GOVERNMENT OF WESTERN AUSTRALIA

WESTPORT

# Outer Harbour Port Development, Kwinana

## Environmental Scoping Document

EPA Assessment 2416

## Version control

| Version | Date | Prepared by | Revision | Issued to |
|---|---|---|---|---|
| **1** | May 2024 | Emerge Associates & O2 Marine | V1 preliminary working draft | WPO |
| **2** | June 2024 | Emerge Associates & O2 Marine | V2 draft | WPO |
| **3** | June 2024 | Emerge Associates & O2 Marine | V3 draft | WPO |
| **4** | July 2024 | Emerge Associates & O2 Marine | V4 draft | WPO |
| **5** | July 2024 | Emerge Associates & O2 Marine | V5 draft | WPO |
| **6** | August 2024 | Emerge Associates & O2 Marine | V6 draft | WPO |
| **7** | October 2024 | Emerge Associates & O2 Marine | V7 draft, responding to EPA Services comments. | WPO |
| **8** | October 2024 | Emerge Associates & O2 Marine | V8 draft, updated indicative timing. | WPO |

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# Invitation to make a submission

The Environmental Protection Authority (EPA) invites public submissions on the draft Environmental Scoping Document (ESD) for this Proposal.

The Director General of the Department of Transport on behalf of the State of Western Australia (the Proponent) proposes to construct and operate a new multimodal port in the Kwinana Industrial Area approximately 30 km south of Perth (the Proposal). The draft ESD has been prepared in accordance with the EPA's *Environmental Impact Assessment Procedures Manual (Part IV Divisions 1 and 2) 2021*. The draft ESD outlines the work required and key areas of focus for the environmental review. The Proponent will undertake this work and the information will be used to prepare an Environmental Review Document.

The draft ESD is available for a public review period of 2 weeks from 14 November 2024, closing on 28 November 2024.

**Why write a submission?**

The EPA seeks information that will inform the EPA's consideration of the likely effect of the Proposal, if implemented, on the environment.

The EPA will use the information in the submissions to identify any additional preliminary key environmental factors/issues and the type and extent of any additional work for the environmental review that should be included in the ESD.

Submissions will be treated as public documents unless provided and received in confidence, subject to the requirements of the *Freedom of Information Act 1992*.

**Why not join a group?**

It may be worthwhile joining a group or other groups interested in making a submission on similar issues. Joint submissions may help to reduce the workload for an individual or group. If you form a small group (up to 10 people) please indicate all the names of the participants. If your group is larger, please indicate how many people your submission represents.

**Developing a submission**

The draft ESD specifies the form, content, indicative timing and procedure of the Proponent's environmental review. The ESD also outlines the preliminary key environmental factors, any specific work required and key areas of focus for the environmental review. The likely environmental impacts and the proposed management measures will be addressed in the Environmental Review Document after the Proponent undertakes the studies outlined in the ESD.

You may agree or disagree with, or comment on, the general issues discussed in the draft ESD or on specific elements.

When making comments on the draft ESD:

- Suggest other preliminary key (i.e., most important) environmental factors and/or any additional work you consider would be appropriate.
- Clearly state your point of view and give reasons for your conclusions.
- Reference the source of your information, where applicable.
- Suggest recommendations or alternatives.

**What to include in your submission?**

Include the following in your submission to make it easier for the EPA to consider your submission:

- your contact details – name and address
- date of your submission
- whether you want your contact details to be confidential
- summary of your submission, if your submission is long
- list points so that issues raised are clear, preferably by environmental factor
- refer each point to the page, section and if possible, paragraph of the draft ESD
- attach any reference material, if applicable.

Make sure your information is accurate.

The closing date for public submissions is 28 November 2024.

The EPA prefers submissions to be made electronically via the EPA's website at https://consultation.epa.wa.gov.au.

Alternatively, submissions can be:

- posted to: Chair, Environmental Protection Authority, Locked Bag 10, Joondalup DC, WA 6919, or
- delivered to: Environmental Protection Authority, Prime House 8 Davidson Terrace, Joondalup Western Australia 6027.

If you have any questions on how to make a submission, please contact EPA Services at the Department of Water and Environmental Regulation on 6364 7000.

# 1 Introduction

## 1.1 Proposal

### 1.1.1 Proposal description

The Proposal[1] is to construct and operate a new Outer Harbour[2] Port Development in the Kwinana Industrial Area, which comprises a new port facility, offshore breakwater, landside infrastructure and connections to the road and rail freight network, as well as a second shipping channel into Cockburn Sound. The Proposal has been strategically located within an existing heavy industrial area, which has existing buffers to sensitive land uses.

The general Proposal content description is provided in **Table 1**.

The location of the Proposal is shown in **Figure 1**.

### 1.1.2 Proposal need

The Proposal is the main component of the State Government's Westport Program, which aims to investigate, plan, build and operate a new container port, with integrated road and rail and supply chain networks.

The Westport Program will strategically address the efficiency, transport access and urban amenity issues facing the Port of Fremantle Inner Harbour, which is Western Australia's sole container port that has handled container trade since 1969.

[1] https://www.epa.wa.gov.au/proposals/outer-harbour-port-development-kwinana

[2] The Port of Fremantle currently operates through two harbours; the Inner Harbour at Fremantle and the Outer Harbour at Kwinana within Cockburn Sound and Gage Roads.

*Table 1: General Proposal content description*

| | |
|---|---|
| **Proposal** | **Outer Harbour Port Development, Kwinana** |
| **Proponent** | The Director General of the Department of Transport on behalf of the State of Western Australia |
| **Short description** | The Proposal is to construct and operate a new multimodal port in the Kwinana Industrial Area (KIA), approximately 30 km south of Perth (**Figure 1**).<br><br>The Proposal includes:<br>• A port facility.<br>• Adjacent areas of landside development.<br>• An offshore breakwater.<br>• Dredging for a second main channel from the Indian Ocean to Cockburn Sound, which will be additional and parallel to the existing Success Channel.<br>• Dredging for access channels, turning basins and berthing areas adjacent to the port facility.<br>• Use of dredge material for beneficial re-use (primarily reclamation) and, where required, placement in approved marine placement areas.<br>• Removal of the disused Kwinana Bulk Berth 1 (KBB1) Jetty.<br>• Removal of the KBB2 Jetty, with replacement infrastructure to be constructed as a component of the port facility.<br>• Connections to road and rail infrastructure up to the vicinity of Rockingham Road.<br>• Relocation, removal or upgrade of existing infrastructure, structures and buildings.<br>• Temporary construction infrastructure.<br>• Maintenance of all infrastructure and assets, including maintenance dredging.<br><br>The Proposal has a total development envelope (DE) of approximately 1683 hectares (ha), comprising two discrete areas; the port DE (841 ha) and the second main channel DE (842 ha).<br><br>The terrestrial elements of the Proposal are located within an area of existing heavy industrial land uses within the KIA, serviced by existing road and rail infrastructure. The marine elements of the Proposal are primarily located within Cockburn Sound adjacent to the KIA, whilst the second main channel extends from the northern boundary of Cockburn Sound to the Indian Ocean. |

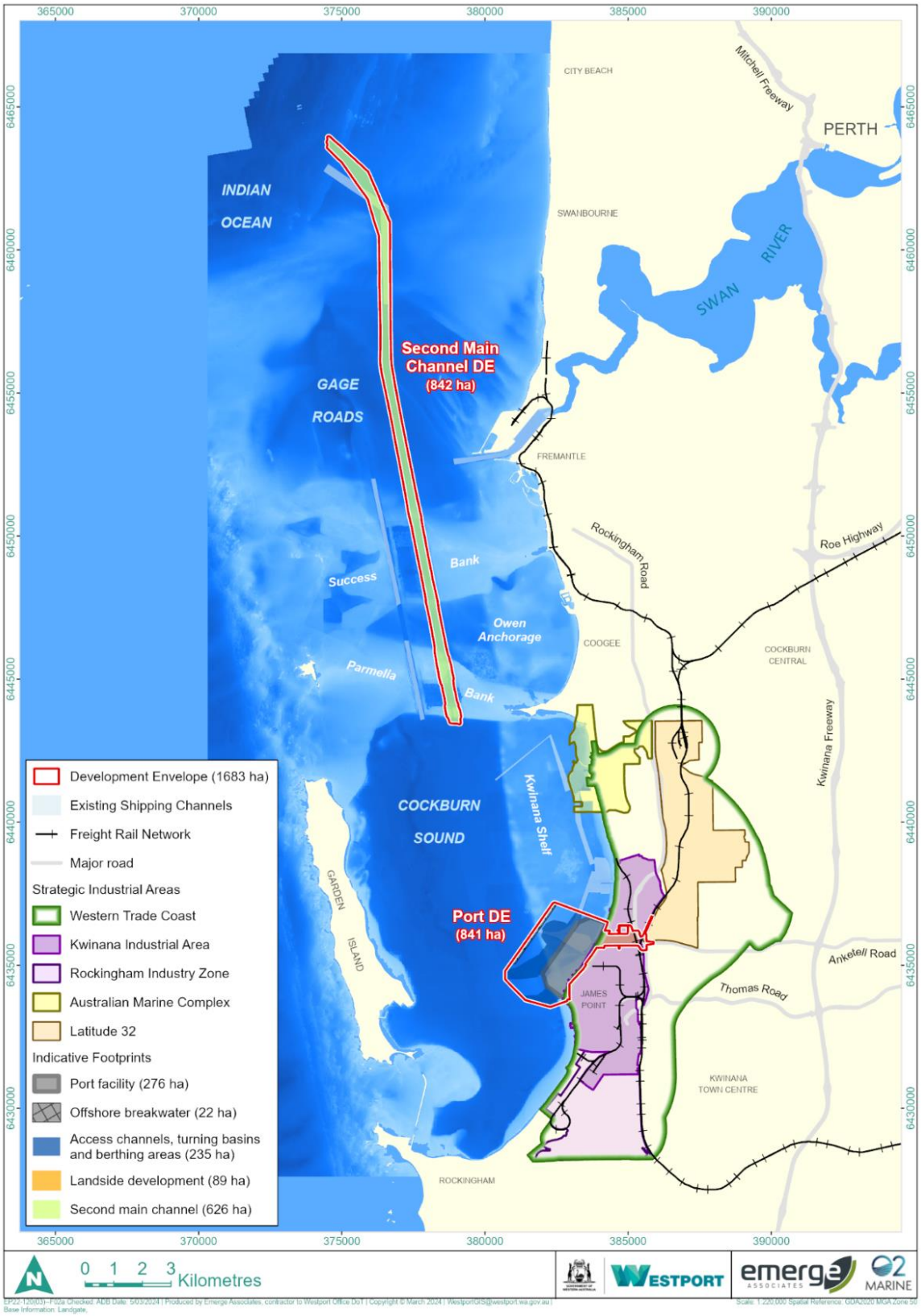


*Figure 1: Proposal location.*

## 1.2 Purpose of this document

The Environmental Protection Authority (EPA) has determined that the Proposal is to be assessed under Part IV of the *Environmental Protection Act 1986* (EP Act), with the level of assessment being a Public Environmental Review (PER). The EPA also determined that the Proponent is to prepare the Environmental Scoping Document (ESD) for the Proposal.

The purpose of the ESD is to define the following elements of the environmental review (as required by Section 40(3) of the EP Act):

- **Procedure** as to how the environmental review will be undertaken (**Section 2**).
- **Indicative timing** of the environmental review (**Section 3**).
- **Form and content** of the environmental review, to be captured in the future Environmental Review Document (ERD). This includes specification of the preliminary environmental factors to be addressed and the required work (including studies and investigations) that needs to be completed (**Section 4**).

The Director General of the Department of Transport on behalf of the State of Western Australia (the Proponent) has prepared this draft ESD according to the procedures in the EPA's Procedures Manual.

The EPA requires the Proponent to undertake the environmental review according to the procedures in the EPA's Administrative Procedures and Procedures Manual, and the Instructions and Template: How to prepare an Environmental Review Document.

The Proponent will undertake a review of the ERD to ensure the requirements of the relevant EPA instructions, templates and guidance have been met. The ERD will include a scoping checklist that identifies the section(s) and page number of the ERD indicating where both all the dot points in the scoping checklist on page 5 of the ERD Template (2021) and the requirements of this ESD can be found.

**Table 2** outlines the general Proposal and Proponent information.

*Table 2: General Proposal and Proponent information*

| **Proposal information** | |
|---|---|
| **Proposal name** | Outer Harbour Port Development, Kwinana |
| **Proponent** | The Director General of the Department of Transport on behalf of the State of Western Australia |
| **Assessment number** | 2416 |
| **Local Government area** | City of Kwinana, City of Cockburn |
| **Public review period** | The EPA determined the following public review periods:<br>• Environmental Scoping Document – 2 weeks<br>• Environmental Review Documents – 8 weeks |
| **EPBC reference no** | 2024/09859 |

# 2 Environmental Review Procedure

## 2.1 WA *Environmental Protection Act 1986*

The Proponent referred the Proposal to the EPA pursuant to the EP Act on 6 March 2024. Following a public comment period between 19 to 25 March 2024, on 27 March 2024 the EPA decided to assess the Proposal and set the level of assessment at Public Environmental Review.

Following EPA approval of the ESD and subsequent completion of the required work specified in the ESD, the ERD will be prepared to describe the Proposal and its potential environmental impacts. The ERD will have two main components.

1. The ERD main report – an integrated, plain-English document that sets out an assessment of the potential impacts. The main report draws on baseline information, technical studies, data, statutory requirements and performance requirements.
2. Supporting technical reports – discipline-based studies and expert investigations and analyses that provide the basis for the ERD main report. They will be provided as appendices to the ERD.

The EPA determined that the ERD will be subject to an eight-week public review period during which members of the public and other stakeholders are provided an opportunity to comment on the ERD.

Following the public review period, the Proponent will respond to submissions received on the ERD. The EPA will then consider the ERD, any submissions received, and the Proponent's response to those submissions, in completing their assessment.

The EPA's report and recommendations will be provided to the Minister for the Environment who will then decide whether to approve the Proposal, and if so to what conditions.

The indicative timing of the environmental review procedure and assessment process is provided in **Section 3**.

## 2.2 Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

The Proposal (also referred to as the 'Proposed Action' for Commonwealth purposes) has been referred to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Public comment on the referral (2024/09859) was conducted between 28 June to 12 July 2024.

On 26 September 2024, a delegate of the Minister for the Environment and Water determined that the Proposed Action is a Controlled Action, meaning it will require assessment and approval under the EPBC Act before it can proceed. The delegate identified the following relevant controlling provisions (i.e. relevant Matters of National Environmental Significance (MNES)):

- Listed threatened species and communities (EPBC Act s18 and s18A)
- Listed migratory species (EPBC Act s20 and s20A)
- Commonwealth marine areas (EPBC Act s23 and s24A)
- Commonwealth land (EPBC Act s26 and s27A).

The delegate determined that the Proposed Action will be assessed by Public Environment Report. Therefore, separate EPBC Act assessment and EP Act assessment processes and documentation for the project will be required. As such, no further consideration of MNES is required in this ESD or as part of the future ERD.

# 3 Environmental Review Indicative Timing

**Table 3** sets out the indicative outline of the timing of the environmental review (indicative timeline), agreed between the EPA and the Proponent.

*Table 3: Indicative outline of the timing of the environmental review (indicative timeline)*

| Key assessment milestones | Indicative timing |
|---|---|
| EPA approves ESD | December 2024 |
| Proponent submits first draft ERD | December 2025 |
| EPA provides comment on first draft ERD<br>*(6 weeks from receipt of ERD)* | March 2026 |
| Proponent submits revised draft Environmental Review Document | May 2026 |
| EPA authorises release of ERD for public review<br>*(2 weeks from EPA approval of ERD)* | June 2026 |
| Proponent releases ERD for public review for 8 weeks | June 2026 |
| Close of public review period | August 2026 |
| EPA provides Summary of Submissions<br>*(3 weeks from close of public review period)* | August 2026 |
| Proponent provides Response to Submissions | February 2027 |
| EPA reviews the Response to Submissions<br>*(4 weeks from receipt of Response to Submissions)* | April 2027 |
| EPA finalises assessment report (including 2 week consultation on draft conditions) and gives report to Minister<br>*(6 weeks from completion of assessment)* | June 2027 |

# 4 Environmental Review Form and Content (Required Work)

The EPA requires that the form of the report on the environmental review required under section 40 of the EP Act is in accordance with the Instructions and Template: How to prepare an Environmental Review Document.

The EPA requires that the content of the ERD is in accordance with the Instructions and Template: How to prepare an Environmental Review Document.

The EPA also requires that the environmental review includes the Proposal-specific additional content outlined in **Section 4**.

## 4.1 Preliminary key environmental factors

Concurrent with the decision that the Proposal requires assessment, the EPA also determined the preliminary key environmental factors that are to be addressed in the ERD, as listed in **Table 4**.

*Table 4: Preliminary key environmental factors to be addressed in the ERD*

| EPA theme | EPA preliminary key environmental factor |
|---|---|
| **Sea** | Benthic communities and habitat |
| | Coastal processes |
| | Marine environmental quality |
| | Marine fauna |
| **Land** | Flora and vegetation |
| | Terrestrial fauna |
| | Terrestrial environmental quality |
| **Water** | Inland waters |
| **People** | Social surroundings |

## 4.2 Specific and/or additional work required for assessment of Proposal for key environmental factors

**Table 5** outlines the Proposal-specific and/or additional work required as it relates to preliminary key environmental factors for the Proposal.

To avoid repetition, the required work that applies to all preliminary key environmental factors is described in the first section of **Table 5**.

*Table 5: Proposal specific and/or additional required work*

| All Environmental Factors | |
|---|---|
| **Required work** | 1) Work to be consistent with the requirements in the Instructions and Template: How to prepare an Environmental Review Document and provided for each factor:<br>• factor objective<br>• relevant policies and guidance<br>• receiving environment<br>• potential environmental impacts<br>• mitigation<br>• assessment and significance of residual impact<br>• environmental outcomes<br>Work required to inform the ERD will be conducted in accordance with the requirements of the most recent EPA Environmental Factor Guidelines and Technical Guidance at the time the ERD is published for each preliminary key environmental factor, and a consolidated report of the surveys and/or investigations undertaken will be provided for each factor. Where previous investigations or surveys are relied upon, justification will be provided to demonstrate that they are relevant and consistent with EPA guidance. |

| Benthic Communities and Habitats (BCH) | |
|---|---|
| **EPA Objective** | To protect benthic communities and habitats so that biological diversity and ecological integrity are maintained. |
| **Relevant activities** | • Capital and maintenance dredging<br>• Land reclamation and excavation<br>• Marine placement of dredge material<br>• Removal of existing marine infrastructure (including jetties)<br>• Construction of marine infrastructure (including breakwater and port facility)<br>• Marine operations (including ship movements and tug operations) |
| **Potential impacts and risks** | Construction phase:<br>• Direct loss (removal and burial) of BCH due to dredging within the indicative footprints and the burial of habitat within the port facility, offshore breakwater, and reclamation area.<br>• Indirect loss or impact to BCH caused by:<br>- reduced benthic light availability due to increased light attenuation by turbidity generated through dredging, reclamation/placement and resuspension;<br>- smothering due to settlement of sediments released by dredging, placement and resuspension; and<br>- release of toxicants and/or nutrients to the water column due to disturbance of sediments.<br>Operations phase:<br>• Indirect loss of BCH caused by altered patterns of longshore sediment transport, and/or bottom shear stresses due to wave shoaling and reflection in front of the port infrastructure, resulting in erosion or smothering of seagrass, creating a 'halo' effect of bare sand.<br>• Indirect loss or impact to BCH caused by chronic turbidity generated through operations at the port, increased vessel traffic and tug propellor wash.<br>• Indirect loss of BCH caused by altered groundwater flows.<br>• Indirect loss or impacts to BCH due to sediment plumes caused by maintenance dredging.<br>• Loss of BCH caused by release of hydrocarbons or other chemical toxicants from vessel or onshore spills.<br>• Loss or displacement of BCH caused by the introduction of marine invasive species. |
| **Required work** | 2) Characterise the BCH within and surrounding the Proposal area (including coral, seagrass, macroalgae, sponges, microphytobenthos and benthic infauna and macrofauna communities) including present and potential future spatial extent as informed by BCH surveys, predictive mapping and available historic data. Prepare mapping of BCH within applicable Local Assessment Units (LAUs). |

| Benthic Communities and Habitats (BCH) | |
|---|---|
| | 3) Assess the values and significance of mapped BCH within the Proposal and adjacent areas and LAUs, including consideration of temporal changes in spatial distribution of ephemeral BCH, and describe these values in a local and regional context. Describe BCH in the context of functional ecological value, significant marine fauna and for supporting commercial and recreational fisheries.<br>4) Describe pressure-response pathways for BCH relevant to the Proposal, as well as other key pressures acting on BCH, considering the sensitivity of BCH and the link between pressure and ecological effect. Quantify relationships and links along pressure-response pathways to inform impact predictions and management.<br>5) Undertake pre-development surveys to characterise relevant physical water quality characteristics that can be affected by dredging activities and how these characteristics vary spatially and temporally considering seasonality and inter-annual variability. Physical parameters to measure include:<br>a) turbidity as nephelometric turbidity units (NTU)<br>b) total suspended solids (TSS)<br>c) seabed light measured as photosynthetically active radiation (PAR) to derive benthic daily light integral (DLI)<br>d) key parameters (e.g. TSS-NTU-light attenuation) to establish relationships necessary to inform impact prediction and management.<br>6) Undertake pre-development surveys to characterise relevant sediment quality and physical characteristics to inform management of dredging and dredge material disposal activities and how these characteristics vary spatially and temporally including:<br>a) physical characteristics (e.g. particle size distribution down to fine clay size class, seawater settling velocity, dry density)<br>b) toxicants (e.g. metals, polycyclic aromatic hydrocarbons, tributyltin)<br>c) nutrients, total organic carbon<br>d) acid sulphate soil (ASS) potential, redox potential and sulphide intrusion.<br>7) Following analysis of relevant studies, investigations and research, prepare a consolidated synthesis report which provides a summary of the analysis and provides a recommended approach with clear rationale and strong evidence base for predicting and managing impacts from the Proposal on the key environmental factor of BCH. The assessment approach described in the synthesis report should be consistent with relevant EPA policy and guidance.<br>8) Describe and assess the direct and indirect impacts to BCH that:<br>a) Aligns with the approaches and standards outlined in *Technical Guidance - Protection of Benthic Communities and Habitats (EPA 2016)* and *Technical Guidance - Environmental Impact Assessment of Marine Dredging Proposals (EPA 2021a)*<br>b) Includes a description of irreversible impacts and the severity and duration of reversible impacts, and the consequences of impacts on, and risks to, biological diversity and ecological integrity at local and regional scales (with specific attention given to seagrass habitats). |

| Benthic Communities and Habitats (BCH) | |
|---|---|
| | c) Includes an estimate of the level of confidence underpinning predictions of residual impacts.<br>d) Gives consideration to plausible events with the potential to significantly impact BCH including marine heat waves and episodic events (e.g. severe storms), the introduction of marine pests, breached reclamation walls, hydrocarbon and other spills.<br>e) Uses hydrodynamic, sediment fate and ecological response modelling to predict indirect impacts to BCH due to construction and operational activities (e.g. change to turbidity regime from capital dredging or generated by ship and tug movements during operations).<br>f) Presents predicted impacts spatially through zonation scheme with most likely best and worst case impact scenarios.<br>9) Identify pressures on BCH resulting from elevated suspended sediment generated during the construction phase (e.g. dredging) and operational phase (e.g. chronic turbidity from tug prop wash) and undertake investigations and assessments to:<br>a) Better understand the susceptibility and resilience of BCH to those pressures.<br>b) Develop and apply tolerance thresholds for key sensitive BCH receptors to the different pressure fields.<br>c) Improve understanding of shading and burial due to natural factors plus changes as a result of elevated suspended sediment concentrations/turbidity.<br>d) Compare patterns in light reaching the seafloor under ambient conditions and those arising from the Proposal.<br>e) Undertake plume dispersion and ecosystem modelling for selected time frames spanning the period of construction and operation, making use of the best available data/information as model inputs to adequately represent climate change, sea level rise and other reasonably foreseeable developments.<br>10) Review the design of existing BCH monitoring programs in Cockburn Sound for their adequacy in supporting monitoring of the Proposal during and post construction activities, including but not limited to seagrasses and infauna. |

| Coastal Processes | |
|---|---|
| **EPA Objective** | To maintain the geophysical processes that shape coastal morphology so that the environmental values of the coast are protected. |
| **Relevant activities** | • Capital and maintenance dredging<br>• Land reclamation and excavation<br>• Marine placement of dredge material<br>• Removal of existing marine infrastructure (including jetties)<br>• Construction of marine infrastructure (including breakwater and port facility)<br>• Marine operations (including ship movements and tug operations)<br>• Sand bypassing and beach nourishment |
| **Potential impacts and risks** | • Permanent alteration of coastal process due to the reclamation and construction of the port facility.<br>• Alteration of direction and magnitude of wave energy and dynamics, current patterns and interruption to longshore sediment transport caused by Proposal construction across the nearshore zone and along adjacent shoreline.<br>• Construction of the offshore breakwater structure having the potential to trap sediment and causing changes to the morphology of the coastal zone and potentially impacting near-shore BCH.<br>• Dredging of the second main channel having the potential to create further interruption of onshore sediment transport from Success and Parmelia Banks.<br>• Potential impacts from the Proposal being exacerbated by sea level rise. |
| **Required work** | 11) Characterise the existing coastal processes, including:<br>a) Analysis of coastal dynamics, variability and trends over at least 20 years to characterise longshore, cross-shore and aeolian processes causing erosional and depositional patterns.<br>b) Spatial quantification of baseline coastal morphology including beach profiles, bathymetry and location of rock/cemented deposits influencing coastal processes.<br>c) Identify and quantify sediment sources, sinks and transport pathways and cross-shore transport rates in relevant nearshore areas, including on Success and Parmelia banks.<br>d) Patterns of erosion, sedimentation and inundation provided by adverse weather events, particularly severe storms.<br>e) Collection of at least 24 months of wave and current data.<br>f) Spatial quantification of changes in coastal morphology using aerial imagery.<br>g) Consideration of all temporal scales, including seasonal, inter-annual and episodic.<br>h) A spatial scale adequate to address coastal processes and patterns likely to be affected by the Proposal. |

| Coastal Processes | |
|---|---|
| | i) An assessment beyond the limits of where impacts are predicted to provide a baseline for subsequent evaluation, for example beach erosion or accretion north or south of the Proposal.<br>12) Following analysis of relevant studies, investigations and research, prepare a consolidated synthesis report which provides a summary of the analysis and provides a recommended approach with clear rationale and strong evidence base for predicting and managing impacts from the Proposal on the key environmental factor of Coastal Processes.<br>13) Assess and describe potential impacts on coastal processes, coastal morphology and beach profiles. The assessment will:<br>a) Provide sufficient temporal and spatial scale to address all impacts resulting from the Proposal to both alongshore and cross-shore sediment transport.<br>b) Be informed by monitoring previously undertaken in the local area.<br>c) Predict near-field responses and beach erosion accretion rate and sand volumes to the proposed coastal facilities, including anticipated updrift and downdrift coastal change.<br>d) Predict changes to local current and wave conditions, longshore sediment movements and erosional and deposition patterns (including cross-shore processes).<br>e) Consider impacts in the context of the latest climate change science and projections.<br>f) Address the frequency, volume and potential impacts and benefits of sand bypassing/back passing.<br>g) Address the requirements of State Planning Policy 2.6 *State Coastal Planning Policy* and the *State Coastal Planning Policy Guidelines*, including preparation of a Coastal Hazard Risk Management and Adaptation Plan.<br>14) Outline the proposed ongoing governance arrangements to manage coastal processes, including the roles and responsibilities for sand bypassing/back passing requirements where required. |

| Marine Environmental Quality (MEQ) | |
|---|---|
| **EPA Objective** | To maintain the quality of water, sediment and biota so that environmental values are protected. |
| **Relevant activities** | • Capital and maintenance dredging<br>• Land reclamation and excavation<br>• Marine placement of dredge material<br>• Removal of existing marine infrastructure (including jetties)<br>• Construction of marine infrastructure (including breakwater and port facility)<br>• Marine operations (including ship movements and tug operations)<br>• Stormwater runoff management |
| **Potential impacts and risks** | Construction phase:<br>• Increase turbidity, suspended sediment concentration and deposition rates (and associated flow-on effects to BCH and water quality for industrial use);<br>• Alter the groundwater regime and resultant discharges to marine environment;<br>• Alter the physical characteristics of adjacent sediments;<br>• Mobilise nutrients and contaminants contained within the sediments;<br>• Temporary reduction in water clarity and light over large areas; and<br>• There is potential for a hydrocarbon release into the marine environment from a vessel spill and/or bunkering operations during construction.<br>Operations phase:<br>• Chronic turbidity and remobilised contaminants generated through operation of the port, increased vessel traffic and tug propellor wash;<br>• Altered nearshore hydrodynamics and/or outfall locations affecting oxygen saturation of bottom waters or assimilation of brine/thermal plumes;<br>• Altered nearshore hydrodynamics, routine port operations or unplanned spills affecting industrial water supply.<br>• Altered nearshore hydrodynamics effecting flushing rates/mixing ability in nearby marinas<br>• Sediment plumes and wrack management resulting from maintenance dredging;<br>• Release of hydrocarbons or other chemical toxicants from vessel or onshore spills; and<br>• Accumulation of antifouls or other toxicants in sediments from vessel hulls or surface water run-off. |
| **Required work** | 15) Characterise the existing MEQ in the area by conducting desktop surveys and baseline water, sediment and biota quality monitoring (over at least two annual cycles). The survey will capture seasonal and spatial variability and parameters will be informed by an assessment of threats and pressures to MEQ. Sampling and analysis is to be conducted and presented in accordance with the supporting documents of the *State Environmental (Cockburn Sound) Policy 2015* and the |

| Marine Environmental Quality (MEQ) | |
|---|---|
| | Australia and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018).<br>16) Develop an integrated response model to support prediction and management of the temporary and long-term effects of pressures from the Proposal on MEQ, and subsequently at an ecosystem level, and the ability of Cockburn Sound to meet established Levels of Ecological Protection (LEPs) and Environmental Quality Objectives (EQOs).<br>17) Following analysis of relevant studies, investigations and research, prepare a consolidated synthesis report which provides a summary of the analysis and a recommended approach with clear rationale and strong evidence base for predicting and managing impacts from the Proposal on the key environmental factor of MEQ. The assessment approach described in the synthesis report should be consistent with relevant EPA policy and guidance.<br>18) Provide an Environmental Quality Plan (EQP, i.e. a map) that is consistent with the *State Environmental (Cockburn Sound) Policy 2015*, or subsequent revisions, and spatially defines the Environmental Values (EVs) to be protected and the EQOs to be achieved and the LEPs that apply to the area.<br>19) Identify environmental risks and elements of the Proposal which may potentially affect MEQ. Describe the marine system and the cause and effect pathways of each element, activity or input from the Proposal on MEQ.<br>20) Describe impact predictions in the context of the EQP for:<br>a) The likely extent, severity and duration of direct and indirect marine-based construction impacts. Predicted impacts will be presented spatially as an overlay of the EQP showing where the EVs to be protected, EQOs and LEPs may not be achieved.<br>b) The likely extent, severity and duration of direct and indirect operational impacts. Predicted impacts will be presented spatially as an overlay on the EQP showing where the EVs to be protected EQOs and spatially defined LEPs will not be achieved. |

| Marine Fauna | |
|---|---|
| **EPA Objective** | To protect marine fauna so that biological diversity and ecological integrity are maintained |
| **Relevant activities** | • Capital and maintenance dredging<br>• Land reclamation and excavation<br>• Marine placement of dredge material<br>• Removal of existing marine infrastructure (including jetties)<br>• Piling<br>• Construction of marine infrastructure (including breakwater and port facility)<br>• Marine operations (including ship movements and tug operations) |
| **Potential impacts and risks** | Construction phase:<br>• Injury from vessel strike during dredging and placement activities;<br>• Underwater noise and vibration impacts from dredging and piling;<br>• Artificial light emissions originating from construction vessels including those associated with dredging altering behaviours;<br>• Loss of marine fauna habitat due to direct removal or disturbance of benthic habitat from dredging;<br>• Increases in turbidity/suspended sediments from dredging and reclamation impacting on foraging fauna, behaviour and/or spawning success;<br>• Entrainment of marine fauna by dredge;<br>• Threats to biosecurity due to the introduction of marine pest species from construction vessels resulting in decline in local marine fauna populations;<br>• Alteration of spawning habitat or reduced spawning success due to changes in hydrodynamics for snapper in Cockburn Sound.<br>Operations phase:<br>• Injury from operational vessel strike;<br>• Underwater noise impacts from maintenance dredging and increased vessel traffic;<br>• Threats to biosecurity due to the introduction of marine pest species from operational vessels;<br>• Artificial light emissions originating from vessels altering behaviours;<br>• Increases in turbidity from vessel movements impacting on foraging fauna, behaviour and/or spawning success. |

| Marine Fauna | |
|---|---|
| **Required work** | 21) Characterise existing marine fauna, faunal assemblages and their physical, and biological requirements. Describe any known uses of the area by marine fauna (e.g. foraging, migrating, calving and nursing, spawning, roosting and nesting). For listed species include:<br>a) An estimate of population size and importance of the population from a local and regional perspective; and<br>b) information on conservation value of each habitat type (e.g. breeding, migration, feeding, nesting etc.), including the percentage representation of each habitat site in relation to its local and regional extent.<br>22) Identify critical habitat and key ecological and environmentally sensitive timeframes for marine fauna in and proximate to the Proposal, including conservation significant or locally important marine fauna, and species important to commercial and recreational fisheries.<br>23) Identify elements of the Proposal which may potentially affect marine fauna including fauna habitat values and at an individual and population scale and the alignment with recovery plans or threat abatement plans.<br>24) Following analysis of relevant studies, investigations and research, prepare a consolidated synthesis report which provides a summary of the analysis and provides a recommended approach with clear rationale and strong evidence base for predicting and managing impacts from the Proposal on the key environmental factor of Marine Fauna. The assessment approach described in the synthesis report should be consistent with relevant EPA policy and guidance.<br>25) Collect baseline underwater noise data for the Cockburn Sound area over at least 12 months and develop a spatial soundscape and undertake modelling to inform the development of a future soundscape (operational phase) to understand the quantum of change in underwater noise as brought about by the Proposal and other developments.<br>26) Use modelling to assess underwater noise from piling, dredging and other construction activities that generate significant underwater noise. Modelling is to delineate the areas within which physical harm and behavioural change (e.g. avoidance behaviours) may occur. Modelling is to outline the extent, magnitude, and duration of potential impacts from underwater noise and will estimate overall noise levels. |

| Flora and Vegetation | |
|---|---|
| **EPA Objective** | To protect flora and vegetation so that biological diversity and ecological integrity are maintained. |
| **Relevant activities** | • Removal of existing landside infrastructure<br>• Clearing<br>• Bulk earthworks<br>• Construction of landside infrastructure<br>• Landside operations (including vehicle and plant movements) |
| **Potential impacts and risks** | • Direct loss, degradation and fragmentation of flora and vegetation through clearing and bulk earthworks of the landside development area.<br>• Indirect loss or impact to flora and vegetation as a result of the introduction or spread of invasive species (pests and weeds) due to construction or operational machinery and vehicles.<br>• Indirect loss or impact to flora and vegetation as a result of the introduction or spread of disease (for example, dieback) due to construction or operational machinery and vehicles. |
| **Required work** | 27) Characterise existing flora and vegetation in a local and regional context by conducting surveys in accordance with EPA guidance. Describe significant (threatened and priority) flora and ecological communities that occur. Consolidate the findings (if relevant) of previously completed or overlapping surveys, into a single survey report.<br>28) Quantify the impacts on threatened and priority flora, including:<br>a) Number of individuals and populations directly or indirectly impacted.<br>b) Number of individuals and populations currently protected within the conservation estate (where known).<br>29) Quantify the impacts on all vegetation units (noting threatened and priority ecological communities), including:<br>a) Area and proportion directly or indirectly impacted.<br>b) Area and proportion of the vegetation type currently protected within conservation estate (where known).<br>30) Describe the management requirements to ensure retained areas of flora and vegetation, if applicable, are maintained. |

| Terrestrial Fauna | |
|---|---|
| **EPA Objective** | To protect terrestrial fauna so that biological diversity and ecological integrity are maintained. |
| **Relevant activities** | • Removal of existing landside infrastructure<br>• Clearing<br>• Bulk earthworks<br>• Construction of landside infrastructure<br>• Landside operations (including vehicle and plant movements) |
| **Potential impacts and risks** | Construction phase:<br>• Direct loss, degradation and fragmentation of fauna habitat through clearing and bulk earthworks of the landside development area.<br>• Mortality of fauna due to interaction with construction equipment.<br>Operations phase:<br>• Mortality of fauna due to interaction with operational equipment. |
| **Required work** | 31) Characterise existing vertebrate and short-range endemic (SRE) invertebrate fauna and fauna habitats in a local and regional context by conducting surveys in accordance with EPA guidance. Consolidate the findings (if relevant) of previously completed or overlapping surveys, into a single survey report.<br>32) Complete targeted surveys for shorebirds, including migratory, marine and terrestrial bird species that utilise shoreline environments.<br>33) Describe significant (threatened and priority) fauna, their known ecology, likelihood of occurrence, habitats and known threats.<br>34) Describe and quantify the impacts on fauna habitat types and significant (threatened and priority) species, including a table specifying the predicted area of each habitat type to be directly impacted and retained. |

| Terrestrial Environmental Quality | |
|---|---|
| **EPA Objective** | To maintain the quality of land and soils so that environmental values are protected |
| **Relevant activities** | • Removal of existing landside infrastructure<br>• Bulk earthworks<br>• Construction of landside infrastructure<br>• Landside operations (including vehicle and plant movements)<br>• Groundwater abstraction and/or dewatering |
| **Potential impacts and risks** | Construction phase:<br>• Disturbance, spread and environmental exposure to existing contaminants within excavated soils during construction.<br>• Introduction of new contaminants into the soil as a result of accidental spills of fuels and other materials used during construction.<br>Operations phase:<br>• Introduction of new contaminants into the soil as a result of accidental spills of fuels and other materials used during operations. |
| **Required work** | 35) Describe the soil units, soil profile and hydrogeological setting and characterise the nature and extent of existing soil and groundwater contamination risks by conducting site investigations consistent with acceptable national and Western Australian standards. Investigations will include a hazardous materials assessment (e.g. asbestos containing materials) and residual risk associated with existing structures and buildings (e.g. underground and above ground, storage tanks, building materials, stored or buried material and on-site liquid disposal).<br>36) Provide evidence of an accredit auditor's endorsement of any preliminary site investigations and the sampling and analysis quality plan, if these are relevant to and required for any detailed site investigations.<br>37) If detailed site investigations are completed, provide a summary report of any preliminary key findings as an appendix to the ERD.<br>38) Describe potential impacts and risks including:<br>a) Disturbance, spread and environmental and human exposure to existing contaminants within soils and groundwater, including from disturbance of existing contaminated sites if relevant.<br>b) Changes to the flow and direction of potentially contaminated groundwater and marine discharge zones. Include consideration of stormwater management arrangements.<br>c) Reuse of dredged marine sediments for land reclamation.<br>d) Introduction of new contaminants as a result of the Proposal.<br>39) Describe any applicable statutory approval processes pursuant to the *Contaminated Sites Act 2003* (WA) that are required to further investigate and remediate existing contamination from historical or adjacent land uses. |

| Inland Waters | |
|---|---|
| **EPA Objective** | To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected. |
| **Relevant activities** | • Construction of marine infrastructure (including breakwater and port facility)<br>• Construction of landside infrastructure<br>• Groundwater abstraction and/or dewatering<br>• Stormwater runoff management |
| **Potential impacts and risks** | • Alteration of groundwater flushing and residence time at the point of contaminated groundwater marine discharge and associated risk of adverse water quality.<br>• Temporary modification of groundwater levels as a result of terrestrial dewatering during construction (if required) to undertake deep excavation.<br>• Impacts to current surface and ground water cycles (alteration of hydrological regimes) resulting in impacts to water dependent values.<br>• Abstraction of groundwater for construction and operational uses (if required), if water quality is confirmed to be suitable for such uses.<br>• Interruption of current groundwater flows into Cockburn Sound due to presence of port facility infrastructure. |
| **Required work** | 40) Characterise the baseline hydrological and hydrogeological regimes, including catchment boundaries, water quality and quantity, water levels, water chemistry, surface water flows and flood patterns. Include information on:<br>a) The saline wedge at the coastal margin and associated groundwater interaction beneath terrestrial and marine areas.<br>b) Existing outfall structures into Cockburn Sound.<br>c) Existing groundwater flow and direction.<br>d) Surface water and groundwater connectively.<br>41) Identify environmental receptors that may be impacted by changes to inland waters as a result of the Proposal.<br>42) Model the potential impacts to groundwater as a result of the Proposal, including:<br>a) Alteration of groundwater levels, flows and direction.<br>b) Changes to marine flushing, residence time and MEQ.<br>c) Temporary modification of groundwater levels due to terrestrial dewatering.<br>d) Alteration of current groundwater flows into Cockburn Sound due to port and land reclamation, which may act as a hydraulic barrier.<br>43) Model the potential impacts to surface water due to the Proposal, including:<br>a) Alteration of stormwater runoff volumes, flows and direction.<br>b) Proposed changes to the stormwater drainage network.<br>44) Describe how stormwater runoff will be treated and managed in accordance with Water Sensitive Urban Design principles. |

| Social Surroundings | |
|---|---|
| **EPA Objective** | To protect social surroundings from significant harm |
| **Relevant activities** | • Capital and maintenance dredging<br>• Land reclamation and excavation<br>• Marine placement of dredge material<br>• Removal of existing marine infrastructure (including jetties)<br>• Removal of existing landside infrastructure<br>• Clearing<br>• Bulk earthworks<br>• Piling<br>• Construction of marine infrastructure (including breakwater and port facility)<br>• Construction of landside infrastructure<br>• Marine operations (including ship movements and tug operations)<br>• Landside operations (including vehicle and plant movements)<br>• Stormwater runoff management<br>• Sand bypassing and beach nourishment |
| **Potential impacts and risks** | • Disturbance to Aboriginal cultural heritage places and cultural associations.<br>• Temporary and permanent constraints to land access and traditional cultural activities.<br>• Disturbance to natural and historic heritage sites during construction.<br>• Impacts on amenity values (including visual landscape, noise, light and dust)<br>• Impacts social values (including aesthetics, recreational, beach access and active use of Cockburn Sound)<br>• Impacts on commercial fishing, aquaculture and tourism operations. |
| **Required work** | 45) Characterise existing social, cultural, amenity, and heritage values and any nearby sensitive receptors whose social surroundings may be impacted by the Proposal. Spatially identify the location of nearby sensitive receptors on a map.<br>**Aboriginal cultural heritage**<br>46) Identify the relevant Aboriginal groups and Traditional Owners who have or will be consulted, and describe how consultation has or will be conducted including:<br>a) Informed consultation on the Proposal and its physical, biological or abiotic impacts on Aboriginal cultural heritage values.<br>b) Information about proposed avoidance and mitigation.<br>c) Opportunity and methods of consultation.<br>d) Presentation of outcomes of any consultation. |

| Social Surroundings | |
|---|---|
| | 47) Conduct an Aboriginal ethnographic and archaeological heritage survey in consultation with Traditional Owners and in accordance with professional practice and guidelines provided by the Department of Lands Heritage and Planning.<br>48) Describe and quantify potential impacts on Aboriginal ethnographic, archaeological and cultural values.<br>49) Describe how the *Aboriginal Heritage Act 1972* (AH Act 1972) processes will address and manage impacts to Aboriginal cultural heritage values, including:<br>a) The scope (Proposal elements or activities within) and boundary of the area likely to be subject to AH Act 1972 processes.<br>b) How the AH Act 1972 processes will consider ACH.<br>c) Likely outcomes of the AH Act 1972 processes.<br>d) Conclude whether AH Act 1972 processes are likely to result in consistency with the EPA's objective for Social Surroundings.<br>50) For impacts to Aboriginal cultural heritage not considered by AH Act 1972 processes, provide the following information:<br>a) The physical or biological impacts and whether they are "on-site" or "off-site" from the area likely to be subject to the AH Act 1972.<br>b) The ACH values likely to be significantly harmed by those impacts, and whether they are likely to be Aboriginal sites under the AH Act 1972.<br>c) The extent and duration of the impacts on ACH, taking cumulative effects into account.<br>d) The proposed avoidance and mitigation of impacts to ACH.<br>e) Residual impacts to ACH values.<br>f) The proposed environmental outcomes to protect ACH values which are likely to be significantly harmed by a physical or biological impact from the Proposal.<br>**Amenity**<br>51) Characterise the current, and any other reasonably foreseeable, land and recreation uses and amenity and landscape values (including valued aspects of character and views).<br>52) Undertake a visual impact assessment (VIA) in accordance with the Western Australian Planning Commission's *Visual landscape planning in Western Australia: a manual for evaluation, assessment, siting and design* (WAPC 2007). The VIA will describe and assess impacts to the visual landscape character and scenic quality values both temporarily and permanently, using reference and vantage points of surrounding areas and using the area's viewer positions and perceptions.<br>53) Assess and predict potential impacts on sensitive receptors from dust and light-spill.<br>54) Undertake a noise and vibration assessment consistent with the *Environmental Protection (Noise) Regulations 1997*, the assessment will consider:<br>a) Potential noise and vibration sources associated with the Proposal's port operations. |

| Social Surroundings | |
|---|---|
| | b) Proposal (only) noise impacts to nearby sensitive receptors.<br>c) Cumulative noise impacts to nearby sensitive receptors.<br>d) If necessary, broad measures to achieve compliance with the *Environmental Protection (Noise) Regulations 1997*, noting that existing cumulative noise emissions from the KIA are known to exceed 'assigned levels' at sensitive receptors under some wind conditions.<br>**Social**<br>55) Undertake a Social Impact Assessment, including community and stakeholder consultation, to identify and assess the potential impacts to the existing recreational and commercial activities reliant upon the physical or biological environment and surroundings of the Proposal. |

## 4.3 Cumulative impact assessment

For the purpose of EIA, cumulative environmental impacts are defined as the total impacts on the environment of a proposal combined with one or more past, present or reasonably foreseeable future activities and pressures.

### 4.3.1 Context

The EPA (2006) has previously highlighted that cumulative marine impacts are a key consideration arising from existing, approved and proposed marine infrastructure and discharges on the eastern shore of Cockburn Sound. The EPA (2006) also expressed concern that the cumulative impacts of proposed developments in Cockburn Sound have, in combination, the potential to either delay or even reverse further improvement in the environmental quality of the Sound. The EPA (2006) highlighted risks that need to be considered from marine cumulative impact assessment perspective, these include:

- impaired ecological processes;
- loss or alteration of habitat;
- changes to nutrient cycling and increased biota stimulation;
- disturbance of sediments and contaminants;
- reduction in light;
- introduction of pest species; and
- reduced flushing times and changed circulation patterns.

These risks are caused by design, project staging, construction or operational activities such as dredging, land reclamation, breakwater construction and ship and tug movements. The above risks may be exacerbated by other impacts not attributable to the Proposal, including climate change and sea level rise.

The above has been considered in preparing this ESD and establishing the proposed cumulative impact assessment framework.

### 4.3.2 Scoping of activities, boundaries and environmental values for relevant environmental factors

The ERD will include cumulative impact assessment for relevant environmental factors and applicable activities, boundaries and environmental values outlined in **Table 6**.

The ESD does not identify past, present or reasonably foreseeable projects that will be considered during the cumulative impact assessment, as these may change over the course of the assessment. These projects will be defined in the ERD, with a preliminary list provided in the previously published referral information.

The Proponent will seek to use available information (for example the EPA website) to gather data to inform cumulative impact assessment, noting that access to non-public data and information on other projects will be subject to attaining agreement from their respective owner/s.

*Table 6: Cumulative impact assessment requirements*

| **Benthic Communities and Habitats** | |
|---|---|
| **Required work** | • Boundaries of assessment – within individual and cumulative to all applicable LAUs, including:<br>  ○ Cockburn Sound LAU<br>  ○ Owen Anchorage LAU<br>  ○ Gage Roads LAU<br>  ○ Deep Water Channel LAU<br>• Environmental values:<br>  ○ Benthic habitats<br>  ○ Benthic communities<br>• Activities considered:<br>  ○ Capital and maintenance dredging<br>  ○ Land reclamation and excavation<br>  ○ Marine placement of dredge material<br>  ○ Removal of existing marine infrastructure (including jetties)<br>  ○ Construction of marine infrastructure (including breakwater and port facility)<br>  ○ Marine operations (including ship movements and tug operations) |
| **Coastal Processes** | |
| **Required work** | • Boundaries of assessment – within individual and cumulative to all applicable LAUs, including:<br>  ○ Cockburn Sound LAU<br>  ○ Owen Anchorage LAU<br>  ○ Gage Roads LAU<br>  ○ Deep Water Channel LAU<br>• Environmental values:<br>  ○ Coastal morphology and stability<br>• Activities considered:<br>  ○ Capital and maintenance dredging<br>  ○ Land reclamation and excavation<br>  ○ Marine placement of dredge material<br>  ○ Removal of existing marine infrastructure (including jetties)<br>  ○ Construction of marine infrastructure (including breakwater and port facility)<br>  ○ Marine operations (including ship movements and tug operations)<br>  ○ Sand bypassing and beach nourishment |

| Marine environmental quality | |
|---|---|
| **Required work** | • Boundaries of assessment – alignment with the *State Environmental (Cockburn Sound) Policy 2015* policy area in relation to the following LAUs:<br>  ○ Cockburn Sound (inside SEP)<br>  ○ Owen Anchorage, Gage Roads and Deep Water Channel (outside SEP)<br>• Environmental values – per *State Environmental (Cockburn Sound) Policy 2015*:<br>  ○ Ecosystem health<br>  ○ Fishing and aquaculture<br>  ○ Recreation and aesthetics<br>  ○ Cultural and spiritual<br>  ○ Industrial water supply<br>• Activities considered:<br>  ○ Capital and maintenance dredging<br>  ○ Land reclamation and excavation<br>  ○ Marine placement of dredge material<br>  ○ Removal of existing marine infrastructure (including jetties)<br>  ○ Construction of marine infrastructure (including breakwater and port facility)<br>  ○ Marine operations (including ship movements and tug operations)<br>  ○ Stormwater runoff management |
| **Marine fauna** | |
| **Required work** | • Boundaries of assessment – collective boundary of the following LAUs:<br>  ○ Cockburn Sound LAU<br>  ○ Owen Anchorage LAU<br>  ○ Gage Roads LAU<br>  ○ Deep Water Channel LAU<br>• Environmental values:<br>  ○ Conservation significant (threatened and priority) species<br>  ○ Iconic species (little penguin, Australian sea lion, Indo-Pacific bottlenose dolphin)<br>  ○ Recreationally targeted species<br>  ○ Commercial fisheries<br>• Activities considered:<br>  ○ Capital and maintenance dredging<br>  ○ Land reclamation and excavation<br>  ○ Marine placement of dredge material<br>  ○ Removal of existing marine infrastructure (including jetties)<br>  ○ Piling<br>  ○ Construction of marine infrastructure (including breakwater and port facility)<br>  ○ Marine operations (including ship movements and tug operations) |

| Flora and vegetation | |
|---|---|
| **Required work** | • Boundaries of assessment:<br>  ○ Swan Coastal Plain IBRA region<br>• Environmental values:<br>  ○ Native vegetation<br>  ○ Conservation significant (threatened and priority) species<br>  ○ Conservation significant (threatened and priority) ecological communities<br>• Activities considered:<br>  ○ Removal of existing landside infrastructure<br>  ○ Clearing<br>  ○ Bulk earthworks<br>  ○ Construction of landside infrastructure<br>  ○ Landside operations (including vehicle and plant movements) |
| **Terrestrial fauna** | |
| **Required work** | • Boundaries of assessment:<br>  ○ Swan Coastal Plain IBRA region<br>• Environmental values:<br>  ○ Fauna habitat (based on native vegetation)<br>  ○ Conservation significant (threatened and priority) species, including locally significant species.<br>• Activities considered:<br>  ○ Removal of existing landside infrastructure<br>  ○ Clearing<br>  ○ Bulk earthworks<br>  ○ Construction of landside infrastructure<br>  ○ Landside operations (including vehicle and plant movements) |
| **Inland waters** | |
| **Required work** | • Boundaries of assessment:<br>  ○ Kwinana Industrial Area and hydrologically upstream areas up to the Beeliar Wetland chain.<br>• Environmental values:<br>  ○ Groundwater<br>• Activities considered:<br>  ○ Construction of marine infrastructure (including breakwater and port facility)<br>  ○ Construction of landside infrastructure<br>  ○ Groundwater abstraction and/or dewatering<br>  ○ Stormwater runoff management |

| Social surroundings | |
|---|---|
| **Required work** | • Boundaries of assessment – Kwinana Industrial Area, adjacent recreational areas (Woodman Point Regional Park and the Mt Brown section of Beeliar Regional Park) and collective marine boundary of the following LAUs:<br>  ○ Cockburn Sound<br>  ○ Owen Anchorage<br>  ○ Gage Roads<br>  ○ Deep Water Channel<br>• Environmental values:<br>  ○ Aboriginal cultural heritage<br>  ○ Amenity (visual, noise, light, dust)<br>  ○ Social values associated with physical or biological values<br>• Activities considered:<br>  ○ Capital and maintenance dredging<br>  ○ Land reclamation and excavation<br>  ○ Marine placement of dredge material<br>  ○ Removal of existing marine infrastructure (including jetties)<br>  ○ Removal of existing landside infrastructure<br>  ○ Clearing<br>  ○ Bulk earthworks<br>  ○ Piling<br>  ○ Construction of marine infrastructure (including breakwater and port facility)<br>  ○ Construction of landside infrastructure<br>  ○ Marine operations (including ship movements and tug operations)<br>  ○ Landside operations (including vehicle and plant movements)<br>  ○ Stormwater runoff management<br>  ○ Sand bypassing and beach nourishment |

## 4.4 Holistic impact assessment

Holistic impact assessment considers the connections and interactions between impacts, and the overall impact of the Proposal on the environment as a whole. Where the combination of the environmental effect of two or more environmental factors or values has the potential to result in a significant impact, a holistic impact assessment of the Proposal on the environment is required.

Given the high degree of connections and interactions between environmental factors and values applicable to the Proposal, a holistic impact assessment will be undertaken and documented in the ERD. The scope of the holistic impact assessment will include the following:

- Outline the connections and interactions between environmental factors or values that in combination have the potential to have a significant effect on the environment.
- Provide a diagram of the links between environmental factors or values.
- Summarise the potential combined environmental effects.
- Summarise any additional mitigation measures proposed to mitigate combined environmental effects.
- Summarise any significant residual combined environmental effects.
- Summarise proposed additional environmental outcomes for the Proposal on the environment as a whole, and (optional) any proposed conditions for consideration by the EPA.
- Provide a summary of the environmental effect of the Proposal on the environment as a whole (as distinct from a summary of the effect for each individual environmental factor or environmental value).

An integrated and coupled water quality modelling platform is currently under development for Cockburn Sound, which will be able to link hydrodynamics, biogeochemistry and essential ecosystem processes. The integrated modelling will allow quantification of the links between water quality and benthic communities such as seagrass in Cockburn Sound. The model will be used in collaboration with other information to assess the holistic impacts of the Proposal.

## 4.5 Offsets

The Western Australian Environmental Offsets Policy (2011) and Western Australian Environmental Offsets Guidelines (2014) defines an environmental offset as *'an offsite action or actions to address significant residual environmental impacts of a development or activity'*.

Offsets are not appropriate for all proposals. They should usually only be considered as the final step in the mitigation hierarchy and only for significant residual impacts for environmental factors.

If significant residual impacts of the Proposal are identified, then the Proponent may propose an appropriate offset (or a package of offsets) to counterbalance significant residual impacts.

Where offsets are proposed, the Proponent must:

- Identify and quantify the significant residual impacts and proposed offsets, including completing the offset template (an example is in Appendix 1 of the WA Offsets Guidelines) and the residual impact significance model table (an example is on Page 11 of the WA Environmental Offsets Guideline).
- Provide details of the proposed offset including but not limited to:
    - objectives and outcomes
    - description of actions to be undertaken
    - specific and measurable success criteria
    - timelines and milestones
    - monitoring to assess offset implementation
    - reporting details and timing
    - financial arrangements
    - risks and contingency measures
    - governance arrangements including responsibilities and legal obligations
    - provide evidence of consultation on offset with relevant stakeholders.
- Provide sufficient evidence about and assess whether (and how) the proposed offset is likely to counter-balance a significant residual impact. Conclusions about this cannot be based on assumptions or conjecture.
- Demonstrate consideration of the six Principles outlined in the WA Environmental Offsets Policy (2011) and WA Environmental Offsets Guidelines (2014).
- Outline how the offset aligns with relevant plans and policies, such as recovery plans.
- Provide evidence that supports the success or viability of the offset (include as an appendix where required).

## 4.6 Stakeholder consultation

The Proposal has a large and diverse range of stakeholders, such as the local community, Traditional Owners, decision-making authorities, other relevant state (and Commonwealth) government agencies and local government authorities, academics and thought leaders, non-government organisations, industry groups and associations, marine service providers, other national and international ports, rail and intermodal terminal operators, recreational and environmental groups, shipping lines and stevedores.

Extensive stakeholder engagement has been undertaken across all stages of the Westport Program to date, with a detailed description of this engagement provided in the publicly available referral document for the Proposal. The Proponent will continue to consult and engage with stakeholders who are affected by or are interested in the Proposal.

The Proponent must document the following in the ERD:

- List the key stakeholders for the Proposal.
- Discuss the stakeholder identification process.
- Discuss the process for stakeholder engagement for the Proposal, including ongoing consultation.

- Include outcomes of consultation with stakeholders and a detailed response to issues raised by them (or reference the section in the ERD where they are addressed) (ERD Template Table 5). Identify who was consulted, summary of discussions, key issues / matters raised, outcomes and whether matters raised were resolved or outstanding.
- Do not include generic outcomes of discussions with decision making authorities – do include specific outcomes.
- Justify if consultation has not been undertaken.

## 4.7 Matters of National Environmental Significance

As discussed in **Section 2.2**, separate EPBC Act assessment and EP Act assessment processes and documentation for the project will be required. As such, no further consideration of MNES is required as part of the future ERD.

# 5 Decision-making Authorities

The Proponent has identified the State decision-making authorities listed in **Table 7** for this Proposal. The identified State decision-making authorities are the same as those identified in the EPA referral determination. Additional decision-making authorities may be identified during the course of the assessment.

Commonwealth decision-making authorities are not listed in **Table 7**, however will include the Commonwealth Minister for Environment for the:

- *Environment Protection and Biodiversity Conservation Act 1999*, in relation to approval for an action.
- *Environment Protection (Sea Dumping) Act 1981*, in relation to approval for loading and dumping of waste at sea and the placement of artificial reefs.

Information about how DMAs processes can meet expected outcomes and EPA objectives is preliminary or may be unknown at this ESD stage. Completion of the information in **Table 7** and **Table 8** will be provided in the ERD on a per impact basis.

The ERD will consider the EPA's (2021c) *Interim Guidance: Taking decision making processes into account in EIA,* in discussion of whether and how statutory decision-making processes can mitigate impacts on the environment and whether or not the EPA's factor objectives can be met through those processes.

*Table 7: Decision-making authorities and processes*

| Decision-making authority | Legislation or Agreement regulating the activity | Approval required (and specify which Proposal element the approval is related to) |
|---|---|---|
| Chairman, Western Australian Planning Commission | *Planning and Development Act 2005* | s135 subdivision and amalgamation of land<br>s115 development approval within planning control area |
| Chief Dangerous Goods Officer, Department of Mines, Industry Regulation and Safety | *Dangerous Goods Safety Act 2004* | Storage and handling of dangerous goods<br>Operation of major hazard facilities |
| Chief Executive Officer, City of Kwinana | *Health Act 1911* and *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulation 1974* | Treatment of sewage for a single dwelling or any other building that produces less than 540 litres of sewage per day |
| | *Building Act 2011* | Building permit (worker accommodation, offices etc) |
| Chief Executive Officer, Department of Biodiversity, Conservation and Attractions | *Biodiversity Conservation Act 2016* | Authority to take flora and fauna (other than threatened species) |
| Chief Executive Officer, Department of Water and Environmental Regulation | *Environmental Protection Act 1986* | Part V works approval and licence |
| Director General, Department of Transport | *Marine Navigational Aids Act 1973*<br>*Navigable Waters Regulations 1958* | Reg 8 permission to throw into or place things in port, harbour or navigable waters |
| Minister for Aboriginal Affairs | *Aboriginal Heritage Act 1972* | s18 consent to impact a registered Aboriginal heritage site |
| Minister for Environment | *Biodiversity Conservation Act 2016* | s40 authority to take or disturb threatened species<br>s45 authority to modify occurrence of a threatened ecological community |
| | *Contaminated Sites Act 2003* | s58 disturbance of contaminated sites |

| Decision-making authority | Legislation or Agreement regulating the activity | Approval required (and specify which Proposal element the approval is related to) |
|---|---|---|
| Minister for Finance | *Public Works Act 1902* | Provides for public work, which includes railways, harbours and ports, and roads |
| Minister for Lands | *Land Administration Act 1997* | s79 lease of Crown land<br>s91 licence over Crown land<br>s144 easement over Crown land<br>s57 lease of land above or below a road<br>s183 authority to enter land for the purposes of constructing railway and any ancillary public works |
| Minister for Planning | *Planning and Development Act 2005 (P&D Act)* | Scheme amendments |
| Minister for Ports | *Port Authorities Act 1999* | s28 lease/licence/easement of land within control of Port Authority<br>s27 Approval for Port Authority to sell port land that is Crown land |
| Minister for Transport | *Main Roads Act 1930* | Approval to construct roads |
| | *Marine and Harbours Act 1981* | s12 seabed lease (where land is vested in the Minister under s9) |
| | *Government Railways Act 1904* | For the maintenance and management of government railways |
| | *Rail Freight System Act 2000* | For the identification and management of railway land corridors |
| Minister for Water | *Rights in Water and Irrigation Act 1914* | s17 permit to interfere with beds and banks<br>s5C licence to take water<br>s26D licence to construct or alter a well<br>Dewatering licence |
| *And other DMAs as identified.* | | |

*Table 8: Other statutory decision-making process which can mitigate potential impacts on the environment*

| Environmental impact | How is the impact regulated by other decision-making process(es)? | Limit(s) of the decision-making process(es) to regulate the impact eg time limits, excluded operations | Likely environmental outcome of decision-making process(es), and consistency with EPA objective | Conditions, enforcement, and review process required by decision-making process(es) | Stakeholder engagement in decision-making process(es) |
|---|---|---|---|---|---|
| *Proponent to populate in the ERD.* | | | | | |

# 6 Abbreviations

| | |
|---|---|
| **ASS** | Acid sulfate soils |
| **BCH** | Benthic communities and habitats |
| **DCCEEW** | Department of Climate Change, Energy, the Environment and Water (Commonwealth) |
| **DE** | Development envelope |
| **DLI** | Daily light integral |
| **DMA** | Decision-making authority |
| **DPLH** | Department of Planning, Lands and Heritage |
| **DWER** | Department of Water and Environmental Regulation |
| **EIA** | Environmental impact assessment |
| **EP Act** | *Environmental Protection Act 1986* (WA) |
| **EPA** | Environmental Protection Authority |
| **EPBC Act** | *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) |
| **EQO** | Environmental Quality Objective |
| **EQP** | Environmental Quality Plan |
| **ERD** | Environmental Review Document |
| **ESD** | Environmental Scoping Document |
| **EV** | Environmental Value, for the purpose of the Cockburn Sound SEP |
| **ISC** | Infrastructure Sustainability Council |
| **KBB** | Kwinana Bulk Berth |
| **KIA** | Kwinana Industrial Area |
| **LAU** | Local assessment unit |
| **LEP** | Level of Ecological Protection |
| **MEQ** | Marine environmental quality |
| **MNES** | Matters of National Environmental Significance |

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|---|---|
| **NTU** | Nephelometric turbidity units |
| **PAR** | Photosynthetically active radiation |
| **PCD** | Proposal Content Document |
| **PER** | Public Environmental Review |
| **SEP** | *State Environmental (Cockburn Sound) Policy 2015* |
| **SRE** | Short-range endemic |
| **SSC** | Suspended sediment concentration |
| **TSS** | Total suspended solids |
| **VIA** | Visual impact assessment |
| **WAPC** | Western Australian Planning Commission |
| **WPO** | Westport Project Office |
| **WSUD** | Water Sensitive Urban Design |

# 7 References


ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at <www.waterquality.gov.au/anz-guidelines>

EPA (2006) *Fremantle Ports Outer Harbour Project – Advice to the Minister for the Environment from the Environmental Protection Authority (EPA) under Section 16(e) of the Environmental Protection Act 1986*, Bulletin 1230, EPA, WA

EPA (2016) *Technical Guidance – Protection of Benthic Communities and Habitats*, EPA, WA

EPA (2021a) *Technical Guidance – Environmental Impact Assessment of Marine Dredging Proposals*, EPA, WA

EPA (2021b) *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual*, EPA, WA

EPA (2021c) *Interim Guidance – Taking decision-making processes into account in EIA*, EPA, WA

EPA (2024) *Instructions: How to prepare an environmental review document*, EPA, WA

Government of Western Australia (2011) *WA Environmental Offsets Policy*

Government of Western Australia (2014) *WA Environmental Offsets Guidelines*

Government of Western Australia (2015) *State Environmental (Cockburn Sound) Policy 2015*

WAPC (2007) *Visual Landscape Planning in Western Australia: A manual for evaluation, assessment, siting and design*, WAPC, WA