

Portland  
energy recovery  
facility

Environmental statement  
Technical appendix I;  
**Ground conditions  
and water quality**  
(part 2 of 2)

Powerfuel

**Portland Energy Recovery Facility  
(ERF)**

**Water Quality Technical Assessment**

Report Ref

Final | 26 August 2020

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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# 1 Introduction

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This document presents an assessment of potential effects upon the water environment resulting from the construction and operation of Portland ERF, which is described in Chapter 2: Site description and development proposals.

This technical assessment is supported by the following drawings and technical appendices:

- Drawing 0979-PDL-101 Preliminary Drainage Layout Drawing;
- Appendix A to this report: WFD Scoping Assessment; and
- AWP Flood Risk Assessment.

## 2 Legislation and policy

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Planning policy, guidance and legislation relevant to the water environment associated with the proposed development are listed below.

### 2.1 European planning policy

The following European legislation is relevant to this assessment:

- the Water Framework Directive (WFD) 2000/60/EC provides a framework for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and groundwater. This includes listing shellfish as ‘Protected Areas’, ensuring that the protections provided by the repealed Shellfish Waters Directive (79/923/EEC) continue;
- a daughter directive of the WFD, the Groundwater Directive establishes a regime which sets groundwater quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater; and
- the Priority Substances Directive amends WFD 2000/60/EC and the Directive on Environmental Quality Standards (Directive 2008/105/EC) by updating the list of priority substances that would apply to WFD assessment.

### 2.2 National planning policy

The following National Planning Policies are applicable to this assessment:

- The Environmental Protection Act 1990 sets out legislative provisions aimed at controlling pollution arising from industrial and other processes for waste management.
- The Land Drainage Act 1991 requires that a watercourse be maintained by its owner. The Act provides functions to internal drainage boards and local authorities to manage watercourses and provide consenting powers for proposed works to watercourses associated with development.

- The Water Resources Act 1991 (WRA) (as amended) sets out the responsibilities of the Environment Agency (EA) in relation to water pollution, resource management, flood defence, fisheries, and navigation.
- Flood and Water Management Act 2010 makes provision for water, including provision about the management of risks in connection with flooding and coastal erosion.
- The Environmental Damage (Prevention and Remediation) (England) Regulations 2015 are based on the ‘polluter pays’ principle and imposes obligations on operators of economic activities requiring them to prevent, limit or remediate environmental damage. They apply to damage to protected species, natural habitats, Sites of Special Scientific Interest (SSSIs), water and land, and implement Directive 2004/35/EC, on environmental liability.
- The Water Framework Directive (WFD) 2000/60/EC has been transposed into the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. WFD is delivered in England and Wales through a framework of River Basin Management Plans (RBMPs). England and Wales are divided into 11 River Basin Districts (RBDs), each comprising smaller management units known as water bodies, including all river, lake, groundwater, coastal, and transitional waters located within that RBD.
- The National Planning Policy Framework (NPPF) 2019 provides a framework within which local people and their accountable councils can produce their own distinctive local and neighbourhood plans. Section 15, titled “Conserving and enhancing the natural environment” specifies that development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.

## 2.3 Local planning policy

The West Dorset, Weymouth & Portland Local Plan 2015 is Dorset Council’s current development plan. The policy of relevance to this chapter is:

- ENV9 Pollution and Contaminated Land: Development will not be permitted which would result in an unacceptable risk of pollution to ground water, surface water-bodies and tidal waters.

The adopted Bournemouth, Christchurch, Poole and Dorset Waste Plan 2019 contains Policy 16 – Natural resources. Criteria for proposals for waste management facilities to be permitted include:

- It can be demonstrated that the quality and quantity of water resources (including ground, surface, transitional and coastal waters) would not be adversely impacted and/or would be adequately mitigated.

## 2.4 Other relevant standards and guidance

The assessment has been based upon the guidance provided by the Design Manual for Roads and Bridges (DMRB) LA 113 Road drainage and the water

environment (formerly HD 45/09)<sup>1</sup>; hereby referred to as LA 113. This guidance provides the methodology and criteria for identifying likely impacts of a proposed road project on the water environment and predicting their magnitude and the significance of the resulting effects. There is no standard guidance for the methodology of water resources assessment therefore in the absence of any sector guidance, DMRB is recognised as the most tried, tested and robust approach and can be applied to other types of development.

This assessment also draws on other guidance including the Planning Inspectorate Advice Note 18 ('Water Framework Directive')<sup>2</sup>. This guidance is specifically for Nationally Significant Infrastructure Projects (NSIPs); however, it benefits from being recognised by regulators and details the relationship between WFD legislation and Environmental Impact Assessments (EIAs). The WFD Scoping assessment provided in Appendix A to this report has been produced following this guidance.

Due reference has been made to GOV.UK guidance for preventing pollution<sup>3</sup>, working on or near water<sup>4</sup> and for managing water on land<sup>5</sup>.

Construction Industry Research and Information Association<sup>6</sup> (CIRIA) guidance used for the assessment includes:

- Control of Water Pollution from Construction sites – Guide to Good Practice (SP156);
- Control of Water Pollution from Construction sites – Guidance for Consultants and Contractors (C532);
- Environmental good practice on-site (C692); and
- Groundwater control: design and practice (second edition) (C750).

### 3 Methodology

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Following on from the Scoping Assessment (Technical appendix A), only components of the Water environment which were scoped in as potentially having

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<sup>1</sup> Design Manual for Road and Bridges. LA113 Road drainage and the water environment. August 2019

<sup>2</sup> The Planning Inspectorate Advice note eighteen: The Water Framework Directive, June 2017

<sup>3</sup> The Environment Agency, "Pollution prevention for businesses," 12 07 2016. [Online]. Available: <https://www.gov.uk/guidance/pollution-prevention-for-businesses>. [Accessed September 2019].

<sup>4</sup> The Environment Agency, "Check if you need permission to do work on a river, flood defence or sea defence," 2017. [Online]. Available: <https://www.gov.uk/permission-work-on-river-flood-sea-defence>. [Accessed September 2019].

<sup>5</sup> The Environment Agency, "Manage water on land: guidance for land managers," 19 02 2015. [Online]. Available: <https://www.gov.uk/guidance/manage-water-on-land-guidance-for-land-managers>. [Accessed September 2019].

<sup>6</sup> Construction Industry Research and Information Association (CIRIA), Free CIRIA Downloads Available: [https://www.ciria.org/CIRIA/Resources/Free\\_CIRIA\\_publications/Resources/Free\\_CIRIA\\_publications.aspx?hkey=622b85b3-7d21-4e59-8093-459571496a0a](https://www.ciria.org/CIRIA/Resources/Free_CIRIA_publications/Resources/Free_CIRIA_publications.aspx?hkey=622b85b3-7d21-4e59-8093-459571496a0a) [Accessed September 2019].

significant effects are assessed within this report. Therefore, the scope of this assessment covers:

- Pollution of coastal waters and groundwater during construction; and
- Pollution of coastal waters post-construction.

Associated effects on ecology are considered within Chapter 10: Natural Heritage. Potential indirect effects on designated sites are considered within the Habitat Regulations Assessment (HRA). Impacts on the water environment and human health effects as a result of disturbance of contaminants are considered within Technical appendix 11: Ground Conditions.

### 3.1 Consultation

A formal scoping report was issued to Dorset Council on 10 January 2020 and the council's scoping opinion was received on 25 February 2020. Scoping responses on ground conditions and water quality were received from Dorset Council's waste planning team and environmental health officer, Natural England, the Environment Agency and Dorset Wildlife Trust, details of which are provided in Table 1.

Through the pre-application process, the EA and Lead Local Flood Authority (LLFA) have been consulted regarding the Flood Risk Assessment and Drainage Strategy. Separate discussions with Dorset Council's Flood Risk Management Engineer have also taken place. Details are provided within the AWP Flood Risk Assessment.

Table 1: Consultation Summary

Consultee and date	Issue raised	Summary of response
Emma Macdonald Minerals and Waste Planning Dorset Council 24th February 2020	Dorset Council's Environmental Health Officer (EHO) has advised that the position of discharge into the sea should be carefully considered due to bathing waters and leisure activities within the vicinity of the site.	The drainage strategy proposes to use existing outfalls, detailed in Section 5. Interceptor details not known at time of writing. Assessment of water quality impacts is based on drainage design in accordance with relevant standards.
EHO, Weymouth & Portland Borough Council 10th February 2020	Particular regard should be given to the discharge of surface water to the sea due to contaminants identified within the 2009 site investigation. Details of the interceptor should be submitted (if known at the time).	
	Due to shellfish and aquaculture activities within the vicinity, it is advised that Centre for Environment Fisheries and Aquaculture	No specific specialist assessment required during scoping. Council to consult Cefas at point of application provided no significant



Consultee and date	Issue raised	Summary of response
	Science (CEFAS), and Southern Association of Inshore Fisheries and Conservation Authorities (IFCA) are consulted on the proposals	impacts are identified during assessment.
Jack Potter Natural England 13th February 2020	Natural England acknowledge that the water quality from facility drainage will be assessed in the Environmental Statement however this should be extended to include the likelihood of leaks from transport to and from the site within the zone of influence.	Potential impacts of increased vehicle and ship volumes assessed in Section 7
Environment Agency 10th February 2020	If historic land use of the site may have caused contamination then National Planning Policy Framework (NPPF) states that the planning system could contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to, or being put at risk from unacceptable levels of water pollution.	Potential for groundwater quality impacts assessed Section 6.2
	The proposed development will require a bespoke permit under the Environmental Permitting (England & Wales) Regulations. We do not currently have enough information to know if the proposed development can meet our requirements to prevent, minimize and/or control pollution	Permit requirements considered within AWP Flood Risk Assessment
Leanne Butt Conservation Officer Conservation Policy & Advocacy Dorset Wildlife Trust	The water quality impacts assessment should consider the potential effects upon MCZs, as well as the marine environment generally.  Portland Harbour, whilst not statutorily designated, is a Sensitive Marine Area and thus habitat of national significance; it is unique in England for its deep sheltered mud habitats supporting sea pens. Indirect effects should also be considered in the assessment; for example,	Potential effects on European sites are considered within the HRA.  The WFD Assessment (Appendix A to this report) provides an assessment on the potential impacts on Portland Harbour and the Dorset / Hampshire waterbody, as well as potential impacts on WFD Protected areas, including sensitive habitats.

Consultee and date	Issue raised	Summary of response
	breeding little terns (an associated feature of Chesil Beach and the Fleet SPA) are known to forage within Portland Harbour, and any potential pollution of this resource might indirectly affect the integrity of the SPA.	Outcomes of both of the above assessments have been used to inform this report.

### 3.2 Sources of information and data

The baseline describes the existing condition of surface water features, groundwater and coastal waterbodies. The following information sources have been used to complete the baseline assessment:

- South West River Basin Management Plan 2015<sup>7</sup>;
- Natural England MAGIC Map – Designated Areas mapping<sup>8</sup>;
- Ordnance Survey (OS) Open Data<sup>9</sup>;
- Environment Agency Ecology and Fish data Explorer<sup>10</sup>;
- Portland Groundsure Report; March 2020<sup>11</sup>
- Arup (2020) Portland ERF Geoenvironmental and Geotechnical Desk Study (appended to Technical appendix I1);
- Historic OS maps<sup>12</sup>;
- Water Framework Directive (WFD) data, classifications and mitigation measures from the EA’s Catchment Data Explorer website<sup>13</sup>;
- AWP Flood Risk Assessment and Drainage Strategy; and
- Water Framework Directive Compliance Assessment report (Appendix A to this report)

### 3.3 Study area

The study area has been selected based on a source – pathway – receptor approach. For direct effects on coastal waters, the study area will include the

<sup>7</sup> South West River Basin Management Plan 2015. Available at:

<https://www.gov.uk/government/collections/river-basin-management-plans-2015>

<sup>8</sup> Natural England MAGIC website. Available at: <https://magic.defra.gov.uk/MagicMap.aspx>

<sup>9</sup> Ordnance Survey Open Data maps. Available at: <https://www.bing.com/mapspreview>

<sup>10</sup> EA Ecology & Fish data explorer <https://environment.data.gov.uk/ecology-fish/>

<sup>11</sup> Groundsure (30/03/2020) Groundsure Enviroinsight Report for Portland. Ref. GS-6721979

<sup>12</sup> National Library of Scotland – historical OS maps. Available at: <http://maps.nls.uk/os/>

<sup>13</sup> Environment Agency 2017 *Catchment Data Explorer* Accessed at: <http://environment.data.gov.uk/catchment-planning/>

geographical extent of the full scope of the works and all surface water features within 500m of the proposed development. Indirect effects on coastal waters will be considered up to 1 km away where features have hydrological connectivity to the proposed development.

### 3.4 Impact assessment and significance criteria

The DMRB methodology is specifically designed for assessing the impacts of road or bridge construction on the water environment and therefore sections of it (e.g. Highways England Water Risk Assessment Tool - HEWRAT) are not applicable to the proposed development. Despite this, the DMRB methodology is widely used for all types of schemes and benefits from being recognised by regulators.

LA 113 provides a standard methodology for the assessment of each topic area and has four key steps:

- Step 1 – Identification of water features within the study area and an assessment of the importance/ value/ sensitivity of each of these receptors, using the criteria set out in Table 2 below;
- Step 2 – Identification of potential impacts to the water features identified in Step 1, from construction and/or operation. Under the WFD, an impact is defined as causing a deterioration in the status of a water body or preventing a water body from reaching ‘Good’ status in the future;
- Step 3 – Assessment of the potential magnitude of any construction or operation impacts on the receptor, based on the criteria in DMRB LA 113: Table 3.71, summarised in Table 3 below; and
- Step 4 – Assessment of the overall significance of any effects to receptors due to impacts, using the significance matrix provided in Table 4. Effects that are moderate or above are considered to be significant in EIA terms. Where significant effects are determined, mitigation measures are proposed.

Table 2: Criteria for estimating the importance of environmental attributes (adapted from DMRB LA 113: Table 3.70)

Value	Quality/ substitutability	Typical examples
Very High	Attribute has a high quality and rarity on regional or national scale	Surface water: Watercourse having a WFD classification shown in a RBMP and $Q95 \geq 1.0$ m <sup>3</sup> /s. Site protected/designated under EC or UK legislation (Special Area of Conservation, Special Protection Area, SSSI, Ramsar site, salmonid water)/Species protected by EC legislation Ecology and Nature Conservation [Ref 5.N]  Groundwater: Principal aquifer providing a regionally important resource and/or supporting a site protected under EC and UK legislation Ecology and Nature Conservation [Ref 5.N]. Groundwater locally supports GWDTE SPZ1

High	Attribute has a high quality and rarity on local scale	Surface water: Watercourse having a WFD classification shown in a RBMP and Q95 <1.0m <sup>3</sup> /s. Species protected under EC or UK legislation Ecology and Nature Conservation [Ref 5.N] Groundwater: Principal aquifer providing locally important resource or supporting a river ecosystem. Groundwater supports a GWDTE SPZ2
Medium	Attribute has a medium quality and rarity on local scale	Surface water: Watercourses not having a WFD classification shown in a RBMP and Q95 >0.001m <sup>3</sup> /s. Groundwater: Aquifer providing water for agricultural or industrial use with limited connection to surface water SPZ3
Low	Attribute has a low quality and rarity on local scale	Surface water: Watercourses not having a WFD classification shown in a RBMP and Q95 ≤0.001m <sup>3</sup> /s. Groundwater: Unproductive strata

Table 3: Criteria for estimating the magnitude of an impact (adapted from DMRB LA 113: Table 3.71)

Magnitude of impact	Typical criteria descriptors
Large	Results in loss of attribute and/or quality and integrity of the attribute.
Medium	Results in effect on integrity of attribute, or loss of part of attribute
Small	Results in some measurable change in attributes, quality or vulnerability
Negligible	Results in effect on attribute but of insufficient magnitude to affect the use or integrity
No Change	Results in some beneficial effect on attribute or a reduced risk of negative effect occurring

Table 4: Arriving at the significance of effect category

		Magnitude of impact (Degree of change)				
Environmental Value (Sensitivity)		No Change	Negligible	Small	Medium	Large
	Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or Moderate
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or Substantial
	High	Neutral	Slight	Slight or moderate	Moderate or Substantial	Substantial or Very Substantial
	Very High	Neutral	Slight	Moderate or Substantial	Substantial or Very Substantial	Very Substantial

## 3.5 Assessment methodology

The assessment of both construction and post-construction impacts follows the guidance set out in LA 113, which recommends that impacts are considered using the source – pathway – receptor approach.

### 3.5.1 Construction phase methodology

The potential impacts of construction on the water environment have been assessed based on typical construction methods and sequencing detailed in Chapter 2: Site description and development proposals.

This assessment assesses construction impacts before construction management measures are incorporated by the contractor. Standard construction practices along with additional specific mitigation measures are both considered as additional mitigation, detailed in Section 8. Cumulative impacts as a result of construction phasing is also assessed.

### 3.5.2 Operational phase methodology

A qualitative assessment of the potential impacts of routine run-off on coastal water quality was undertaken to determine whether there is an environmental risk and if additional pollution mitigation measures are needed when compared to the existing and future baselines.

As described in Chapter 2, for the purposes of the EIA the site is assumed to be undeveloped in the future baseline.

## 4 Baseline conditions

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This section sets out existing conditions and identifies potential receptors, describing their sensitivity or value according to the methodology.

### 4.1 Surface and coastal water

As shown in Natural England MAGIC Map – Designated Areas mapping<sup>8</sup>, the site is situated on the coastline adjacent to Portland Harbour to the north and Balaclava Bay to the east, with the inner breakwater dividing the two waterbodies. Lyme Bay East coastal waterbody is on the western coastline of Portland.

Portland Harbour is a 10.2km<sup>2</sup> waterbody designated as ‘Shellfish Waters’, which places specific restrictions on microbial pollution. Portland Harbour Castle Cove and Portland Harbour Sandsfoot Castle bathing waters are situated 3.8km from the proposed development on the north of the harbour.

Balaclava Bay is situated on the southern side of the breakwater, within the Dorset / Hampshire coastal waterbody; which has an area of 513.1km<sup>2</sup>, covering a large area from Portland on the west to the Isle of White to the east. Protected areas within the Dorset / Hampshire waterbody include:

- Studland and Portland Special Area of Conservation (SAC) 3km to the south and 6.5km to the east of the proposed development, designated for reefs; and
- Purbeck Coast Marine Conservation Zone (MCZ) 6.5km to the east of the proposed development.

To the west of Portland Harbour is the Fleet Lagoon waterbody; which is bordered by the fossil shingle barrier beach structure of Chesil Beach. This is a 4.9km<sup>2</sup> waterbody connected to Portland Harbour through a narrow channel which, at its closest point is located approximately 2.5km to the north west to the site. Designations associated with this waterbody include:

- Chesil and the Fleet SAC; the area of which includes this waterbody, Chesil beach and the adjacent coastline to the south;
- Chesil Beach & The Fleet Special Protection Area (SPA); and
- The Fleet Shellfish Waters (2014)

Lyme Bay East waterbody is a 118.16km<sup>2</sup> waterbody situated to the west of Portland, 8km along the coastline from the proposed development. Designations on the eastern side of this waterbody include:

- South of Portland MCZ is 8.3km along the coastline to the south of the proposed development, to the south of Portland Bill; and
- Chesil Beach and Stennis Ledges MCZ; and the area of Chesil and the Fleet SAC on the adjacent coast line to the proposed development, 1.8km over land and 12km along the coastline.

As of 2016, both the Dorset / Hampshire and Portland Bay waterbodies have a Moderate overall WFD classification with a target status of Good by 2021 and Lyme Bay East has a Good overall classification. Detailed baseline information including presence of higher and lower sensitivity habitats is provided in WFD Scoping assessment (Appendix A to this report).

Impacts on designated sites have been assessed within the Habitat Regulations Assessment.

There are no surface watercourses on or in close proximity to the site, the closest river is the River Wey, situated to the east of Portland Harbour approximately 5km north of the site. There is therefore no fish data or water quality monitoring data for watercourses within close proximity to the site.

According to OS mapping, there is one isolated pond and one spring fed pond 150m to the south of the site and another spring fed pond 300m to the south west of the site. These are discrete, localised features which do not connect to other watercourses. With no pathway to effect, these features are not considered further within this assessment.

## 4.2 Groundwater

As detailed within the Groundsure report<sup>11</sup>, the site is not within a groundwater source protection zone or drinking water protected / safeguard area. There are no groundwater abstractions within 1km of the site.

The underlying Kimmeridge Clay bedrock is classified by the EA as an unproductive aquifer. The superficial deposits (tidal flat deposits) immediately east of the site are classified as a secondary undifferentiated aquifer.

Site investigations undertaken to inform the 2009 ES concluded that groundwater beneath the site forms a natural gradient towards the coast and discharges into the sea. Groundwater quality beneath the site is indicative of the presence of saline and brackish water.

## 4.3 Existing drainage

The ERF will be situated on brownfield land owned and managed by Portland Port Authority, the site has been cleared and levelled in preparation for the development. The site is currently impermeable, with surface water drainage discharging to the sea. There are a number of licenced discharges identified in the Groundsure report, indicating outfalls into both Portland Harbour and Balaclava Bay.

Information provided by the Groundsure report<sup>11</sup> indicates that there are nine licenced discharges within 500m of the proposed development. Drawing 0979-PDL-101 Preliminary Drainage Layout Drawing indicates the use of one easterly outfall into Balaclava Bay and one northerly outfall into Portland Harbour.

Table 5 lists the water features identified to be assessed and ascribes them a value for the assessment (see Table 2 for description of the values).

## 4.4 Future baseline

Considering the site to be undeveloped in the future baseline, the site would remain impermeable and the surface run-off volumes and pollutant concentrations would remain unchanged when compared to the existing baseline.

Table 5: Summary of water features within proximity of proposed development

Receptor	Location relative to proposed development	Description	Proposed development elements	Value	Value rationale
Portland Harbour	Adjacent, to the north of the proposed development	A 10.2km <sup>2</sup> waterbody with land to the east and breakwaters on the west.  Designated for Shellfish waters	To receive surface water run-off from the site via existing outfall(s)	Very High	WFD Protected Species
Balaclava Bay	Adjacent, to the west of the proposed development	Within the Dorset / Hampshire coastal waterbody  Designated sites within this waterbody include Studland to Portland SAC and Purbeck Coast MCZ	To receive surface water run-off from the site via existing outfall(s)	Very High	Site protected/designated under EC legislation
Fleet Lagoon	Connected to Portland Harbour through a narrow channel which, at its closest point is located approximately 2.5km to the north west to the site.	A 4.9km <sup>2</sup> waterbody bordered to the north by the mainland coastline and to the south by the fossil shingle barrier beach structure of Chesil Beach.	No direct proposed development elements	Very High	Site protected/designated under EC legislation



		Designated sites within this waterbody include Chesil and the Fleet SAC			
Lyme Bay East	Neighbouring waterbody to the west of the peninsula	On the western coastline of the island  Designated sites within this waterbody include South of Portland MCZ and Chesil Beach and Stennis Ledges MCZ; and Chesil and the Fleet SAC	No direct proposed development elements	Very High	Site protected/designated under EC legislation
Groundwater	Underlying the development	Kimmeridge Clay bedrock designated as unproductive strata.	RDF pit excavation  Piled foundations	Low	Unproductive strata

## 5 Scheme design and impact avoidance

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There are several measures built into the design of the proposed development to minimise the impact of the water environment, these include:

- Risks to water quality would be managed during operation using the standard practice set out in the Environment Agency's PPGs (withdrawn) and Guidance for Pollution Prevention (GPPs).
- The Flood Risk Assessment provides drainage principles for the operation of the Site. It is proposed that the surface water runoff from buildings is collected via gutters and rainwater downpipes and discharged to Balaclava Bay (east). Surface water on roads and hardstanding will be collected by linear drainage channels and external gullies and passed through treatment swales and oil separators prior to discharge into Portland Port (north).
- The site will utilise the existing tidal outfalls but, with a reduced impermeable catchment compared to existing brownfield conditions, peak rates of discharge will be reduced.
- The inclusion of green space will provide opportunities for some shallow above-ground SuDS features capable of providing attenuation and treatment prior to discharge.
- Process effluents, including boiler blow-down and wash down waters from internal process areas, will be discharged to a foul sewer in accordance with a trade effluent consent, which will be obtained from Wessex Water.
- Subject to formal approval from Wessex Water, it is proposed to discharge all foul water from the proposed development, which will principally be from domestic sources, to Wessex's Water's sewer.
- Incinerator bottom ash will be collected to be taken off site for recycling into construction aggregate, either by ship or by road. Metals will be extracted from the bottom ash for separate recycling.
- The ERF operator will implement an environmental management system certified to ISO14001. Measures pertinent to water quality will include:
  - A number of spill procedures will be produced for each potential spillage event identified, including spillage of raw material inputs to the plant, ready use consumables, and waste material outputs.
  - Suitable and sufficient equipment will be maintained on site, such as spill kits, in order to deal with the predicted scale of possible spillages of materials.
  - Staff will receive training in the use of the spill kits and will regularly practise as part of the normal operation of the facility.
  - Engineering controls will be employed where these would reduce the potential for spillage (or minimise the impact of spillage), such as bunded areas for fuel storage above ground.

- Shipping activities associated with the proposed development will be compliant with relevant standards and protocols detailed, including Marine and Coastguard Agency guidance: Control and management of ballast water<sup>14</sup>, International Maritime Organisation guidance<sup>15</sup>, Marine Guidance Note (MGN) 512<sup>16</sup> and the guidance relating to carrying solid bulk cargoes safely<sup>17</sup>.

## 6 Effects of the proposals during construction

This section presents the assessment of potential effects to coastal and groundwater quality resulting from the construction phase of the development.

### 6.1 Coastal water quality

For both the development site and the cable laying routes, potential sources of contaminants include the following:

- Over the length of the construction sequence, there is potential for the pollution of coastal waters from sediment run-off, spillages from vehicles/plant and concrete wash-waters or discharges resulting from construction activities.
- Due to the presence of made-ground, there is also potential for contaminated run-off from the stock-piled material.
- Temporary increases in traffic flow and deposits on access roads from construction vehicles and machinery.

If not properly collected and controlled, polluted run-off has the potential to enter coastal waters.

The magnitude of these impacts would be large adverse and short-term in timeframe in the absence of mitigation. For the two recipient coastal waterbodies of Very High sensitivity, the significance of effect on water quality would be **very substantial** and significant. Therefore, mitigation measures including standard practice construction site management are required and detailed in Section 8.1.

### 6.2 Groundwater quality impacts

Sources of potential pollutants to groundwater quality include accidental spills (e.g. fuel from vehicle/plant), silt laden waters from excavation activities or from water contaminated during specific activities, such as concrete pouring/washing.

Foundation and bunker construction provide pathways for pollution to reach groundwater. With no surface water features identified on site, the other potential pathway for pollutants is direct infiltration at the pollutant source.

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<sup>14</sup>Maritime and Coastguard Agency, 2018, Control and management of ballast water

<sup>15</sup> International Maritime Organisation, 2015, MSC.1/Circ.1453/Rev.1

<sup>16</sup> Maritime and Coastguard Agency, 2014, Solid Bulk Cargoes

<sup>17</sup> Lloyd's Register, 2013, Carrying solid bulk cargoes safely

The magnitude of these impacts on groundwater quality would be medium adverse in the absence of mitigation. The significance of effect on the quality of groundwater would be *slight adverse* and not significant. Mitigation measures including the Outline CEMP are outlined in Section 8.1.

## 7 Effects of the proposals in the operational phase

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This section presents the assessment of potential effects to coastal water quality resulting from the operational phase of the development.

Due to the cable routes being either underground or strung through the ports, there is not anticipated to be any operational impacts from the cable routes.

### 7.1 Coastal water quality

For the development site, potential operational sources of contaminants include the following:

- leaks and spills from plant, vehicles and equipment used across the site;
- spillage of fuels, oils or waste material on the local road network generated by HGV traffic accessing the site;
- additional ship movements related to the delivery of waste to the site or the removal of bottom ash;
- contaminated runoff from the site.

The proposed development is forecast to generate approximately 80 two-way HGV movements per day to deliver waste and remove bottom ash under the worst-case scenario of 100% of deliveries being by road. Although this is not a significant traffic volume and will therefore not result in a significant change in road related pollutants, this could result in a residual risk of a spillage of contaminating material, for example fuels and oils.

An environmental management system accredited to ISO 14001 would be implemented during the operation of the site which will minimise the risk and scale of spillage events. The risk of spillage of contaminating material from vehicles will be managed by operational measures such as speed limits and road markings and implementing procedures during delivery or movement of materials. All vehicles carrying RDF into or out of the facility will be covered or sheeted, thereby ensuring the potential for litter to escape is minimised.

There is the potential for delivery and removal of materials to the site to be undertaken by ship. Both procedures would use the crane on the Inner Breakwater to transfer between land and ship. If the proposal was to transfer the incinerator bottom ash (IBA) to Greenwich by ship, it would be stored on the RWE site and then taken by HGV to the Inner Harbour, where it would be transferred by grab crane onto a lighter. It would be stored on the lighter until being transferred by grab crane to the ship.

Risks associated with the transfer of materials by ship could include potential dust, release of leachate or spillage into the aquatic environment. This has the potential to effect water quality within Portland Harbour. Procedures will be detailed within the EMP to minimise and manage spillages and the IBA will be inert.

A maximum increase of 81 ships per year associated with the proposed development represents approximately 10% of the total number of ships that used the port in 2019 and equates to fewer than two additional ships per week on average, which the port has capacity to accommodate. As detailed within Section 5, ship deliveries will be compliant with relevant standards and protocols.

As described in Section 5, subject to agreement with Wessex Water, all process effluent and foul water generated on site will be discharged to the sewer system and taken off-site. Surface water runoff from buildings is collected via gutters and rainwater downpipes and discharged to Balaclava Bay (east). Surface water on roads and hardstanding will be collected by linear drainage channels and external gullies and passed through treatment swales and oil separators prior to discharge into Portland Port (north). Using the green space within the masterplan, opportunities to incorporate SuDS features with water treatment capabilities have also been utilised.

With effective management of surface water run-off, the implementation of an EMP and incorporation of SuDS where possible, the magnitude of impact on coastal water quality is no change. The significance of impact is therefore *neutral* and not significant.

## 8 Mitigation and monitoring

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### 8.1 Construction phase

Measures included within the proposed development design during construction and defined mitigation for the purpose of this assessment include:

- A Construction Environmental Management Plan (CEMP) which has been agreed with the EA and Local Planning Authority will be adhered to. This will ensure industry standard practice working methods and mitigation measures set out in the Environment Agency's Pollution Prevention Guidelines (PPGs) (withdrawn) and Guidance for Pollution Prevention (GPPs) are implemented, this will include measures outlined in:
  - Control of Water Pollution from Construction sites – Guide to Good Practice (SP156);
  - Control of Water Pollution from Construction sites – Guidance for Consultants and Contractors (C532);
  - Environmental good practice on-site (C692); and
  - Groundwater control: design and practice (second edition) (C750)

- An Outline CEMP is provided in Technical appendix C. This provides a framework from which the final CEMP will be developed. Measures intended to prevent impacts upon surface water or groundwater quality include:
  - Appropriate consents for the storage and use of controlled substances will need to be obtained e.g. Oil Storage Regulations, Environmental Permitting Regulations;
  - Temporary drainage facilities to control discharge water from the site, ensuring the suitable treatment of surface water discharges from the site during the construction phase;
  - Management of water and sediment across the site and provisions to minimise the likelihood of run-off, for example the use of sedimats or check-dams to offer filtration;
  - Earthworks will be sequenced to minimise the amount of soil exposed at any one time. This will reduce exposure of soils during removal of existing hardstanding and potential for leaching and infiltration into groundwater;
  - Spill kits kept on-site appropriate to types of materials being stored. Emergency spillage response procedures to be developed and incorporated into CEMP
  - Surface water discharges to controlled waters will require EA consent;
  - Provide containment of spillage to capture or treat wastewaters where necessary;
  - Detail the management of earthworks and stockpiles to prevent releases of run-off and appropriate measures for dealing with any unexpected contamination encountered. This will include appropriate bunding and drainage measures and positioning to limit any impact of surface runoff in the event of extreme rainfall;
  - Include a requirement of a suitable Construction Traffic Management Plan to minimise the risk of accidents and related spillages; and
  - A commitment for regular inspection throughout the construction programme and following completion as agreed with Dorset Council.

## 8.2 Operational phase

As no significant effects are anticipated to arise during the operational phase, no specific additional mitigation measures over and above those described in Section 5 are required.

## 9 Cumulative effects

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This assessment of cumulative impacts has been based on the understanding that the construction of the proposed development is delivered in line the measures contained in the Outline Construction Environmental Management Plan (CEMP) (Technical appendix C). It further assumes that the developments identified to be included in the cumulative effects assessment through the scoping report will be

delivered in accordance with the same environmental standards and require the appropriate level of mitigation at construction and operation to meet regulatory requirements. In addition, it is assumed a surface water management plan will be required for each of the other developments. Therefore, it is predicted that the cumulative impacts are no greater than those from the proposed development in isolation.

## 10 Residual effects

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### 10.1 Construction

#### 10.1.1 Coastal water quality

With the implementation of mitigation measures as outlined in Section 8.1; including a suitable Construction Traffic Management Plan and run-off treatment measures detailed in the Outline CEMP, the magnitude of impact on receiving coastal waterbodies would reduce to negligible.

For the two recipient coastal waterbodies of Very High sensitivity (Portland Harbour and Balaclava Bay), the significance of effect on water quality would be *slight adverse* and not significant. Therefore, no mitigation measures additional to those embedded within the proposed development design and standard practice construction site management are required.

#### 10.1.2 Groundwater quality

With the implementation of mitigation measures outlined in Section 8.1, which include the Outline CEMP, the magnitude of construction impacts on groundwater quality would reduce from moderate adverse to negligible. Therefore, the significance of effect on the quality of groundwater would be *neutral* and not significant.

### 10.2 Operation

With no additional mitigation measures proposed, the residual effects of the proposed development during operation are as stated in Section 7.

## 11 Summary

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This chapter provides an overview of the legislation and policy relevant to coastal and groundwater quality and details the baseline conditions at the development site and surrounding area.

The scope of this assessment covers coastal and ground water quality impacts as a result of construction activities and coastal water impacts as a result of operational activities.

With the implementation of a CEMP which complies with relevant guidelines, as detailed within Section 8.1, the residual significance of effects during construction would be *slight adverse* and *neutral* for coastal waters and groundwater respectively, neither effect are significant.

During the operation phase, pollutant sources will be minimised through effective site management. Treatment measures incorporated into the drainage design in accordance with relevant guidelines remove pollutants from the surface water run-off. The significance of impact of coastal waterbodies during the operational phase is *neutral* and not significant.

The WFD compliance scoping assessment has indicated that the proposed development would not result in a degradation in the status of WFD quality elements or prohibit them from reaching good status in the future.

## References

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Provided as footnotes throughout



Powerfuel Portland Ltd

**Portland Energy Recovery Facility  
(ERF)**

**WFD Compliance Assessment**

WFD/03

Final | 26 August 2020

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 267701-20

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**ARUP**

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**Table 1:** Portland Port project details

**Table 2:** WFD baseline for potentially affected waterbodies

# 1 Introduction

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## 1.1 Project background

Ove Arup and Partners Ltd (Arup) has been commissioned by Powerfuel Portland Ltd to undertake a Water Framework Directive (WFD) Assessment for the proposed development known as Portland Energy Recovery Facility (ERF).

Powerfuel Portland has entered into an agreement for lease with Portland Port in relation to the site and is proposing to develop the site for an energy recovery facility (ERF) fuelled by refuse-derived fuel (RDF). The ERF will be situated on brownfield land owned and managed by Portland Port Authority, the site has been cleared and levelled in preparation for the development.

The 6.29 ha site lies on the north eastern coast of the Isle of Portland, within Portland Port, approximately 600 m east of the villages of Fortuneswell and Castletown (Figure 1.1). The site comprises two elements:

- the 2.14 ha site for the ERF building; and
- 4.15 ha of cable routes to the electricity substation off Lerret Road and to the berths at Queens Pier and Coaling Pier.

## 1.2 Purpose of this report

Under the WFD<sup>1</sup>, all proposed schemes with the potential to impact upon WFD-designated water bodies must be assessed to ensure:

- no deterioration of the current status or potential of any WFD quality elements; and
- no prevention of future attainment of the ‘good’ status or potential objectives of any WFD quality elements.

This report follows guidance produced by the Environment Agency (EA)<sup>2</sup> and The Planning Inspectorate within ‘Planning Inspectorate Advice Note 18’ to produce a WFD Assessment Report which identifies the activities related to the proposed development that may cause deterioration or prevent a water body from meeting its objectives. The report follows the scoping template provided as part of this guidance, along with a detailed impact assessment of residual risk identified.

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<sup>1</sup> European Commission. Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy.

<sup>2</sup> Environment Agency. Water Framework Directive assessment: estuarine and coastal water. Available at: <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters>

## 1.3 Other relevant reports

This WFD Assessment should be read in conjunction with the following key documents that form part of the planning submission for the proposed Development:

- ES Scoping report (see Technical appendix A);
- Main ES Report: This comprises the main text including a description of the proposed Scheme, the baseline conditions, an assessment of the likely significant environmental effects resulting from the proposed development, and proposed measures to mitigate those effects. These chapters comprise supporting figures, plans and other illustrations or visualisations. Key technical chapters of relevance include;
  - Chapter 8: Ground Conditions and Water Quality; and
  - Chapter 10: Natural Heritage.
- ES Technical Appendices: This comprises the supporting technical information such as baseline surveys and detailed impact assessments cross referenced throughout the Main ES Report. Key appendices of relevance include:
  - Outline Construction Environmental Management Plan (CEMP) in Technical appendix C
- Flood Risk Assessment and Drainage Statement

## 2 Legislative context

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The EU WFD has been in force since 2000 and is currently the largest and most influential piece of EU legislation relating to the water environment. The Directive was transposed into UK law by The Water Environment (Water Framework Directive) (England and Wales) Regulations (amended 2017). The Environment Agency is the competent authority responsible for delivering the Directive in England.

The WFD aims to protect and enhance the quality of the water environment across all EU Member States. It takes an integrated approach to the sustainable management of water by considering the interactions between surface water, groundwater and water-dependent ecosystems.

Under the WFD, ‘water bodies’ are the basic management units and are defined as all or part of a river system or aquifer. These water bodies form part of a larger River Basin District (RBD), for which River Basin Management Plans (RBMPs) are developed by EU Member States and environmental objectives are set. These RBMPs are produced every six years, in accordance with the river basin management planning cycle.

The WFD requires all EU Member States to classify the current condition or ‘status or potential’ of surface water and groundwater bodies and to set a series of objectives for maintaining or improving conditions so that water bodies reach and/or maintain ‘good status or potential’. These overall Environmental Objectives are to:

- prevent the deterioration in the status of aquatic ecosystems, protect them and improve the ecological condition of waters;
- aim to achieve at least ‘Good’ status for all water bodies by 2015. Where this is not possible and subject to the criteria set out in the Directive, aim to achieve Good status by 2021 or 2027;
- meet the requirements of Water Framework Directive Protected Areas;
- promote sustainable use of water as a natural resource;
- conserve habitats and species that depend directly on water;
- progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment;
- progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants; and
- contribute to mitigating the effects of floods and droughts.

All new (and current on-going) activities in the water environment now need to be guided by the requirements of the WFD. This includes ensuring that no changes occur that causes a deterioration of current status of a water body or prevents the achievement of the future status objectives of a water body. This principle is now

integrated into the planning permission application process for proposed developments/activities.

### 3 Project details

**Table 1:** Portland Port project details

Your activity	Description, notes or more information
Applicant name	Powerfuel
Name of activity	Develop land within Portland Port for use as an energy plant
Brief description of activity	<p>Proposed development of an energy recovery facility with ancillary buildings and works including administrative facilities, gatehouse and weighbridge, parking and circulation areas, cable routes to ship berths and existing off-site electrical sub-station, with site access through Portland Port from Castletown.</p> <p>The proposed ERF has been designed to treat 183,000 tonnes of RDF per year, with a 10% design tolerance to treat up to 202,000 tonnes should this be necessary in response to changes in calorific value, in order to maintain the efficiency of the plant.</p> <p>Utilities arrangements for the site include:</p> <ul style="list-style-type: none"> <li>• Surface water runoff from the site will be discharged into the sea via treatment measures such as interceptors using existing tidal outfalls. It is proposed that the surface water runoff from buildings is collected via gutters and rainwater downpipes and discharged to Balaclava Bay (east). Surface water on roads and hardstanding will be collected by linear drainage channels and external gullies and passed through treatment swales and oil separators prior to discharge into Portland Port (north);</li> <li>• Subject to formal approval from Wessex Water, it is proposed to discharge all foul water from the proposed development, to Wessex's Water's sewer; and</li> <li>• Process effluents, including boiler blow-down and wash down waters from internal process areas, will be discharged to a foul sewer in accordance with a trade effluent consent, which will be obtained from Wessex Water.</li> </ul>
Location of activity (central point XY coordinates or national grid reference)	SY696742
Footprint of activity (ha)	6.29 ha ERF development site 2.14 ha Cable route 4.15 ha
Timings of activity (including start and finish dates)	The total site preparation and construction programme is expected to last for approximately 30 months (Early to mid-2021 to late 2023), with 24 months of construction and six months for cold and hot commissioning.
Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	RDF deliveries will be via either HGV or ship delivery where RDF would be offloaded at the berth on the Inner Breakwater to the north east of the site and brought into the

	<p>site by HGV along Inner Breakwater Road. If all the waste was delivered by road, 25 deliveries of RDF would need to occur per day, with a further 11 HGVs providing consumables and ash cart-off.</p> <p>With the addition of green space reducing the impermeable catchment within the proposed development, discharge rates will be reduced compared to the existing.</p> <p>The cable route to the electricity substation will run from the main site for the ERF building, through the port along Main Road and out of the port along Castletown and Lerret Road.</p>
<p>Use or release of chemicals (state which ones)</p>	<p>Flue gases will be thoroughly treated before being released to the atmosphere via a stack. The treatment process produces air pollution control residues, which are classified as hazardous waste due to their alkalinity. Opportunities are being investigated to recycle these residues. Incinerator bottom ash will be collected to be taken off site for recycling into construction aggregate, either by ship or by road. Metals will be extracted from the bottom ash for separate recycling.</p> <p>Process effluents, including boiler blow-down and wash down waters from internal process areas, will be discharged to a foul sewer in accordance with a trade effluent consent, which will be obtained from Wessex Water.</p> <p>Relevant potentially polluting sources during construction include: raised suspended sediment concentrations and accidental spills; e.g. concrete or fuel oils from construction plant.</p>

## 4 WFD assessment methodology

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### 4.1 Scope of assessment

The assessment comprises of up to three stages, as recommended by The Planning Inspectorate<sup>3</sup>, to assess the potential for each proposed activity (individually and in combination) to impact on individual (or multiple) WFD quality elements:

1. Screening - exclude any activities that do not need to go through the scoping or detailed assessment stages;
2. Scoping - identify the quality elements that are potentially at risk from the proposed activity and need further detailed assessment; and
3. Detailed Assessment - consider the potential impacts of an activity on bodies of surface and ground water, identify ways to avoid or minimise impacts, and identify if an activity may prevent the water body achieving good status or cause deterioration.

At each screening and scoping stage, if effects are ruled out, no further assessment is required.

### 4.2 Data sources

The following data sets and resources have been used to inform this assessment:

- South West River Basin Management Plan 2015<sup>4</sup>;
- Natural England MAGIC Map – Designated Areas mapping<sup>5</sup>;
- Ordnance Survey (OS) Open Data<sup>6</sup>;
- Environment Agency Ecology and Fish data Explorer<sup>7</sup>;
- Portland Groundsure Report; March 2020<sup>8</sup>
- Arup (2020) Portland ERF Ground Conditions Desk Study (Technical appendix I1);
- Historic OS maps<sup>9</sup>; and

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<sup>3</sup> Advice Note Eighteen: The Water Framework Directive. The Planning Inspectorate, June 2017.

<sup>4</sup> South West River Basin Management Plan 2015. Available at:

<https://www.gov.uk/government/collections/river-basin-management-plans-2015>

<sup>5</sup> Natural England MAGIC website. Available at: <https://magic.defra.gov.uk/MagicMap.aspx>

<sup>6</sup> Ordnance Survey Open Data maps. Available at: <https://www.bing.com/mapspreview>

<sup>7</sup> EA Ecology & Fish data explorer <https://environment.data.gov.uk/ecology-fish/>

<sup>8</sup> Groundsure (30/03/2020) Groundsure Enviroinsight Report for Portland. Ref. GS-6721979

<sup>9</sup> National Library of Scotland – historical OS maps. Available at: <http://maps.nls.uk/os/>



- Water Framework Directive (WFD) data, classifications and mitigation measures from the EA's Catchment Data Explorer website<sup>10</sup>.

## 5 WFD baseline information

The inner breakwater adjacent to the proposed development is the boundary between the Dorset / Hampshire and the Portland Harbour waterbodies. Lyme Bay East waterbody is situated to the west of Portland, 8km along the coastline from the proposed development, due to distance to the proposed development, it is not considered there is a potential to impact on this waterbody.

Although not directly affected by the site, the Fleet Lagoon waterbody is connected to Portland Port via a narrow channel which, at its closest point is located approximately 2.5km to the north west to the site and potential indirect effects are considered. Table 2 provides a summary WFD baseline information for the three identified potentially affected waterbodies.

**Table 2:** WFD baseline for potentially affected waterbodies

WFD Water body <sup>11</sup>	<i>Dorset / Hampshire</i>	<i>Portland Harbour</i>	<i>Fleet Lagoon</i>
Water body ID	<i>GB620705550000</i>	<i>GB680805270000</i>	<i>GB510080077000</i>
River basin district name	<i>South West</i>	<i>South West</i>	<i>South West</i>
Water body type (estuarine or coastal)	<i>Coastal</i>	<i>Coastal</i>	<i>Transitional</i>
Water body total area (ha)	<i>51310.6</i>	<i>1024.4</i>	<i>493.8</i>
Overall water body status (2016)	<i>Moderate</i>	<i>Moderate</i>	<i>Moderate</i>
Ecological status	<i>Moderate</i>	<i>Moderate</i>	<i>Moderate</i>
Chemical status	<i>Good</i>	<i>Good</i>	<i>Good</i>
Target water body status and deadline	<i>Good by 2021</i>	<i>Good by 2021</i>	<i>Moderate by 2015 (due to unfavourable balance of costs and benefits)</i>
Hydromorphology status of water body	<i>Supports good</i>	<i>Not assessed</i>	<i>Supports good</i>
Heavily modified water body and for what use	<i>Not heavily modified</i>	<i>Yes – navigation and harbours</i>	<i>Not designated artificial or heavily modified</i>
Higher sensitivity habitats present	<i>Chalk reef (ha) 24962.19</i> <i>Maerl (ha) 205.80</i>	<i>Subtidal kelp beds (ha) 26.87</i> <i>Subtidal seagrass (ha) 5.01</i>	<i>Intertidal Seagrass Beds (ha) 194 (approx.)</i>

<sup>10</sup>Environment Agency 2017 *Catchment Data Explorer* Accessed at: <http://environment.data.gov.uk/catchment-planning/>

<sup>11</sup> *Water body information can be found in the Environment Agency's catchment data explorer and the water body summary table. Magic maps provide additional information on habitats and protected areas. Links to these information sources can be found in the WFD assessment guidance for estuarine and coastal waters.*

	<i>Subtidal kelp beds (ha)</i> 406.99 <i>Subtidal seagrass (ha)</i> 119.17		
Lower sensitivity habitats present	<i>Cobbles, gravel and shingle (ha)</i> 1013.49 <i>Intertidal soft sediment (ha)</i> 432.64 <i>Rocky shore (ha)</i> 220.96 <i>Subtidal rocky reef (ha)</i> 16747.79 <i>Subtidal soft sediments (ha)</i> 18102.33	<i>Cobbles, gravel and shingle (ha)</i> 10.64 <i>Intertidal soft sediment (ha)</i> 51.86 <i>Rocky shore (ha)</i> 8.79 <i>Subtidal rocky reef (ha)</i> 31.92 <i>Subtidal soft sediments (ha)</i> 893.80	<i>Small sections along coastline: Rockyshore, Gravel &amp; Cobbles</i>
Phytoplankton status	<i>Good</i>	<i>High</i>	<i>Moderate</i>
History of harmful algae	<i>Not monitored</i>	<i>Yes</i>	<i>Yes</i>
WFD protected areas within 2km	<i>Isle of Portland Studland Cliffs SAC adjacent, to the south of the proposed development</i>	<i>Portland Harbour East Shellfish Waters adjacent to the proposed development Portland Harbour West Shellfish Waters 1.3km to the west of the proposed development</i>	<i>Chesil &amp; The Fleet SAC Chesil Beach &amp; The Fleet SPA The Fleet Shellfish Waters</i>

## 6 Screening assessment

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As concluded within the EIA Scoping Assessment (Technical appendix A), there is the potential for effects on groundwater and coastal water quality as a result of leaks / spills and sedimentation during construction. There is also the potential for post-construction pollution of coastal waters by leaks and spills from plant and equipment and contaminated runoff from the site.

Given the proximity of the coastal waterbody and the link between the underlying groundwater and the coastal waters, it is considered that these effects have the potential to pose a potential pathway to effect to the current WFD status of the Dorset / Hampshire and Portland Harbour coastal water bodies. Further assessment of the potential impact on the affected WFD waterbodies is therefore required.

Potential indirect effects on Fleet Lagoon waterbody through the connection to Portland Harbour has been considered. Due to Fleet Lagoon being located 2.5km from the existing outfall into Portland Harbour, it is considered there will be no potential impacts. This is in accordance with the EA guidance<sup>2</sup> stating impacts should be considered up to 1 nautical mile out to sea and the maximum distance of potential impact considered within the below checklist being 2km.

## 7 Scoping assessment

The following tables have been taken from the EA Water Framework Directive assessment: estuarine and coastal waters scoping template <sup>12</sup>.

### 7.1 Hydromorphology

Consider if your activity:	Yes	No	Hydromorphology risk issue(s)
Could impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status		Impact assessment not required	Portland Harbour is of High status, Dorset / Hampshire supports Good  The site is currently impermeable. The proposed development will use existing outfalls and reduce the impermeable area on site, resulting in a lower peak discharge rate. There will therefore be no increase in surface water runoff as a result of the proposed development and no impact on the waterbody hydromorphology.
Could significantly impact the hydromorphology of any water body		Impact assessment not required	As above
Is in a water body that is heavily modified for the same use as your activity	Requires impact assessment		Portland Harbour is heavily modified for navigation and harbours.  There is the potential for waste to be delivered to and removed from the plant by ship, via the existing 50 tonne crane berth on the Inner Breakwater, which would increase ship movements in the area.

<sup>12</sup> Environment Agency. Water Framework Directive assessment: estuarine and coastal water Scoping Template. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/577892/wfd\\_scoping\\_template.odt](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/577892/wfd_scoping_template.odt)

## 7.2 Biology

### Habitats

Higher sensitivity habitats <sup>13</sup>	Lower sensitivity habitats <sup>14</sup>
chalk reef	cobbles, gravel and shingle
clam, cockle and oyster beds	intertidal soft sediments like sand and mud
intertidal seagrass	rocky shore
maerl	subtidal boulder fields
mussel beds, including blue and horse mussel	subtidal rocky reef
polychaete reef	subtidal soft sediments like sand and mud
saltmarsh	
subtidal kelp beds	
subtidal seagrass	

Consider if the footprint <sup>15</sup> of your activity is:	Yes	No	Biology habitats risk issue(s)
0.5km <sup>2</sup> or larger	Yes to Lower Sensitivity Habitat; requires impact assessment		Combined direct and indirect footprint of the proposed development does not exceed 0.5km <sup>2</sup>
1% or more of the water body's area			Not ≤ 1% of water body area
Within 500m of any higher sensitivity habitat			Closest Higher sensitivity habitat 2.7km east of the development
1% or more of any lower sensitivity habitat			Subtidal Soft Sediment to the north of the proposed development in Portland Bay. Footprint of the proposed development does not affect ≥1% area  3.2ha area of Gravel & Cobbles to the west of the proposed development in Balaclava Bay. The footprint of the dispersion plume from a

<sup>13</sup> Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.

<sup>14</sup> Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.

<sup>15</sup> Note that a footprint may also be a temperature or sediment plume. For dredging activity, a footprint is 1.5 times the dredge area.

			site outfall has the potential to affect 1% or more of each of this area.
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## Fish

Consider if your activity:	Yes	No	Biology fish risk issue(s)
Is in an estuary and could affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary		No - Go to next section	N/A
Could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or flow)		No - Go to next section	N/A
Could cause entrainment or impingement of fish		No - Go to next section	N/A

## 7.3 Water quality

Consider if your activity:	Yes	No	Water quality risk issue(s)
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)	Requires impact assessment		No construction activities are to take place below MHSL.  There is the potential for the pollution of coastal waters by leaks and spills from plant and equipment and contaminated runoff from the site both during and post-construction. This presents a potential pathway for increase in suspended solids and decreased oxygen levels.
Is in a water body with a phytoplankton status of moderate, poor or bad		No - Impact assessment not required	Portland Harbour - Good Hampshire / Dorset - High
Is in a water body with a history of harmful algae	Requires impact assessment		Portland Harbour – Yes Hampshire / Dorset – Not assessed
If your activity uses or releases chemicals (for example through sediment disturbance or building works) consider if:	Yes	No	Water quality risk issue(s)
The chemicals are on the Environmental Quality Standards Directive (EQSD) list	Requires impact assessment		Construction:  Disturbance of made ground which may contain chemicals on the EQSD list has the potential to result in a pathway to the sea.  Operation:  It is proposed to discharge surface water runoff from the site into the sea via treatment measures such as interceptors.  Process effluents, including boiler blow-down and wash down waters from internal process areas, will be discharged to a foul sewer in accordance with a trade effluent consent, which will be obtained from Wessex Water.  Surface run-off from the site in the post-construction phase is therefore not anticipated to contain chemicals on the EQSD list.
It disturbs sediment with contaminants above Cefas Action Level 1		No - Impact assessment not required	No disturbance of sediment below MHSL

If your activity has a mixing zone (like a discharge pipeline or outfall) consider if:	Yes	No	Water quality risk issue(s)
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list	Requires impact assessment <sup>16</sup>		<p>Construction:</p> <p>Disturbance of made ground which may contain chemicals on the EQSD list has the potential to result in a pathway to the sea.</p> <p>Operation:</p> <p>It is proposed to discharge surface water runoff from the site into the sea via treatment measures such as interceptors.</p> <p>Process effluents, including boiler blow-down and wash down waters from internal process areas, will be discharged to a foul sewer in accordance with a trade effluent consent, which will be obtained from Wessex Water.</p> <p>Surface run-off from the site in the post-construction phase is therefore not anticipated to contain chemicals on the EQSD list.</p>

<sup>16</sup> Carry out your impact assessment using the Environment Agency's surface water pollution risk assessment guidance, part of Environmental Permitting Regulations guidance.



## 7.4 WFD protected areas

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2km of any WFD protected area <sup>6</sup>	Requires impact assessment		Portland Harbour East Shellfish Waters, adjacent to the proposed development Isle of Portland Studland Cliffs SAC adjacent, to the south of the proposed development. No pathway for effect.

## 7.5 Invasive non-native species (INNS)

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS	Requires impact assessment		The potential increase in ship traffic within Portland Harbour could result in increased risk of introduction or spread of INNS. There are a number of potential sources of INNS from ship movement, ship ballast being one of the main sources through the volume of water exchanged. No construction activities are to take place below MHSL. The CEMP (Technical appendix C) would include measures to prevent the introduction or spread of invasive species as a result of construction activities.

## 7.6 Scoping summary

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	Yes	Portland Harbour is heavily modified for navigation and harbours. There is the potential for waste to be delivered to the plant by ship, via the existing 50 tonne crane berth on the Inner Breakwater, which would increase ship movements in the area.
Biology: habitats	Yes	3.2ha area of Gravel & Cobbles to the west of the proposed development in Balaclava Bay. The dispersion pool footprint has the potential to affect $\leq 1\%$ lower sensitivity habitat area
Biology: fish	No	
Water quality	Yes	There is the potential for the pollution of coastal waters by leaks and spills from plant and equipment and contaminated runoff from the site both during and post-construction. This presents a potential pathway for temporary increase in suspended solids and decreased oxygen levels.

		Portland Harbour is within a water body with a history of harmful algae
Protected areas	Yes	Portland Harbour East Shellfish Waters is adjacent to the proposed development, within Portland Harbour
Invasive non-native species	Yes	The potential increase in ship traffic within Portland Harbour could result in increased risk of introduction or spread of INNS.

## 8 Detailed assessment

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The WFD Scoping Assessment identified potential risks to the following receptors: hydromorphology, lower sensitivity habitats, water quality, WFD protected areas and INNS.

### 8.1 Hydromorphology

The scoping assessment identified a risk to hydromorphology as the development use is the same as the water body's heavily modified designation.

There is the potential for waste to be delivered to the plant by ship, via the existing 50 tonne crane berth on the Inner Breakwater, which would increase ship movements in the area. However, maximum increase of 81 ships per year associated with the proposed development represents approximately 10% of the total number of ships that used the port in 2019 and equates to fewer than two additional ships per week on average, which the port has capacity to accommodate. Therefore, no impact on the overall WFD waterbody status of Portland Harbour is anticipated.

### 8.2 Habitat

The scoping assessment identified a risk to Lower Sensitivity Gravel and Cobbles Habitat immediately adjacent to the proposed development, on the shoreline to the south of the breakwater. The majority of Portland Harbour is classed as Lower Sensitivity Habitat under the WFD with Subtidal Soft Sediment covering the majority of the Harbour area. Further south along the eastern shoreline there are areas of Rocky shore and areas of Subtidal soft sediment, Subtidal rocky reef and Gravel & Cobbles further offshore.

There is no direct impact on this area; however, incorporating the potential for wave action to disperse the discharge, the footprint of the dispersion plume from the outfall into Balaclava Bay has the potential to affect 1% or more of the 3.2ha area of Gravel & Cobbles. The potential effects of the plume on the habitat would relate to water quality and hydromorphology.

The proposed development will use existing outfalls and reduce the impermeable area on site, resulting in a lower peak discharge rate. As concluded within the Water Quality ES Chapter 8, effective treatment of surface run-off via SuDS measures at Portland Harbour and only clean roof water discharge into Balaclava Bay will sufficiently minimise the risk of contaminants leaving the site.

Therefore, the potential water quality and hydromorphology impacts of the scheme are not anticipated to be an impact on the lower sensitivity habitat and no permanent impacts on the status or future potential of WFD quality elements are expected.

## 8.3 Water quality

### 8.3.1 Water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns

The potential pollution source during both construction and post-construction is contaminated runoff from the site resulting from leaks and spills from plant and equipment. This presents a potential pathway for increase in suspended solids and decreased oxygen levels. This could affect both chemical and ecological WFD elements.

The CEMP would be adhered to, to ensure industry standard practice working methods and mitigation measures set out in the Environment Agency's Pollution Prevention Guidelines (PPGs) (withdrawn) and Guidance for Pollution Prevention (GPPs) are implemented. This includes details of the management of water and sediment across both sites and provisions to minimise the likelihood of run-off, provide containment of spillage and capture or treat wastewaters where necessary. These mitigations are intended to prevent impacts upon surface water or groundwater quality. An Outline CEMP is included as Technical appendix C.

As concluded within the Water Quality ES Chapter 8, effective treatment of surface run-off via SuDS measures would sufficiently minimise the risk of contaminants leaving the site.

Therefore, with the above mitigation measures incorporated, no permanent impacts on the status or future potential of WFD quality elements are expected.

### 8.3.2 History of harmful algae

According to WFD classification, Portland Harbour has a history of harmful algae. Harmful algae result from eutrophication, caused by enrichment of water nutrients, especially compounds of nitrogen and/or phosphorus. Sources of nitrogen include nitrogen gases (e.g. nitrogen oxides from ships, which are transferred via the atmosphere to oceans through precipitation), aquaculture, waste water treatment plants and industrial water. The main contribution of human-introduced phosphate comes from domestic and industrial sewage and waste water. Run-off from land is also an important source of phosphate as it is a component of fertilizers.

Subject to formal approval from Wessex Water, it is proposed to discharge all foul water from the proposed development, which would principally be from domestic sources, to Wessex Water's sewer. Process effluents, including boiler blow-down and wash down waters from internal process areas, would be discharged to a foul sewer in accordance with a trade effluent consent, which would be obtained from Wessex Water.

Therefore, the only discharge into Portland Harbour would be surface run-off. As detailed within the Water Quality ES chapter 8, the treatment measures incorporated during the construction and post-construction phases of development

would effectively remove pollutants from surface run-off. The nutrient load of Portland Harbour would therefore not be affected and impacts on the harmful algae are not expected to affect status or future potential of WFD quality elements of this waterbody as a result of the proposed development.

### 8.3.3 Chemicals released from discharge are on the EQSD list

The desk-based assessment shows low concentrations of metals and organic compounds in the made ground soils beneath the site. Disturbance of this ground therefore has the potential to result in a pathway to the sea. The CEMP will be adhered to, to ensure industry standard practice working methods and mitigation measures are implemented to minimise risks to WFD quality elements during the construction phase. This will include mitigation measures management of earthworks and stockpiles to prevent releases of run-off and appropriate measures for dealing with any unexpected contamination encountered.

Therefore, surface water discharge is not expected to affect status or future potential of WFD quality elements as a result of the proposed development.

## 8.4 WFD protected areas

Portland Harbour is a 10.2km<sup>2</sup> waterbody designated as ‘Shellfish Waters’, split into East and West. Portland Harbour East Shellfish Waters are adjacent to the proposed development. These waters place specific restrictions on microbial pollution. As is the case for harmful algae, surface run-off treatment measures included in the scheme design will ensure the nutrient load of Portland Harbour is not affected by the proposed development.

Shipping activities associated with the proposed development will be compliant with relevant standards and protocols detailed, including Marine and Coastguard Agency guidance: Control and management of ballast water<sup>17</sup>, International Maritime Organisation guidance<sup>18</sup>, Marine Guidance Note (MGN) 512<sup>19</sup> and the guidance relating to carrying solid bulk cargoes safely<sup>20</sup>.

Therefore, impacts on the Shellfish Waters Protected Waters are not expected to affect status or future potential of WFD quality elements as a result of the proposed development.

## 8.5 Invasive non-native species

The potential increase in ship traffic within Portland Harbour could result in increased risk of introduction or spread of INNS. As stated within Section 7.5, there are a number of potential sources of INNS from ship movement, ship ballast being one of the main sources through the volume of water exchanged. All relevant standards and protocols will be followed by the ships associated with the

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<sup>17</sup>Maritime and Coastguard Agency, 2018, Control and management of ballast water

<sup>18</sup> International Maritime Organisation, 2015, MSC.1/Circ.1453/Rev.1

<sup>19</sup> Maritime and Coastguard Agency, 2014, Solid Bulk Cargoes

<sup>20</sup> Lloyd’s Register, 2013, Carrying solid bulk cargoes safely

proposed development, including Marine and Coastguard Agency guidance: Control and management of ballast water<sup>21</sup>.

The increase in ship numbers resulting from the proposed development is not considered to result in specifically a greater risk of introduction of INNS than other marine activities. With the increase in ship numbers in the area being negligible in the context of existing ship traffic in the port, the change in ship volume as a result of the proposed development are not expected to affect status or future potential of WFD quality elements as a result of the proposed development.

## 9 Conclusion

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The assessment has considered the potential risks to WFD receptors associated with the proposed development, concluding that the risk which the proposed development poses to the water environment does not, either alone or in-combination with other projects, give rise to any adverse effects upon the Dorset / Hampshire and Portland Harbour coastal WFD water bodies or habitats or prevent them from attaining good status in the future.

This assessment has been based on currently available WFD baseline data and design information for the proposed development. It should be reviewed and updated during construction, particularly if:

- The EA update or provide additional WFD baseline data for the relevant water bodies; and/or
- Significant changes to the nature, spatial extent, scale or construction methods of the proposed development are made.

The outcomes of this assessment should be shared and agreed with the EA (as the regulatory authority for the WFD in England).

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<sup>21</sup> Maritime and Coastguard Agency, 2018, Control and management of ballast water