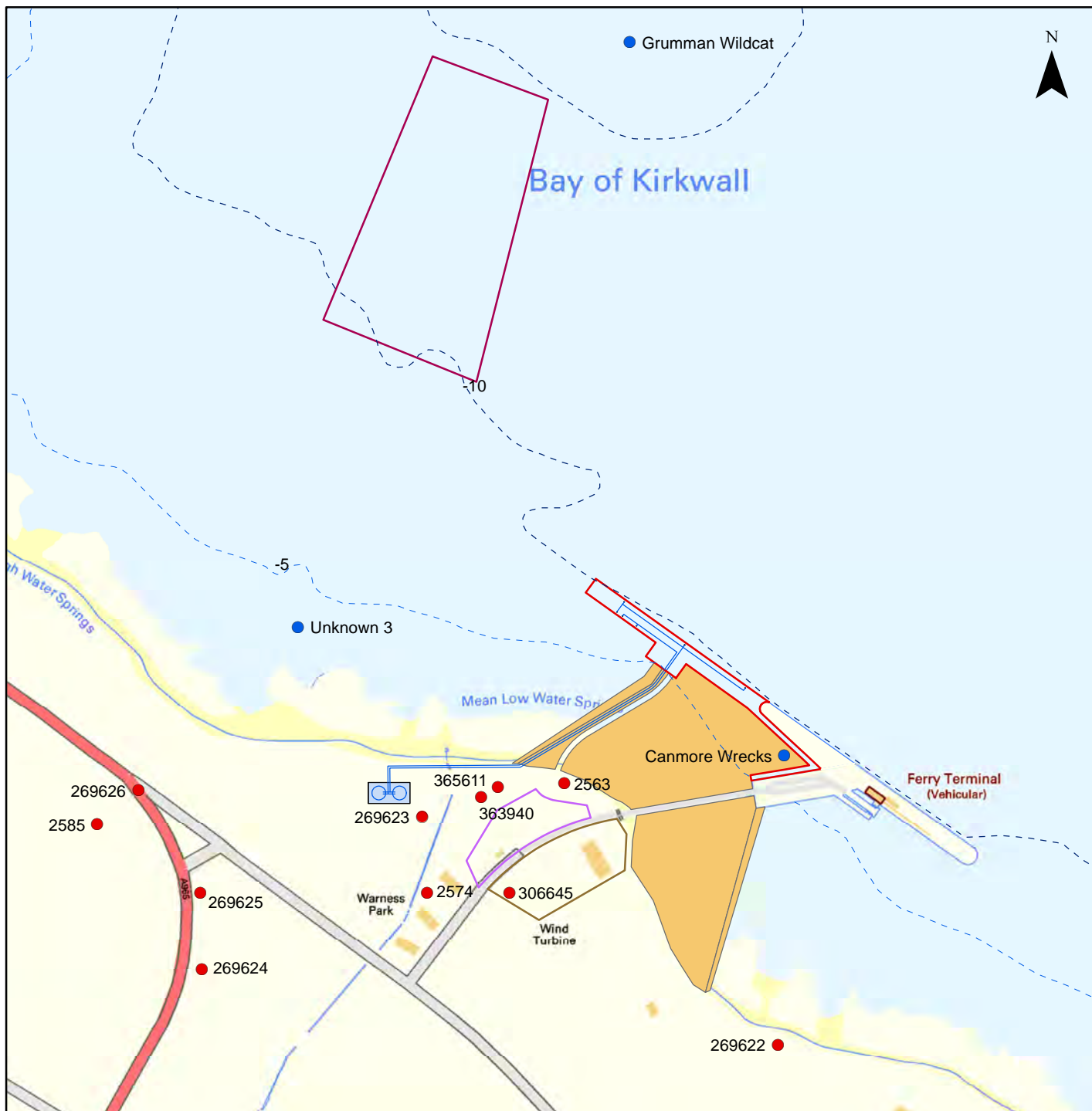


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DRAWING No: 202043/FS- 30 REV: P1



Legend

- Onshore Sites
- Marine Sites
- Public Access Parking
- - - Contours -10m ACD_line
- Fish Farm
- Freight Marshalling Area
- - - Contours -5m ACD_line
- Proposed Quay
- Bunkering Line
- Proposed Infill
- Bunkering



Orkney College, East Road, Kirkwall, KW15 1LX

0 100 200 300 400 500 m

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Figure 6.1 Historic environment assets

Project Name: Hatston Pier Extension

Project No: 888 **Scale:** @A4 1:8,500

Date: 02/21

Initial: CB

Rev. No. 1.0

B HATSTON CANMORE WRECKS

Table B 1: Hatston Canmore Wrecks

Name	UKHO Wreck Number	CANMORE	Description	Circumstance of loss	Date Lost	Lat (WGS84)	Long (WGS84)	Proximity	Source	Importance	Reason
Ferry Terminal		298032	Hatston Ferry Terminal.						5	Negligible	Modern structure
Eliza		223729	Brig, of Dublin. Archangel to Dublin with a cargo of fish, tar and iron. Crew saved but cargo much damaged.	Drove ashore in Kirkwall Bay.	21/11/1801				1,2,10	Medium	International trade.
Catherine		228288	Smack, 12 tons 2 crew and 7 passengers. Westray to Kirkwall with cattle and ponies.	Collision with the Lizzie of Kirkwall at entrance to Kirkwall Bay, off Thieves Holm.	27/06/1892			Not in the area	1,2,10	Low	Vessel of a common type. Cargo of low interest.
Lizzie		228290	Smack of 15 tons, Westray to Kirkwall with cargo of hay, eggs, lobsters and 2 passengers.	Collision with the Catherine of Kirkwall at entrance to Kirkwall Bay, off Thieves Holm.	27/06/1892			Not in the area	1,2	Low	Vessel of a common type. Cargo of low interest.

Ibbetsons		271042	From London bound for Archangel	Driven ashore in a gale. "Expected to be got off without any material damages"	27/05/1819				5,6	None	saved
Samuel Whitbread		271043	From London bound for Archangel	Driven ashore in a gale. "Expected to be got off without any material damages"	27/05/1819				5,6	None	saved
Elizabeth		271046	Greenland to Hull with fish	Ashore in Kirkwall Bay but refloated and repaired and continued to Hull.	12/09/1822				5,6	None	Saved
Favorite		283175	Schooner of Kirkwall. 50 tons. Cargo of coal	Dragged anchors and stranded at Kirkwall. Vessel was broken up	15/05/1852				1,7	Low	Broken up and scrapped
Unknown 1		285176	Brig (Ex frigate) of Norway. Cargo of Flax	Ashore "Below Kirkwall".	00/12/1817				1	Medium	International trade.
Hope		285177	Sloop of Lerwick.	Stranded in Kirkwall Bay	24/01/1788				1	Medium	Vessel of common type but date of loss
David And James		285178	Vessel	Wrecked in Kirkwall Bay. Capt. Maxwell	00/12/1674				1,7	Medium	Date of vessel loss
Unknown 2		285179	Craft.	Vessel stranded at Kirkwall	12/09/1878				1	Unknown	Unknown

Runa K375		287199	Auxiliary smack, 2 tons. 7m x 2m. Capt. Burgess.	Lost in Kirkwall Bay	00/09/1916				1	Low	Common vessel, cargo of low interest
Grumman Avenger	69279	270117, 286838, 324221	Grumman Avenger: FN899 832 Sqn.	Ditched in Wide Firth. All crew survived.	16/11/1943	59 01.110N	03 01.994W		1,3,4,8,9	High	Military Remains Act
Grumman Wildcat	74628	324499, 330866	Grumman Wildcat JV526	Ditched off Scargun Shoal and broke up. Pilot not recovered	17/05/1944	59 00.583N	02 58.839W		1,3,4,7,8,9	High	Military Remains Act
Supermarine Spitfire		270118	Spitfire BL253 899 Sqn	Crashed into the sea 500 yards N of Hatston	20/01/1943				1,8,9	High	Military Remains Act

1 = Whittaker (1998); 2 = Larn & Larn (1998); 3 = UKHO 4 = Wrecksite.eu 5 = CANMORE 6 = Lloyds List 7 = CanmoreADAIR 8 = ARGOS 9 = Skies over Scapa 10 = Britishnewspaperarchives