May 2019

Non-Technical Summary

Strategic Environmental Assessment (SEA) Environmental Report

For Consultation June/July 2019

Port of Waterford

Port of Waterford Master Plan

MALONE O'REGAN ENVIRONMENTAL

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Non-Technical Summary

Strategic Environmental Assessment (SEA) Environmental Report

Port of Waterford Master Plan

Contents

FIGURES

TABLES

1 INTRODUCTION

The Port of Waterford (POW) is currently developing a 25- year Master Plan to provide a physical framework for the sustainable development of the Port.

This report is a non-technical summary of the detailed Strategic Environmental Assessment (SEA) Environmental Report that has been prepared in support of the Master-Plan.

POW is designated as a Port of National Significance (Tier 2) within the terms of the National Port's Policy (Department of Transport, 2013) and is a comprehensive port on the Ten-T Network. The POW Corporate Plan 2018-2022 predicts that annual throughput at the Port will reach approximately 1.7 million tonnes by 2022 (POW, 2018a) with the Port currently handling over 1.6 million tonnes of freight annually (POW, 2018b). Due to the current economic growth there is a potential that throughput growth will be significantly beyond what is predicted in the POW Corporate Plan.

1.1 SEA Process and Methodology

The aim of the SEA Regulations that were first introduced into Ireland in 2004, is to enable plan making authorities to incorporate environmental considerations into early decision-making and in an integrated way throughout the plan making process.

This SEA process undertaken in support of the POW Master Plan in accordance with the relevant legislation comprised of four stages, see Table 1-1 below.

Table 1-1: The Stages in SEA

Stage	Description	Current Status – POW SEA
1. Screening	Determines whether SEA is required for a plan / programme in consultation with the designated statutory consultees.	Completed Q2 2018
2. Scoping	Determines the spatial and temporal scope of the SEA in consultation with the designated statutory consultees.	Competed Q2 2018
3. Environmental Report	Formal and transparent assessment of the likely significant impacts on the environment due to implementation of a plan / programme including all reasonable alternatives. The output from this stage is an Environmental Report which is required to go on public display along with the draft plan / programme.	**Ongoing**
5. SEA Statement	Summarises the process undertaken and identifies how environmental considerations and consultations have been integrated into the final Plan / Programme.	Scheduled for Q3 2019

As part of this SEA process the following reports have been prepared:

- SEA Environmental Report;
- Natura Impact Report (NIR); and,
- Strategic Flood Risk Assessment (SFRA).

1.2 Master Plan Overview

Development of the Master Plan is considered critical to guide and manage future operations at the Port. It will provide a physical framework to cater for the increased demand for Port services, improve overall Port capacity and performance and illustrate a clear vision of future

Port operations. The development of this 25-year Master Plan is considered essential to support Irish economic growth and meet the requirements of both the South-East Region and the Port's stakeholders.

The key objectives of the Master Plan will be as follows:

1. To reduce dredging requirements at the Port.
2. To increase navigational safety and access to the Port.
3. To facilitate the development of new shore side berthing provisions and facilities.

Meeting these key objectives is necessary in order for the Port to cater for increases in ship sizes and the changing operational preferences of the shipping services industry. A range of both on-shore and off-shore projects will be included in the Master Plan to achieve these objectives.

1.3 Master Plan Development Options

The development options presented in the POW Master Plan are not a definitive list of developments that will be undertaken at the Port. Rather, they are a selection of possible proposals for future development that may be undertaken depending on social, economic and environmental variables. Figure 1-1 and Table 1-2 and below outline these development options. Figure 1-1 is presented in a larger format in the main SEA report.

Figure 1-1: Master Plan Development Options

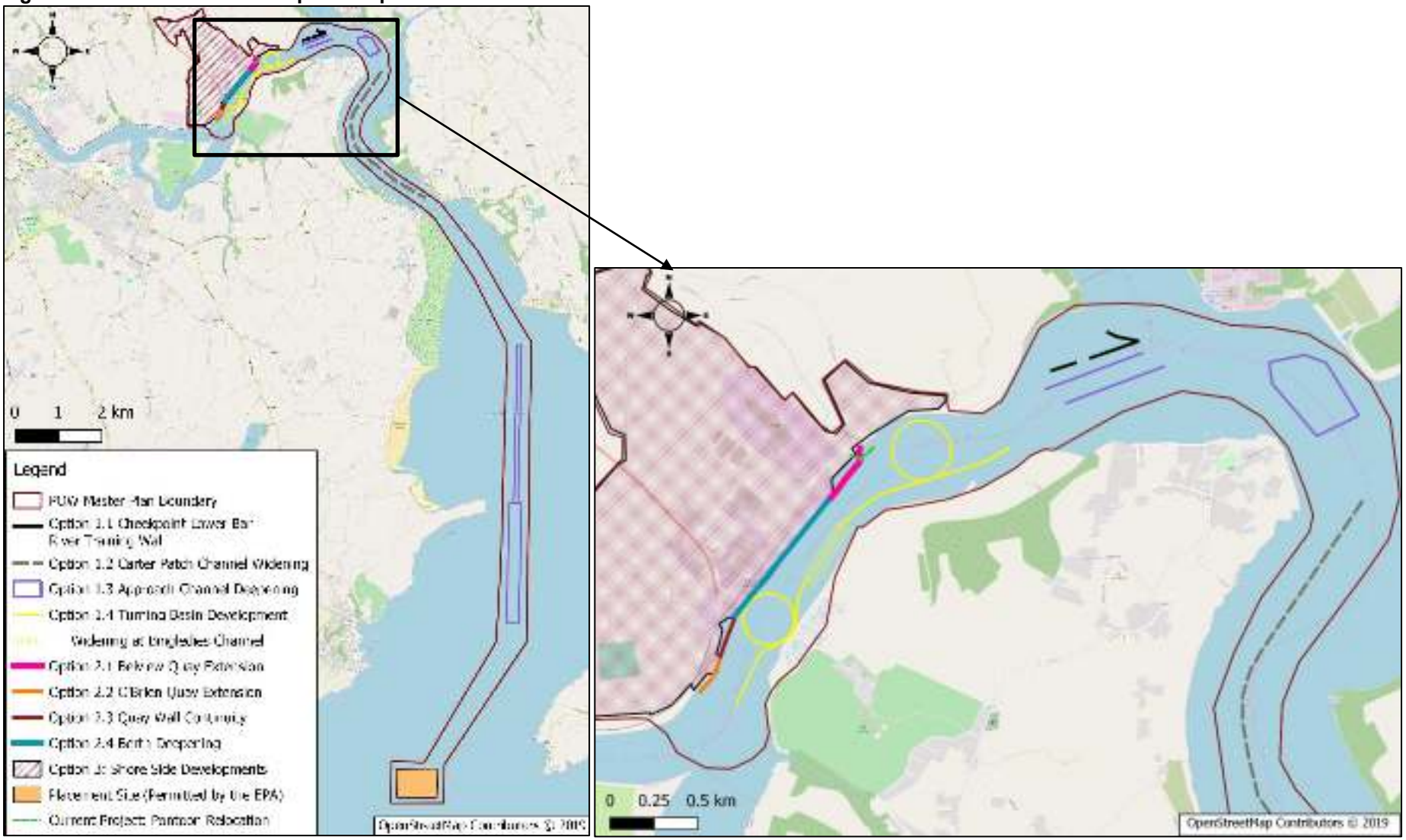

Table 1-2: Development Options

No.	Option	Description
1	**Options to minimise dredging and improve marine access**	
1.1	Cheekpoint Lower Bar River Training Wall	The Cheekpoint Lower Bar area is regularly maintained by dredging, resulting in the need for the disposal of high volumes of dredged material and high ongoing maintenance costs. The key project within the Master Plan is construction of a river training wall at a strategic location, which would significantly reduce the need for ongoing dredging, as shown by the hydrodynamic model completed for the estuary (ABPmer, 2018a). The training wall will be a double line of sheet piles, ca.6m wide – such design minimises environmental impacts, while maximising hydrodynamic benefits.
1.2	Carter Patch Channel Widening	Carter Patch represents an area of the navigational channel (from Passage East to Sheagh Light) that poses a navigational safety hazard to longer trade vessels. The curve of the navigational channel requires vessels to 'crab' when manoeuvring the channel. This results in a limiting length of vessel through the area. This project would involve widening this area by 50m to approximately 150m total width to remove this restriction and increase navigational safety and access.
1.3	Approach Channel Deepening	To accommodate larger vessels, it is required to deepen the approach channel, from the mouth of the estuary to the quays, from 6.5mBCD to a more appropriate level, potentially to a depth of 8mBCD. Approach channel deepening would likely be completed in three phases – deepening to 7mBCD, 7.5mBCD and 8mBCD, respectively.
1.4	Turning Basin Development	Currently, areas where vessels can turn have constraints preventing larger vessels accessing the Port. Therefore, it is proposed to enlarge one of these turning basins to safely accommodate trade vessels which are foreseen to possibly visit the Port over the next 25 years. This would require widening of the Bingledies channel area, i.e. removal of the rock outcrop to widen and deepen the approach channel for maritime safety and manoeuvrability.
2	**Options for development/improvements to berths**	
2.1	Belview Quay Extension	Construction of up to 400m extension of the main Belview Quay to provide two new berths is proposed. This project would require 6 hectares (ha) of land reclamation and capital dredging. This would likely be completed in two phases – the first phase would comprise 200m extension, facilitating one new berth. The second phase would comprise another 200m extension facilitating a second new berth.
2.2	O'Brien Quay Extension	O'Brien's Quay can currently accommodate 120m long ships. Extension to accommodate 190m long ships is proposed. Extension to either side of the existing quay is being considered. Turning circle will be required in the vicinity of this Quay to allow longer ships to turn, which would require deepening and maintenance dredging.
2.3	Quay Wall Continuity	There is currently a break of 230m in the continuity of the quay wall between Belview Quay and O'Brien's Quay. This area is prone to sedimentation and impinges on safe navigational depths in the adjacent downstream berth. To minimise this feature and provide additional berthing and storage area, the construction of a quay wall in this area is proposed.

No.	Option	Description
2.4	Berth Deepening	Deepening of berths at Belview or O'Brien's Quay is proposed to accommodate deeper drafted vessels at the terminals.
3	**Shore Side Developments**	
3.1	Improvements to road access to port	Alterations to the N29 in the vicinity of the Port to allow access to roadside lands will be required.
3.2	Improvements/development of services infrastructure	Development of services including water supply, effluent treatment, and broadband will be required. Potentially, other shore side infrastructural developments will be required to support the above shore side projects.
3.3	Serviced sites	Provision of serviced development sites.
3.4	Office Buildings	POW is seeking a wider zoning designation on Marine Point.
3.5	Development of additional warehousing	Development of additional warehousing required for forecasted increased Port throughput.
Current Project: **Pontoon Relocation** The tugs serving Belview Port berth at the pontoon system on the South Quays in Waterford City will be relocated to the Belview Port, downstream from the Belview Quay.		

1.4 Master Plan Development and Temporal Scope

The Master Plan and associated environmental documentation will be reviewed every 5 years and updated as required. Phasing of the development options in the Master Plan is presented in Table 1-3 below.

Table 1-3: Phasing and Temporal Scope of the Master Plan

Master Plan Phases	Options	Option
Current Project	Pontoon Relocation	Option No. 3. Shore Side Developments (road access improvements, services infrastructure, serviced development sites, office buildings, additional warehousing)
Phase 1	Option No. 1.1 Cheekpoint Lower Bar River Training Wall	
Future Phases	Option No. 1.2 Carter Patch Channel Widening Option No. 1.3 Approach Channel Deepening Option No. 1.4 Turning Basin Development Option No. 2.1 Belview Quay Extension Option No. 2.2 O'Brien's Quay Extension Option No. 2.3 Quay Wall Continuity Option No. 2.4 Berth Deepening	

2 CONSULTATION

In accordance with Article 6 of the SEA Directive and Article 11 of S.I. No. 435 of 2004, consultation should be undertaken with specific environmental authorities (statutory consultees) on the scope and level of detail to be included in the SEA Environmental Report. In line with S.I. No. 200 of 2011, the following five statutory consultees were consulted with in July 2018:

- The Environmental Protection Agency (EPA);
- Department of Housing, Planning and Local Government (DHPLG);
- Department of Agriculture, Food and the Marine (DAFM);
- Department of Communications, Climate Action and the Environment (DCCAE); and,
- Department of Culture, Heritage and Gaeltacht (DCHG).

In order to ensure a comprehensive assessment twenty-one non-statutory consultees were also consulted with in July 2018. The opinion of all of these consultees was sought in relation to the scope and level of detail to be included in the Environmental Report.

A SEA Scoping Workshop was then held on 8th August 2018 to allow for statutory and non-statutory consultees to participate in the scoping phase of the Master Plan. A revised Scoping Report was prepared to incorporate comments received during this workshop as well as those received during the statutory consultation period.

Submissions were received from the following stakeholders:

- The Environmental Protection Agency (EPA);
- Department of Culture, Heritage and the Gaeltacht (DCHG);
- Transport Infrastructure Ireland (TII); and,
- Bord Iascaigh Mhara (BIM).

In line with SEA Regulations, the Master Plan and the SEA draft Environmental Report has been made available to the public. Please see Section 8 of the NTS for more details.

3 BASELINE ENVIRONMENT

3.1 Biodiversity, Flora & Fauna

Within ca.15km of the Master Plan area, there are a total of nine Natura 2000 sites. However, only two European designated Special Areas of Conservation (SACs) are situated within the Master Plan area, namely Lower River Suir SAC and River Barrow and River Nore SAC. Four additional SACs are located within 15km of the Master Plan area, namely Hook Head SAC, Bannow Bay SAC, Tramore Dunes and Back Strand SAC and Ballyteige Burrow. Also, there are three European designated Special Protection Areas (SPAs) situated within 15km of the Master Plan area, namely Bannow Bay SPA, Tramore Back Strand SPA and Keeragh Island SPA. Waterford Estuary and Bannow Bay are designated shellfish areas.

A number of mammal, bird, and aquatic species were recorded by National Biodiversity Data Centre in the Master Plan area. Otters are one of the qualifying interests for both the Lower River Suir SAC and the River Barrow and River Nore SAC. Tramore Backstrand is designated for eight specific bird species in addition to wetland birds and water birds. The Lower Suir Estuary is one of only three known spawning grounds for Twaite Shad in Ireland.

3.2 Population & Human Health

Counties Waterford, Wexford and Kilkenny have a combined population of 365,130, ca.71.4% of the South-East Region's population, and 7.67% of the State population. As of Q4 2018, the unemployment rate in the South-East Region stood at 7.7% which is moderately higher than the national average of 5.4%. In addition to the existing industries that are based in the POW, important employment sectors in the surrounding areas would include, agriculture, fishing and tourism.

3.3 Geology, Sediments, Soils and Land Use

The offshore area of the Master Plan is located within Waterford Estuary and Harbour, where the seafloor bedrock is characterised by Cambrian quartzite sandstone, Devonian sandstone and areas of Ordovician slate. Waterford Estuary bedrock is largely covered with glacial sediments of varying thickness. The on-shore area of the Master Plan area is underlain by the Campile Formation which comprises of rhyolitic volcanics, grey and brown slates and by the In-Campile Formation, which comprises of felsic and intermediate volcanics. The bedrock is heavily faulted. There are seven Irish Geological Heritage (IGH) sites situated in close vicinity to the Master Plan Area.

In order to maintain chartered depths in Waterford Estuary and Harbour, POW carry out maintenance dredging at a number of sites throughout the Estuary and Harbour. The sandbars at Duncannon and Cheekpoint and the berths at Belview are the primary dredging areas and require dredging at least twice a year. A Trailing Suction Hopper Dredger (TSHD) is used for dredging along with ploughing / bed levelling at Cheekpoint Lower Bar, to maintain depths at this point.

The soils beneath the on-shore area of the Master Plan area are derived from mainly non-calcareous materials. These soils may be described as deep well drained and made up of largely acidic materials (AminDW).

The majority of the land within the Master Plan area is zoned for Port Facilities and Industrial (PFI) activities.

3.4 Water

The on-shore Master Plan area lies within River Suir Catchment. The Luffany River runs to the east and the Gorteens River runs along the western boundary of the Master Plan. The offshore Master Plan area lies within two transitional water bodies – Lower Suir and Barrow Suir Estuaries. Under the Water Framework Directive, water quality status and risk is assigned to each water body. The Lower Suir Estuary is assigned '*moderate*' status and at risk, and the Barrow Suir Nore Estuary is assigned '*good*' status and not at risk. The Master Plan area further extends into Waterford Harbour coastal waters towards the south, which is assigned '*good*' status and the risk is in review. The New Ross Port Estuary transitional water, lies to the north of the Master Plan area. There are three designated bathing areas in close vicinity to the Master Plan Area, namely Duncannon Beach with '*good*' status, Dunmore Councillors' Strand with '*excellent*' status, and Dunmore Strand, Dunmore East, with '*excellent*' status.

The on-shore Master Plan area overlies a groundwater body, which is of *'good'* status. Groundwater vulnerability varies from moderate to extreme at a small area of rock outcrop. The bedrock aquifer is classified as a Regionally Important Aquifer – Fissured Bedrock (Rf).

A Strategic Flood Risk Assessment (SFRA) has been undertaken in conjunction with this SEA Environmental Report. The Flood River Extent of the River Barrow Estuary and much of Waterford Harbour is listed by the Office of Public Works (OPW) as a '*High Probability'* zone, meaning that it's Annual Exceedance Probability (AEP) is greater than 10%. Cheekpoint, Passage East, Woodstown and Arthurstown, all of which border the Master Plan area, experience recurring flood events. Ballyhack and Passage East have also suffered from singular flood events within the past five years.

Within the Master Plan area there are two Industrial Emissions Directive (IED) sites. The surface water emissions arising from these sites are regulated by the EPA. There are also five separate industrial discharges to surface water regulated under Trade Effluent Licenced (TEL) issued by the Local Authority.

POW carry out regular comprehensive testing of the dredged sediment to monitor potential contamination of the sediments and to monitor the potential impacts on the disposal site in accordance with the Dumping at Sea Permit.

3.5 Air Quality and Acoustics

The POW is located in Zone D, within the 'Rural East' Air Quality Index Region (EPA, 2018). The air quality in Zone D is good. The main sources of air emissions in the vicinity of the site are the adjacent N29 road and IED licenced facilities.

According to the Noise Action Plan, the major source of noise present within County Kilkenny are the National Primary and Secondary Routes. The locality of the Master Plan area is not within or directly impacted from major road noise. However, locally to the Port (3.5km radius) there are five EPA licenced sites. Noise emissions from these facilities are all regulated by the EPA.

POW holds permit number S0012-02, from the EPA to authorise the loading and dumping at sea of dredged material from the Suir Estuary/Waterford Harbour. This permit requires annual surveys on dredging and ambient noise. This annual monitoring (unless otherwise agreed with the EPA) is undertaken at Cheekpoint (NSL1). The results of this annual survey include dredging and ambient noise data, and indicate that ambient daytime values since 2015 range from a $L_{Aeq,30minute}$ of 41dB to 43dB in the Cheekpoint area. Specific noise, arising from dredging works, over the same period, range from $L_{Aeq,30minute}$ of 44dB to 47dB. Arising from the marginal elevation for night-time works, PoW have drafted a Noise Reduction Plan, which has now been implemented to further control noise arising from dredging works.

3.6 Climatic Factors

South Kilkenny is classified as having a 'temperate oceanic climate'[1], characterised by a narrow range of annual temperatures and a lack of extreme temperatures in both summer and winter (Met.ie, 2018).

The expected effects of climate change on Ireland are an increased frequency of extreme weather events within the next century, including a 20%-30% increase in precipitation, greater rainfall intensity coupled with flash floods and an average annual temperature increase of ~2°C**.** The potential impacts of climate change could have serious consequences for both people and infrastructure along Ireland's coastal areas as well as its rivers (OPW, 2015).

While ports are generally more climate-resilient than other sectors of the Irish transport network, stronger winds and more intense storms still pose a significant risk to operations and safety at Irish ports. Additionally, increased storm activity will disturb large amounts of sand and silt which will build-up in bays and harbours, resulting in increased amounts of costly dredging operations along port channels.

3.7 Material Assets – Infrastructure, Fisheries, Aquaculture

Traffic and Transport

As the Port is an important cargo gateway for the South-East Region, it is vital the Port is well connected to the road network. The POW is directly served by the N29 and N25 national roads. The N25 road connects the Port with Cork in the south-west and Wexford / Rosslare Harbour in the south-east and connects to the N24 road to Limerick and the M9 motorway to the north of the Port. The Port is connected to Waterford City via the N25 road and the River Suir Bridge which crosses the River Suir to the east of the City and forms part of the N25 Waterford City Bypass. Waterford City train station (Plunkett Station) serves Waterford City and is located ca.4km west of the Master Plan area. There is also a fully functional rail connection to the Port from the national rail network.

Water Supply Sources

Irish Water and Kilkenny County Council are contracted to maintain water supply facilities in the County. There are no drinking water protection zones located within or in the vicinity of the Master Plan area. At present, the water supply source for POW is a borehole to the north of the POW site, with capacity of $20m^3$ per hour. IW have recently brought additional groundwater abstraction wells online in the vicinity of the Port, as such water supply would be available to meet increased demand.

Wastewater / Foul Water

POW operates two on-site WWTPs which discharge effluent into River Suir under the conditions of Trade Effluent Licences Ref. No. ENV/W/64 ENV/W/104). POW does not have facilities for dealing with bilge or ballast water from ships, and this is currently retained on ships.

Waste Management

Kilkenny County Council is trying to gradually move away from reliance on landfills through the increasing focus on waste prevention, reuse, maximising recycling and using waste as a fuel in replacement of fossil fuels (EPA, 2016).

[1] Under Köppen climate classification

POW have developed a Waste Management Plan[2], which ensures compliance with all relevant legislation and is applicable to all Port users and vessels. Waste at the Port is classified as either ship waste, port waste or cargo waste.

POW was granted a Dumping at Sea Permit (S0012-02) by the EPA in 2014, which allows for regular disposal of dredged material from the navigation channels and berths within the harbour and estuary.

Energy

In 2017, the POW Annual Report recorded 1,701MWh of energy consumption, with electricity accounting for 78.1% (1,329MWh) of energy usage which powered operational areas, commercial offices and navigational and electrical equipment. Fossils fuels accounted for the remaining energy usage (21.9% - 372MWh) which powered marine craft and road vehicles. The POW has energy efficiency plans and programmes in place, and has already completed several projects such as upgrade of offices to energy efficient lighting and purchased electric vehicles.

Fisheries and Aquaculture

The fishing and aquaculture industry provide substantial and significant employment for the South-East Region (FLAG, 2016). The main inshore fisheries are crustaceans and shellfish, but this also includes netting, trawling and line fishing. Aquaculture is a very important industry for the Region which includes bottom culture mussels (Waterford Estuary) and giga oysters (Waterford Estuary and Bannow Bay).

Waterford Harbour is a Designated Shellfish Area under S.I. No. 55 of 2009 (Quality of Shellfish Waters). Waterford Harbour has also been identified as a shellfish growing area by the Sea Fisheries Protection Authority (SFPA).

The active fishery harbours in Waterford are Dunmore East, Passage East, Dungarvan, Heilbhic, and Tramore. Dunmore East is the largest and busiest fishing port in Waterford. There are also a number of active fishing ports in Wexford including Duncannon, Ballyhack and Slade.

3.8 Cultural Heritage

Within the Master Plan area, there are no National Inventory of Architectural Heritage (NIAH) sites. However, there are five known registered monuments of archaeological significance and there are three structures listed on the Record of Protected Structures for County Kilkenny, namely the Glass House, Bellevue House and a Mill. In addition, there are over 50 registered monuments within 1km from the Master Plan area; with Barrow Bridge being a site of national importance.

There are 16 recorded shipwrecks from the Port at Belview to the mouth of the harbour at Hook Head. The shipwrecks which are most relevant to this Master Plan are Duncannon Wreck 1 and Duncannon Wreck 2, both of which are located approximately 1.4km north-east of Creadan Head, north of Dunmore East. A comprehensive exclusion zone was identified around the shipwrecks, which prohibits all activities, including dredging, fishing and diving, within this zone, and was agreed to by the POW, the NPWS and the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DAHRGA).

3.9 Landscape and Visual Amenity

The Master Plan Area comprises estuarine and coastal landscapes in addition to onshore industrialised lands. The Master Plan area does not lie within any protected or designated landscape areas.

[2] http://www.portofwaterford.com/corporate-documents

To the east of the Master Plan boundary, is a protected view, Snowhill House (Power House) (Reg No. 12404404) as listed on the NIAH website. This protected view is also listed in the Kilkenny CDP as V22. In addition to this, much of the R683 and R684 regional roads between Passage East, Faithlegg and Waterford City are labelled as 'scenic routes' by the Waterford CDP.

3.10 Inter-relationships between SEA Environmental Topics

All environmental topics interact with each other to some extent. It is considered that the most significant inter-relationships for the Master Plan are between biodiversity, water and material assets.

4 OBJECTIVES, TARGETS AND INDICATORS

SEA objectives are measures developed from policies which usually govern environmental protection objectives established at EU or national level. The SEA objectives are used as standards against which the components of the proposed Master Plan can be evaluated in order to identify the provisions which have the potential to result in likely significant environmental effects.

The SEA objectives also take consideration of the baseline conditions (Section 6), consultation and the identification of the key environmental issues. The development of these objectives ensures that the SEA focuses only on those issues that are most relevant and of significance to the Master Plan area.

The SEA objectives are separate to the objectives contained within the Master Plan. The SEA objectives have been divided into environmental topics, with at least one objective for each topic:

- Biodiversity, Flora & Fauna (B)
- Population & Human Health (P)
- Geology, Soils & Land-use (G)
- Water (W)
- Air Quality & Acoustics (A)
- Climatic Factors (CF)
- Material Assets – Infrastructure, Fisheries & Aquaculture (MA)
- Cultural Heritage (Architectural and Archaeological) (CH)
- Landscape & Visual Amenity (L).

These SEA objectives are then paired with specific targets. Environmental indicators are used to track the process in achieving the targets. Table 4-1 below sets out the SEA objectives, targets and indicators for the Master Plan.

Table 4-1: SEA Objectives, Targets and Indicators

Environmental Topic	Objectives	Targets	Indicators
Biodiversity, Flora & Fauna (B)	**B1:** Preserve, protect and where possible enhance, the biodiversity, flora and fauna at and in the vicinity of the Port of Waterford in particular designated sites and their qualifying features of interest.	To maintain and or enhance European sites and species in accordance with conservation objectives.	Status, condition, area and number of European sites and their habitats and species, within Master Plan area.
	B2: Prevent the entry of invasive species to the Master Plan area due to the Port operations.	Prevent the entry and spread of invasive species within Master Plan area due to Port operations.	Presence, absence, location, quantity of invasive species, within Master Plan area.
Population & Human Health (P)	**P1:** To maximise positive impacts and minimise the negative impacts of the proposed Master Plan projects to the local communities and mitigate any potential negative effect of development on the local communities.	Noise and air quality impacts arising from the proposed projects (on-shore and offshore) shall not exceed statutory and/or recommended guideline values. Increasing direct and indirect employment created by the delivery of the projects set-out in the Master Plan. Implementing corporate social responsibility programmes at local communities.	Noise levels and air quality indicators (primarily dust, NO_x, CO, SO_x). A long-term employment figures associated with the Port. Implementation of specific community projects or sponsorships.
Geology, Sediments, Soils & Land-use (G)	**G1:** To minimise coastal erosion and soil / sediment contamination.	Protect the coastline from further erosion. Minimise contamination of soils / sediments at lands within or in the vicinity of the Master Plan area.	Erosion rates, and / or presence of new areas of erosion within the Master Plan area. The number and significance of soil / sediment contamination incidents.
	G2: Beneficial use of dredged materials to support circular economy.	Seek to introduce the reuse of dredged materials.	Volume of dredge material reused.

Environmental Topic	Objectives	Targets	Indicators
Water (W)	**W1:** Prevent the deterioration of the status of water bodies (surface / ground / coastal) in line with the objectives of the WFD and River Basin Management Plan. Protect the local designated bathing areas and shellfish waters.	Maintain the status of any water bodies (surface / ground / coastal) and support the ability of any water body to maintain or achieve its WFD status. Maintain status and prevent the deterioration of water quality the local designated bathing areas and in shell fish waters.	WFD water body status as indicated by the EPA. Status of local designated bathing areas and shellfish waters.
	W2: Minimise the impacts on water resources and flood risk and to ensure implementation of the Flood Directive within the Master Plan.	No increase in flood risk at the Port or in the estuary.	Flood risk within the Master Plan area.
	W3: Limit the impacts of the dredging regime in the long-term.	Maintain suspended sediment concentrations at baseline levels.	Suspended sediment concentrations in the estuary during and after dredging operations.
Air Quality & Acoustics (A)	**A1:** Air Quality: To minimise the impacts on air quality.	Maintain a 'Good' Status on the EPA Air Quality Index for Health. Compliance with Air Quality Standards as set out in the CAFE Directive.	The EPA's Air Quality Index for Health. Ambient concentrations of relevant pollutants.
	A2: Acoustics: To minimise acoustic impacts to local communities and aquatic environments.	Daytime noise emissions, of Lar,T of 55dB and night-time emissions of LAeq,T of 45dB at sensitive receptors. To achieve a 'Good Environmental Status' (GES) for the acoustic aquatic environment from direct and indirect activities as part of the Master Plan.	Noise levels. Underwater acoustics shall comply with the Marine Strategy Framework Directive (2008/56/EC) to '*not adversely affect the marine environment'.*

Environmental Topic	Objectives	Targets	Indicators
Climatic Factors (CF)	**CF1**: To minimise greenhouse gas (GHG) emissions and the carbon footprint of the Port.	To ensure no increase in GHG emissions and the carbon footprint, expressed per unit of cargo at the Port.	Carbon emissions from Port activities.
	CF2: Adaptation to the potential climate change effects.	No increased risk from climate change induced flooding events.	Flood risk associated with climate change within the Master Plan area.
Material Assets - Infrastructure, Fisheries & Aquaculture (MA)	**MA1:** To protect the commercial fisheries and aquaculture.	To support the development of sustainable commercial fisheries and aquaculture within the Port.	Annual turnover of fisheries and aquaculture in the area of the Master Plan.
	MA2: To protect existing and develop new material assets and infrastructure.	To develop new infrastructure which supports sustainable development within the Port.	New infrastructure at the Port.
	MA3: To reduce waste generation from Port related activities.	To limit any potential increase in the quantity of waste being directed to landfill from the Port and increase, wherever possible, the quantity of material for reuse and recycling at the Port, supporting a circular economy.	The amount of waste being directed to landfill, recycled or reused.
Cultural Heritage Architectural & Archaeological (CH)	**CH1**: To prevent damage to / loss to heritage features with particular regard to the local maritime heritage. **CH2:** To support the research of underwater archaeology in the Master Plan area. To improve by record and publication the diverse range of underwater archaeology of the locality.	To ensure no significant impacts on known SMR or RPS sites. To prevent potential impact on unknown archaeological sites (on-shore and underwater).	The record of known cultural, archaeological, underwater artefact or shipwreck finds, and the quality of these objects.

Environmental Topic	Objectives	Targets	Indicators
Landscape & Visual Amenity (L)	**L1:** To avoid adverse impacts to the landscape as far as possible and where possible enhance the landscape character and visual amenity at and in the vicinity of the Port.	No avoidable significant impacts on the landscape character and visual amenity as a result of the Master Plan.	The number of receptors affected by significant visual impacts from the development of the Master Plan. This includes post development impacts of the Master Plan.

5 ALTERNATIVES

Alternatives are essential to the SEA process and are required under the SEA Directive. Consideration of alternatives provides the opportunity to identify and examine the different ways to achieve the Master Plan objectives while taking into account environmental issues.

Alternatives have been developed taking cognisance of the best practice guidelines including 'Developing and Assessing Alternatives in Strategic Environmental Assessment' (EPA, 2015).

Five alternatives were considered as part of the SEA process, which are summarised as follows:

Alternative 1: Do-Nothing

Alternative 2: Relocation of the POW

Alternative 3: Development of the POW Infrastructure and Estuary

Alternative 4: Concurrent Development of all Options

Alternative 5: Phased Development of all Options

These alternatives were assessed against the SEA objectives, targets and indicators. Alternative 5 was chosen as the preferred Master Plan alternative. Alternative 5 comprises the phased development of all of the Master Plan proposals. These developments will occur in phases throughout the 25-year Masterplan period. This approach allows meeting all of the objectives of the proposed Master Plan. Phased development will also mostly avoid cumulative and in-combination environmental impacts, and will also be more realistic in terms of capital investment.

6 ASSESSMENT OF POTENTIAL IMPACTS IN THE ABSENCE OF MITIGATION

6.1 Biodiversity, Flora & Fauna

Potential environmental impacts on Natura 2000 sites are addressed in detail in the Natura Impact Statement for the POW Master Plan, provided separately to this report. In absence of mitigation measures, there is a potential for all receptors in the study area to be impacted directly or indirectly, in the short, medium and the long-term as a result of the implementing the Master Plan. The main environmental impacts of the Master Plan relate to the marine and intertidal habitats and species through disturbance during works associated with the Master Plan, specifically dredging and construction of the training wall. Each development option that is part of the Master Plan will require an AA Screening in accordance with Article 6 of the Habitats Directive and Guidelines issued by DEHLG at the planning stage.

6.2 Population & Human Health

Implementation of the preferred alternative will create medium and long term direct and indirect positive effects on population within the region. Maximum development of the Port will enable POW to operate at increased capacity and contribute to economic development within the region. In absence of mitigation measure, the Master Plan also has the potential for some slight negative impacts on human health in the short-term as a result of Port developments, which may include increased traffic and construction noise. In the longer term the developments, in conjunction with Local Authority and Government planned initiatives, have the potential to greatly enhance the tourism sector of the region.

6.3 Geology, Sediments, Soils and Land Use

Overall it is considered that implementation of the Master Plan is unlikely to result in significant adverse impacts on soil and geology provided best practice guidelines and mitigation measures are followed during construction and operational works.

The current dredging regime at the Port has been undertaken without any adverse impacts on underlying geology as shown in numerous studies completed over the past 20 years. Further, POW have completed extensive sampling and laboratory analysis of the estuarine sediments, most recently in 2017, to ensure no contamination is present. In addition, the River Suir runs through an alluvial plain, therefore any material lost through dredging will be replaced within the estuary, albeit in a different location. POW commissioned a detailed hydrodynamic and sediment transport study of the estuary in 2018. This Study concluded that changes in the dredging regime proposed under the preferred alternative of the Master Plan will have little to no impact on the overall sedimentation process, as the natural rate of sediment accumulation in the Harbour far exceeds the level of recirculation of dredged sediment from the existing disposal site.

To ensure no impacts would occur for the areas within the Master Plan that have not been dredged previously a series of studies will be required to be carried out at a planning level. Also a Foreshore License will be required for additional dredging.

6.4 Water

In terms of the physico-chemical parameters relating to water quality, suspended solids are considered one of the main potential contaminants. Increased suspended solid concentrations could cause aquatic ecological problems which include reducing light penetration for flora growth, adding bacteria to water, clogging fish gills and smothering spawning grounds. However, a modelling study conducted by ABP Marine Environmental Research Ltd (ABPmer) on the impact of plough dredging at Cheek Point in 2017, showed that there was no perceptible change in the water quality due to dredging.

Turbidity monitoring conducted during the dredging period February 2012 and February 2013 (IDS Monitoring Ltd., 2013) and between January and March 2017 (IDS Monitoring Ltd., 2017) indicated that differences observed during dredging were not greater than periods without dredging and any differences can be attributed to natural processes i.e. strong tidal and fluvial flows.

Contaminated sediment also has the potential to impact on water quality. The dredged sediment has been tested as part of the Dumping at Sea licence application and the results indicate that the dredge material is not contaminated. Chemical and radiological testing was also performed on these sediment samples and no issues were identified. These studies have been reviewed and accepted by the EPA.

6.5 Air Quality and Acoustics

While increases in Port activity and the presence of Heavy Goods Vehicles (HGVs) have the potential to negatively affect the air quality of the area, it is not envisaged that air quality will be significantly impacted by the development of the preferred alternative. However, a traffic impact assessment will need to be undertaken at project level. It is important to note that in the absence of the Master Plan, the POW will not develop, resulting in increased road traffic due to the increased transport of goods into southeast from Dublin and Cork.

Construction of the development options listed in the Master Plan, will likely increase noise levels within the area. These impacts, however, will be short term / temporary in nature, and phasing of the Master Plan development options and integration of the options with existing Port operations will minimise in-combination impacts associated with noise.

Increased Port activity, including increased maritime traffic and dredging operations, has the potential to result in increased noise levels, but such potential impacts can be mitigated through good site management and adherence to best practice guidelines. Nonetheless the increase in activity within the Port will need to be assessed at a project level.

Where in-water works are necessary, a construction methodology must be developed and the risk assessment completed in accordance with relevant guidance to identify, reduce and manage all such activities.

6.6 Climatic Factors

The POW has already committed to addressing its carbon footprint by embarking on an energy efficiency programme. Under the preferred alternative, expanding the Port to allow for more ships and opening up the Port to larger ships will increase throughput while reducing per unit CO_2 emissions. This will enable the POW to meet future regional export/import demands while concurrently reducing per-unit CO_2 emissions at the Port.

The biggest risk to the POW from climate change is the potential for stronger storms and higher winds, which would most likely occur in conjunction with coastal or fluvial flooding. The Port benefits from its estuarine (as opposed to coastal) location, and is located away from known flood-risk areas, therefore required mitigation measures will likely be minor.

6.7 Material Assets – Infrastructure, Fisheries, Aquaculture

Traffic and Transport

Traffic at morning rush-hour along these roads is considered '*free flow'* by TII and may increase in traffic as a result of the Master Plan is not expected to significantly alter commute times or cause prolonged congestion. Construction activities associated with the development options will likely lead to a rise in traffic on the local road network, with slight significance short-term duration impact on the transport network.

The Port development through the Master Plan implementation will have an overall positive impacts on transport in Ireland. Delivering goods closer to destination via sea should ease congestion on roads throughout Ireland. Moreover, there is a rail link a POW which has a potential to open up the Port for the North-West and Mid-West regions, further decreasing the burden on road transport.

Water Supply Sources

An increase in trade at the Port, will lead to an increase in demand for water supplies. If additional need arises that cannot be met by the current well, there are two options: drilling an additional supply well or connecting POW to the mains supply.

Wastewater / Foul Water

As the Master Plan aims to facilitate increased trade at the Port including onshore development, this will in turn lead to increased levels of wastewater being generated. In order to facilitate future expansion at the Port while maintaining good wastewater treatment standards, the POW will construct an effluent treatment plant on-site or connect to the nearby public WWTP that is operated by IW.

Waste Management

An updated Waste Management Plan will be required to address the increasing waste through the new port developments and increased activity, to ensure that future waste and recycling targets are met. Implementation of all Development Options has a potential to result in additional dredge material (waste) during the lifetime of the Master Plan. Appropriate surveys will be undertaken to ensure compliance with the current Dumping at Sea Licence. POW will employ the most appropriate method of dredging, to minimise the potential for environmental impact.

Energy

It is envisaged that during the lifetime of the Master Plan electricity will continue to be supplied by the existing source, the main ESB grid. Increased energy demand for Port offices and facilities is not expected to be an issue.

Fisheries and Aquaculture

As two major commercial operations in the South-East, the ability of the POW and local fisheries to co-exist is of utmost importance to the economic wellbeing of the region.

Changes in the Port's dredging regime present the biggest potential risk to fisheries and aquaculture in the harbour, particularly shellfish, as these organisms reside on the soft sands and muds of the harbour bed. Further assessment will need to be undertaken at project level.

6.8 Cultural Heritage

The registered archaeological monuments will not be directly impacted in the short, medium or long term by the Master Plan as all development options will be located a sufficient distance from these protected sites.

Under the Master Plan, a reduction in dredging in the upper estuary will prevent potential damage to shipwrecks, both known and currently undiscovered; however, it will also reduce a potential to find currently undiscovered shipwrecks.

The key to protecting underwater archaeology is that the POW commissions underwater archaeology surveys and consults with the Underwater Archaeology Unit (UAU) prior to any intensification of dredging or following the discovery of underwater artefacts.

6.9 Landscape and Visual Amenity

The development options in the Master Plan largely involve in-estuary works to increase navigational access and safety at the Harbour. Therefore, it is unlikely to have any impact on the landscape character and visual amenity of the area.

The proposed training wall development has the potential to negatively impact upon visual amenity in the Harbour, however, the protected views in the area of the Master Plan will not be impacted. The most significant visual impact will occur from Cheekpoint; however, the wall will be located between the existing industrial and infrastructural features. It is considered that the development options regarding quay infrastructure will blend into the surrounding Port landscape and as such no significant adverse impacts are expected.

7 MITIGATION AND MONITORING

A list of mitigation measures has been recommended where potential negative impacts have been identified within the SEA Environmental Report (ER) and NIS to prevent, reduce and mitigate for potential impacts of implementing the Master Plan. The primary mitigation recommendation is that predicted negative impacts should be considered in more detail at project level stage, when the specifics of the development options will be available. Full details of the proposed construction methodologies will be developed at the design stage and subject to detailed assessment to ensure that impacts can be both avoided or minimised.

Article 10 of the SEA Directive requires that the significant environmental effects of the implementation of the Master Plan are monitored in order to identify, at an early stage, unforeseen adverse effects and in order to undertake appropriate remedial action. The environmental monitoring programme has been developed based on the SEA Objectives, Targets and Indicators.

8 NEXT STEPS

The next step in the SEA process will be consultations on the Master Plan, SEA Environmental Report, NIR and SFRA. These documents will be made available for viewing at the Port of Waterford offices in Belview and digitally via the POW website. The consultation period will commence in June 2019 and will run for 8 weeks.

A digital copy of the Master Plan and this Report is available on the POW website at http://www.portofwaterford.com/corporate-masterplandocuments.

All comments and submissions received during the consultation period will be collated and the documents will be reviewed as necessary. Where no major objections or comments are received, the final version of the Master Plan will be adopted. Following publication of the Master Plan, a SEA statement will be prepared to summarise the process and outline how environmental considerations and consultation responses were integrated into the final Master Plan.

The proposed timeline for the upcoming processes and dates for implementing the Master Plan is outlined in Table 8-1 below.

Table 8-1: Upcoming Events the Master Plan Process

Action	Timeline
Master Plan, SEA Environmental Report, NIR & SFRA Public Consultation	June - July 2019
Publication of Final Master Plan, SEA Environmental Report, NIR & SFRA Public Consultation (revised as required)	August 2019
Publication of SEA Statement	August 2019

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