



6 IMPACT VALIDATION (OPERATION) STAGE 4

A program of proactive and reactive management measures, integrated with routine and reactive monitoring, has been developed to limit the impacts of operation of the ocean outlet to those predicted in Section 4.5. The following sections define the management and monitoring actions associated with key environmental elements to be implemented during operation. These actions are intended to minimise and validate predicted impacts.

Operation of the ocean outlet in this section refers to the ongoing presence of the pipeline in the environment, as well as the potential impacts of any maintenance undertaken on the pipeline. The impacts of ocean outlet discharge are outside the scope of this document and are covered in a separate document that will be prepared to satisfy Ministerial Condition 11.

6.1 Element 1: Water Quality

6.1.1 Summary of Predicted Impacts

The primary predicted impact on water quality is the potential for fuel spills or leaks during maintenance activities. Although a major spill or leak is not predicted to occur, emergency procedures must be in place in case of such an incident. A minor risk of small scale incidents also exists.

6.1.2 Procedures

| Element | Water Quality |
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| Performance Objective | <ul style="list-style-type: none"> To minimise the potential for and impact of fuel spills or leaks during maintenance activities. |
| Proactive Management Actions | <ul style="list-style-type: none"> A program of regular preventative maintenance will be implemented for all vessels and equipment to be used during operation of the ocean outlet. Prior to commencement of maintenance work, all vessels and equipment will be inspected by a qualified mechanic to reduce the risk of fuel spills and leaks. All wastes and spillages will be contained on board vessels and appropriate storage and disposal practices will be implemented. A spill cleanup kit will be provided to deal with spills on the maintenance vessels and an oil spill boom will also be available at all times for containment of spills on water. |
| Performance Indicators | <ul style="list-style-type: none"> No contamination of the marine environment by hazardous substances from maintenance activities. In the event of a spill to the marine environment, the aforementioned procedures have been undertaken. |



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| Monitoring | <ul style="list-style-type: none"> • Maintenance Contractor to monitor the maintenance activities on a continual basis and report any incidents that are likely to cause environmental harm to the project location and surrounding areas. |
| Responsibility | <ul style="list-style-type: none"> • The AWA Environment Manager is responsible for ensuring that each of the monitoring programs is implemented. These programs may be subcontracted to a specialist sub-consultant. • The Maintenance Contractor is responsible for monitoring all maintenance operations and undertaking management actions assigned to them. |
| Reporting | <ul style="list-style-type: none"> • The Maintenance Contractor will immediately report any incidents affecting water quality to the AWA Environment Manager. • The Maintenance Contractor must complete an environmental incident report and corrective action report as soon as practicable, but within 24 hours of an incident occurring, and forward this to the AWA Environment Manager. • The AWA Environment Manager must report, to the Regulatory Committee, any incidents affecting water quality within 24 hours. |
| Corrective Action | <ul style="list-style-type: none"> • In the event of a spill to the marine environment, the dredging contractor is to undertake the following procedure: <ul style="list-style-type: none"> ▪ Stop the source of the spill. ▪ Prevent the oil/chemical from entering the water and mop up the spill with appropriate absorbent material from the onboard spill kit. The absorbent material is to be stored onboard until it can be appropriately disposed of offshore to a licensed facility. ▪ Notify the following personnel immediately: <ul style="list-style-type: none"> • AWA Marine Superintendent – Paul Harries 0417 099 433 • AWA Oil Response – Kate McManus 0448 978 752 • AWA Environment Manager – Jason Hick 0409 940 969 • After details of the incident have been confirmed and compiled into an incident report, AWA will coordinate the notification of relevant agencies and additional stakeholders. |

6.2 Element 2 Benthic Primary Producer Habitat

6.2.1 Summary of Predicted Impacts

Potential impacts to BPPH may result from launching and anchoring of vessels (including for maintenance) during operation, as well as from erosion halos underneath the pipeline.



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6.2.2 Procedures

| Element | Benthic Primary Producer Habitat |
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| Performance Objective | <ul style="list-style-type: none"> To avoid loss of BPPH during to launching and anchoring of vessels during operation. |
| Proactive Management Actions | <ul style="list-style-type: none"> Skippers will be instructed on the environmental sensitivities of the area and their responsibility in regard to protecting BPPH. Vessels shall not be launched within or close to seagrass beds and vessel routes shall avoid areas with shallow seagrass beds. 'Cyclone' rather than 'Swing' moorings shall be installed where moorings are required. There shall be no anchoring of vessels within seagrass areas unless in an emergency situation. The Maintenance Contractor will ensure that all equipment is not significantly fouled and does not contain any introduced marine pests. Preventative maintenance will be undertaken in areas with the potential for erosion halos to occur. |
| Performance Indicators | <ul style="list-style-type: none"> No net loss of BPPH resulting from operation of the ocean outlet. |
| Monitoring | <ul style="list-style-type: none"> For the first 2 to 3 years of operation, surveys will be undertaken to monitor the extent of BPPH. This will be compared to pre-construction and post-construction surveys. Monitoring techniques identical to those used during construction will be utilised. Maintenance Contractor to monitor the maintenance activities on a continual basis and report any incidents that are likely to cause loss of BPPH in the project location and surrounding areas. |
| Responsibility | <ul style="list-style-type: none"> The AWA Environment Manager is responsible for ensuring that each of the monitoring programs is implemented. These programs may be subcontracted to a specialist sub-consultant. The Maintenance Contractor is responsible for monitoring all maintenance operations and undertaking management actions assigned to them. |
| Reporting | <ul style="list-style-type: none"> The Maintenance Contractor will immediately report any incidents affecting BPPH to the AWA Environment Manager. The Maintenance Contractor must complete an environmental incident report and corrective action report as soon as practicable, but within 24 hours of an incident occurring, and forward this to the AWA Environment Manager. |



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- The AWA Environment Manager must report, to the Regulatory Committee, any incidents affecting BPPH within 24 hours.
- A report will be prepared and submitted to the DEC CEO annually for at least the first three years of operation, detailing the extent of BPPH in the vicinity of the ocean outlet and any proposed or completed rehabilitation.

Corrective Action

- An investigation will be undertaken into the cause of any net loss of BPPH.
- Backfilling with aggregate of eroded areas under or adjacent to the pipeline.

6.3 Element 3: Seabed (subtidal, intertidal and beaches)

6.3.1 Summary of Predicted Impacts

No long term impacts are expected to result from the ongoing presence of the ocean outlet pipeline. However, minor erosion halos may occur under the pipeline in some areas. The pipeline is not predicted to significantly influence local water movement and sediment transport processes.

6.3.2 Procedures

| Element | Seabed |
|-------------------------------------|--|
| Performance Objective | <ul style="list-style-type: none"> • <i>To avoid long-term impacts to the seabed due to the ongoing presence of the ocean outlet.</i> |
| Proactive Management Actions | <ul style="list-style-type: none"> • The pipeline has been designed and constructed to avoid long-term impacts to the seabed. • Preventative maintenance will be undertaken in areas with the potential for erosion halos to occur. • Preventative maintenance of beach areas will be undertaken if necessary to maintain the integrity of such areas. |
| Performance Indicators | <ul style="list-style-type: none"> • No significant change to seabed outside the area of direct impact. |
| Monitoring | <ul style="list-style-type: none"> • The condition of the pipeline and surrounding seabed will be monitored regularly to detect any maintenance requirements. • For at least the first three years of operation, surveys will be undertaken to map the seabed condition. This will be compared to pre-construction surveys. Such surveys will comprise a quantitative assessment of changes to the seabed. |
| Responsibility | <ul style="list-style-type: none"> • The AWA Environment Manager is responsible for ensuring that all monitoring programs are implemented. These programs may be subcontracted to a specialist sub-consultant. |



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- The Maintenance Contractor is responsible for monitoring the dredging operation and undertaking management actions assigned to them.
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Reporting

- The Maintenance Contractor will immediately report any incidents affecting the seabed to the AWA Environment Manager.
 - The Maintenance Contractor must complete an environmental incident report and corrective action report as soon as practicable, but within 24 hours of an incident occurring, and forward this to the AWA Environment Manager.
 - The AWA Environment Manager must report, to the Regulatory Committee, any incidents affecting the seabed within 24 hours.
 - A report will be prepared and submitted to the DEC CEO annually for 2 to 3 years after the beginning of operation, detailing the seabed condition in the vicinity of the ocean outlet and any proposed or completed rehabilitation.
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Corrective Action

- The contingency actions that may be implemented to address excessive accretion on beach areas include:
 - excavation of accreted sand using a land-based excavator
 - sand replenishment
 - rock armouring to increase stability
 - backfilling with aggregate of eroded areas under or adjacent to the pipeline.
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6.4 Element 4: Marine Fauna

6.4.1 Summary of Predicted Impacts

Direct impacts to marine fauna are predicted to result from activities associated with maintenance activities to the proposed pipeline route. Maintenance activities including vessel movements, chemical spills, noise and vibration affects from the use of tools and other mechanical equipment have the potential to impact on marine fauna.

No direct impacts to marine fauna are predicted to result from operation of the ocean outlet, although the potential for boat strike exists. Indirect impacts, including noise and vibration and chemical spills associated maintenance activities are possible.



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6.4.2 Procedures

| Element | Marine Fauna |
|-------------------------------------|---|
| Performance Objective | <ul style="list-style-type: none"> To minimise direct and indirect impacts to marine fauna during operation of the ocean outfall. |
| Proactive Management Actions | <ul style="list-style-type: none"> Controlled drill and blast (as opposed to surface blasting) will be used. Work vessels must not block the direction of travel of any wildlife, particularly a whale, dolphin, sea lion or turtle, or any passage of escape available to wildlife from an area where escape is otherwise prevented by a barrier, shallow water, vessel or some other obstacle to the animal's free passage. Wherever possible, a distance of at least 300 m will be maintained from any whale and a whale shall never be deliberately approached by construction personnel or vessels. Wherever possible, a distance of at least 150 m will be maintained from any dolphin and a dolphin shall never be deliberately approached by construction personnel or vessels. Wherever possible, a distance of at least 50 m will be maintained from any sea lion or turtle. No Sea lions or turtles will be deliberately approached by personnel or vessels. Vessels will not stop suddenly or change direction suddenly if a whale, dolphin, turtle or sea lion is in close proximity to the vessel. All construction personnel shall comply with all relevant components of the Australian National Guidelines for Whale and Dolphin Watching 2005 (Appendix I). Wherever possible, wide, deep channels will be used as transport routes for work vessels. Shallow areas and seagrass beds will be avoided. Wherever possible outboard motors on work vessels should be able to tilt up (rather than lock-down) in the event of a collision with marine fauna. Noise and vibration will be kept to a minimum whilst work is been undertaken. All chemicals will be stored in a bunded area with appropriate spill kits. Any chemical spills will actioned and contained as appropriate. Chemical spills to the marine environment will be reported immediately to the Regulatory Committee for actioning. |
| Performance Indicators | <ul style="list-style-type: none"> No marine mammal or turtle mortalities during construction. No significant change in diversity and abundance of benthic fauna outside the defined construction footprint. |



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| Monitoring | <ul style="list-style-type: none"> • Visual Onsite monitoring for live, injured or dead marine fauna will be undertaken during maintenance activities. • Observations will be recorded in the Marine Fauna Log Book. |
| Responsibility | <ul style="list-style-type: none"> • The AWA Manager is responsible for ensuring that each of the monitoring programs is implemented. These programs may be subcontracted to a specialist sub-consultant. • The Dredging Contractor is responsible for monitoring the dredging operation and undertaking management actions assigned to them. |
| Reporting | <ul style="list-style-type: none"> • A brief summary of any interactions with marine fauna will be incorporated into the Annual Environmental Update Report, which will be submitted to the AWA Manager, Water Corporation, EPA and DEC. • Primary findings and evidence of compliance with the Ministerial Statement will be compiled in the Annual Compliance Report. This report will be provided to AWA Manager, Water Corporation, EPA and DEC and will also be made publicly available. • Any injury or mortality of marine mammals, turtles or other protected fauna will be reported immediately to the AWA Environment Manager, who will then report the incident to Water Corporation, EPA and DEC as soon as practicable but within 48 hours. • All sightings of marine mammals or turtles, within 1.5 km of construction activities or work vessels will be recorded in a Marine Fauna Log Book and reported to the Australian Fisheries Management Authority (AFMA). |
| Corrective Action | <ul style="list-style-type: none"> • If any marine mammal or turtle is observed to be in distress, as a result of the project or otherwise, the AWA Environment Manager should be notified immediately, along with DEC's Wildcare Hotline on (08) 9474 9055 (24-hour emergency number) or the DEC Duty Officer on (08) 9334 0224. |

6.5 Element 5: Heritage

6.5.1 Summary of Predicted Impacts

Impacts to the Alkimos and Eglinton shipwrecks may result from interference operation vessels and equipment.



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6.5.2 Procedures

| Element | Heritage |
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| Performance Objective | <ul style="list-style-type: none"> To avoid impacts to the <i>Alkimos</i> and <i>Eglinton</i> shipwrecks. |
| Proactive Management Actions | <ul style="list-style-type: none"> The precise locations of the <i>Alkimos</i> and <i>Eglinton</i> will be recorded on GPS systems used by all work vessels. <ul style="list-style-type: none"> <i>Alkimos</i>: 31°36.613437; 115° 39.24134 <i>Eglinton</i>: 31° 38.4500; 115° 39.5400 All vessel skippers will be made aware of the presence of the wrecks in the area. Work vessels shall not occupy the waters within 100 m of either shipwreck at any time. |
| Performance Indicators | <ul style="list-style-type: none"> No damage to the <i>Alkimos</i> or <i>Eglinton</i> wrecks due to construction activities or vessels. |
| Monitoring | <ul style="list-style-type: none"> The location of operational activities and vessels will be monitored to ensure they do not encroach on a 100 m buffer surrounding each wreck. |
| Responsibility | <ul style="list-style-type: none"> Marine Superintendent is responsible for ensuring all skippers are aware of the presence of the wrecks. Vessel skippers are responsible for remaining at least 100 m from wrecks. |
| Reporting | The responsible party must complete an environmental incident report and corrective action report as soon as practicable, but within 24 hours of an incident occurring, and forward this to the AWA Environment Manager. |
| Corrective Action | <ul style="list-style-type: none"> Relevant authorities will be notified of any incident involving the <i>Alkimos</i> or <i>Eglinton</i> wrecks within 24 hours of an incident occurring. |

6.6 Element 6: Air Quality

6.6.1 Summary of Predicted Impacts

Likely sources of air emissions during operation of the ocean outlet are limited to exhaust emissions from maintenance vessels and equipment.



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6.6.2 Procedures

| Element | Air Quality |
|-------------------------------------|---|
| Performance Objective | <ul style="list-style-type: none"> To minimise air emissions produced during operation. |
| Proactive Management Actions | <ul style="list-style-type: none"> All plant and equipment used during the operation shall be regularly maintained to comply with the relevant exhaust emission guidelines. Prior to commencement of work, all equipment will be inspected by a qualified mechanic to minimise green house gas emissions. |
| Performance Indicators | <ul style="list-style-type: none"> There shall be no visible dark emissions from vessel exhausts. |
| Monitoring | <ul style="list-style-type: none"> The Maintenance Contractor is to visually monitor emissions and repair or replace equipment parts as required. |
| Responsibility | <ul style="list-style-type: none"> The Maintenance Contractor is responsible for visual monitoring of emissions from the dredge. |
| Reporting | <ul style="list-style-type: none"> The Maintenance Contractor is to report any visible dark emissions from the plant or equipment to the AWA Environment Manager. The Maintenance Contractor must provide the AWA Environment Manager with details of the total amount of fuel used during the operational works. |
| Corrective Action | <ul style="list-style-type: none"> Repair or replace emission control devices. |