Report and recommendations of the Environmental Protection Authority

Kimberley Aquaculture Development Zone

Minister for Fisheries

Report 1504

February 2014

Assessment on Proponent Information
Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
9/7/2012	Level of assessment set	
22/8/2012	Scoping guideline issued by EPA	6
19/12/2013	Proponent's Final API document received by EPA	69
22/01/2014	EPA considered Assessment Strategy	4
12/2/2014	Provision of EPA Report to Minister	3
17/2/2014	Publication of EPA report (three days after report to Minister)	3 days
4/3/2014	Close of appeals period	2

Timelines for an assessment may vary according to the complexity of the project and are usually agreed with the proponent soon after the level of assessment is determined.

In this case, the Environmental Protection Authority met its timeline objective in the completion of the assessment and provision of a report to the Minister.

Dr Paul Vogel
Chairman

12 February 2014

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Contents

1. Introduction and background

This report provides the Environmental Protection Authority's (EPA's) advice and recommendations to the Minister for Environment on the strategic proposal by the Minister for Fisheries (the proponent) for the establishment of a 2,000 hectare (ha) aquaculture development zone within Cone Bay in the Kimberley (Figure 1).

Section 44 of the *Environmental Protection Act 1986* (EP Act) requires the EPA to report to the Minister for Environment on the outcome of its assessment of a proposal. The report must set out:

- the key environmental factors identified in the course of the assessment; and
- the EPA's recommendations as to whether or not the proposal may be implemented, and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may include in the report any other advice and recommendations as it sees fit.

An Assessment on Proponent Information (API) environmental review document has been prepared by the Department of Fisheries (DoF) on behalf of the proponent, setting out the details of the strategic and derived proposals, potential environmental impacts, and proposed plans to manage those impacts.

The EPA considers that the proposal, as described, can be managed to meet the EPA's environmental objectives, subject to the EPA's recommended conditions being made legally binding.

This report provides the EPA's advice and recommendations in accordance with Section 44 of the EP Act.

2. The proposal

The strategic proposal being assessed by the EPA is the declaration of a 2,000 ha aquaculture development zone within Cone Bay in the Kimberley (Figure 1). The Minister for Fisheries, as the proponent, has the power to declare an area of Western Australian waters to be an aquaculture development zone under s101A(2A) of the *Fish Resources Management Act 1994* (FRM Act). The maximum production capacity of the Kimberley Aquaculture Development Zone (KADZ) is 20,000 tonnes per annum (tpa). The approach to assessing the Zone as a strategic proposal means that the EPA is able to assess the cumulative impacts of future aquaculture proposals, rather than assessing impacts on a case-by-case basis as individual aquaculture projects are received, or expansion of existing operations is proposed. In this regard, the KADZ will provide for existing and future aquaculture operators to refer future proposals to the EPA to be considered as derived proposals.

The future proposals have been identified as aquaculture operations, which include the feeding, growing and husbandry of marine finfish within the KADZ. This would involve installation of floating sea cages and would use only species that are naturally occurring within the Pilbara and Kimberley Region (as defined by the Fish Resources Management Regulations 1995).

The main characteristics of future proposals are summarised in Table 1 below.

Table 1: Specifications and characteristics of the future proposals identified in the strategic proposal

Element	Description and authorised extent
Proposed aquaculture lease area	The proposed aquaculture lease area must be within the Kimberley Aquaculture Development Zone, with at least a 50 m separation distance between the boundary of the Kimberley Aquaculture Development Zone and boundary of the proposed aquaculture lease area.
Proposed aquaculture licence	Proposed aquaculture licence with a production capacity not exceeding 20,000 tonnes per annum having considered the existing aquaculture licences already issued in the Kimberley Aquaculture Development Zone.
Aquaculture operations	Including: • installation and maintenance of floating sea cages; • stocking of marine finfish of a species that occurs naturally within the Pilbara and Kimberley Region; and • finfish feeding, husbandry and harvesting.
Floating sea cage specifications	Including: • predator nets or equivalent to prevent fish escapes; • at least a two metre difference between the bottom of the sea cage and the seafloor at lowest astronomical tide; and

Element	Description and authorised extent
	• anchorage and mooring infrastructure associated with the sea cages must be used in such a way so as not to physically damage any reef or coral habitat.
Feed inputs	Only commercial pellet feeds manufactured within Australia to the standard specified in the Kimberley Aquaculture Development Zone Management Policy or if imported fish feed or ingredients then only with the approval of the Australian Quarantine Inspection Service.
Seed stock	From a facility certified by the Supervising Scientist Biodiversity and Biosecurity, Department of Fisheries or with a health certificate issued or approved by the Department of Fisheries.

The potential impacts and management of the future proposals are discussed in the DoF's API document (Department of Fisheries, 2013) (see Appendix 4).

During the assessment of the strategic proposal, the EPA considered the governance of the KADZ and the manner in which identified future aquaculture proposals will be monitored, managed, and regulated in the Zone. The governance arrangements for the Zone are set out in the draft KADZ Management Policy and the environmental management framework is set out in the KADZ Environmental Monitoring and Management Plan (EMMP). Both these documents form part of the API documentation and are summarised below.

KADZ Management Policy

This policy sets out the overarching framework for the KADZ and outlines the broad principles for management. The policy sets out the codes of practice, the responsibilities of the DoF as the Zone Manager, and the general principles that apply to the location and operation of aquaculture leases/licences within the KADZ. These include specifying separation distances, the species of finfish to be farmed, details regarding what constitutes acceptable aquaculture infrastructure, disease and biosecurity arrangements, and linkages with the EMMP. It also details the legislative framework applicable to aquaculture operations under the FRM Act and the EP Act. The policy recognises that the DoF, as the Zone manager, will work in conjunction with the Office of the EPA to ensure compliance with the authorisations provided under the EP Act.

The KADZ Management Policy will be given effect through the DoF's administration and the allocation of leases and licences under the FRM Act. This draft policy will be finalised when the KADZ is declared and gazetted by the Minister for Fisheries.

KADZ EMMP

The EMMP sets out the environmental monitoring criteria and management measures to be applied by future operators in the KADZ. The EMMP also includes

sections on reporting, adaptive management, mitigation measures, and a marine fauna interaction plan. Requiring the proponent to comply with the EMMP will be given effect through both an aquaculture lease/licence and also a Notice issued by the Minister for Environment in relation to the implementation of any declared derived proposal (under Section 45A of the EP Act).

Existing operations in the KADZ

Marine Produce Australia Limited has approval under the *Environmental Protection Act 1986* (Ministerial Statement 885) to produce 2,000 tpa of barramundi by sea cage aquaculture in an existing aquaculture lease in a portion of the proposed Zone (see Figure 1). This proposal was assessed by the EPA in 2011 at the API level of assessment and published in EPA Report 1422 in December 2011.

Marine Produce Australia is currently implementing its proposal and submitting compliance reports to the Office of the EPA and the DoF. The monitoring information in the compliance reports has been used to inform the assessment of the strategic proposal and has therefore been attached to the API documentation for this strategic proposal. Since the implementation of the proposal in Statement 885, no significant adverse impacts on the Cone Bay marine environment have been reported by Marine Produce Australia.

3. Consultation

During the preparation of the API document the DoF, on behalf of the proponent, has undertaken consultation with government agencies and key stakeholders. The agencies, groups and organisations consulted, the comments received and the DoF's response are detailed in the API documents (Department of Fisheries, 2013).

The EPA considers that the consultation process has been appropriate and that reasonable steps have been taken to inform the community and stakeholders of the proposed development.

4. Key environmental factors

It is the EPA's opinion that the following key environmental factors relevant to the proposal require evaluation in this report:

(a) Marine environmental quality; and

(b) Benthic communities and habitat.

The key environmental factors are discussed in Sections 4.1 – 4.2. The assessment of each factor is where the EPA decides whether or not a proposal meets the environmental objective set for that factor.

Marine fauna was considered to be a preliminary key environmental factor at the level of assessment stage, but is no longer considered to be a key environmental factor for the reasons set out in Appendix 3 of this report.

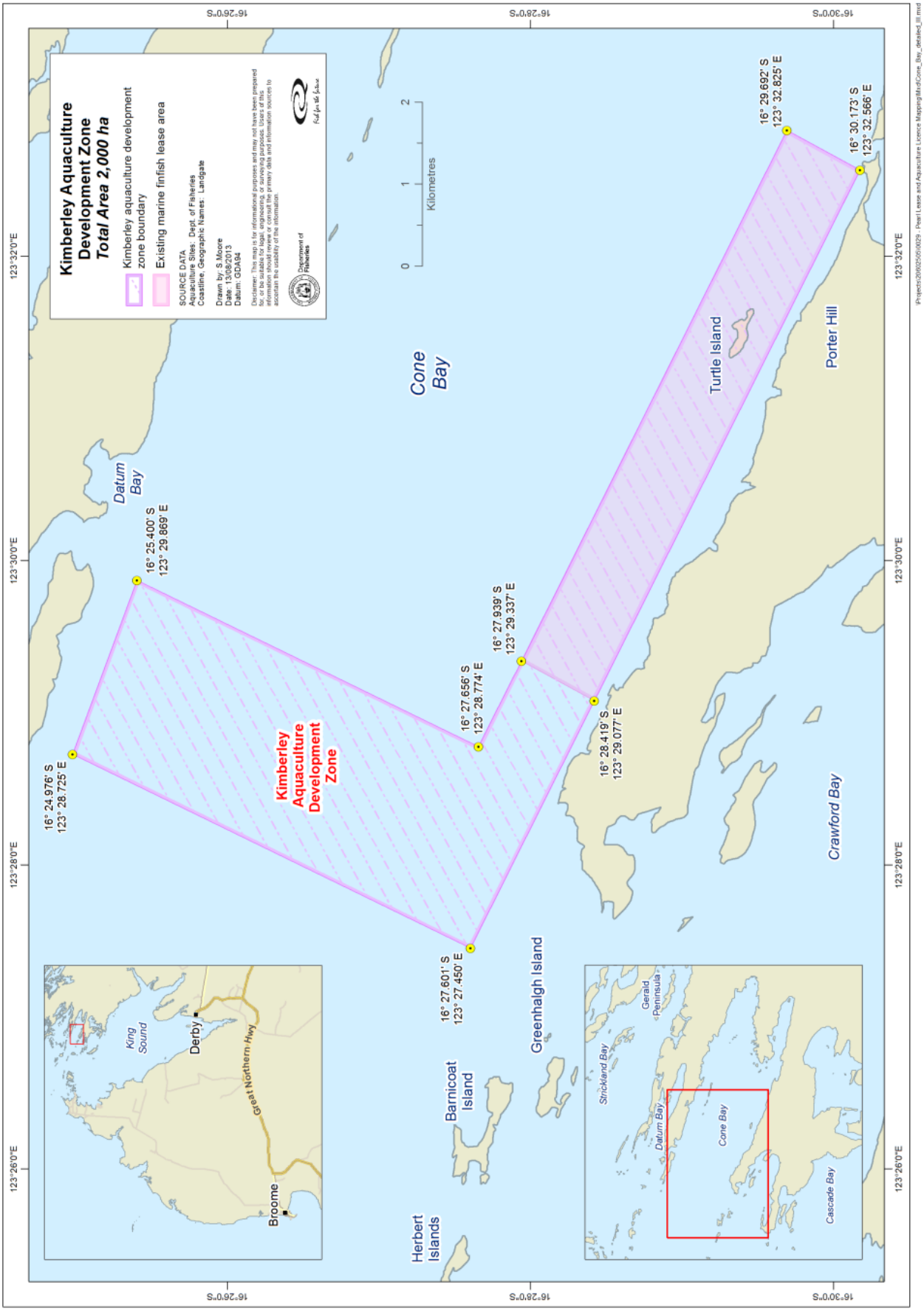

Figure 1: Location of the Kimberley Aquaculture Development Zone

4.1 Marine environmental quality

The EPA's environmental objective for this factor is *to maintain the quality of water, sediment and biota so that the environmental values, both ecological and social, are protected*.

Future aquaculture activities have the potential to impact on marine environmental quality. The key threats to the environment are related to the utilisation (and potential overfeeding) of supplementary feed (fish and pellets) and the subsequent likely release of nutrients, and sedimentation from waste food and faeces. Potential impacts from these threats include organic enrichment of the sediment, reduced dissolved oxygen and a decline in the health of benthic infauna as well as other invertebrates such as filter feeders (potential impacts to benthic communities are further discussed in Section 4.2).

Feed waste and faeces may also increase the level of particulates (Total Suspended Solids (TSS)) within the water column, thus reducing light available to benthic primary producer communities (Department of Fisheries, 2013).

The extent and duration of these potential impacts on water and sediment quality is largely influenced by the degree of flushing and water circulation. The hydrodynamics of Cone Bay are characterised by large tides and rapid flushing of water with the DoF predicting that Cone Bay flushes in two to three days throughout the year (DHI, 2013). This reduces the risk of potentially significant impacts from future proposals as Cone Bay is dominated by high energy tides with high velocities resulting in short water retention times and strong mixing of the water column. As well as the high energy currents in the Bay, the outer western part of the production zone is influenced by a large eddy formed in the north-west corner of the bay. The eddy, which occurs every 12 hours, creates circular anti-clockwise currents and effectively "vacuum cleans" the seabed as well as significantly increasing flushing (DHI, 2013).

The DoF has completed comprehensive field studies to determine baseline water and sediment quality during both the wet and dry seasons in and around the KADZ. The water quality parameters measured include nutrients, phytoplankton community composition, chlorophyll-a, TSS (organic component) and light attenuation. Sediment parameters measured included total nitrogen, total phosphorous, total organic carbon, sediment trace metals and sediment grain size distribution (DHI, 2013).

The DoF has undertaken hydrodynamic, deposition and ecological modelling to predict the potential impacts of future proposals for a range of scenarios from medium to full production across both the wet and dry seasons.

Modelling has shown that at full production there will be detectible changes to key water and sediment quality indicators in the Zone. For stressors including TSS (the organic component), sedimentation, light attenuation, dissolved oxygen and chlorophyll-*a,* the DoF predicts there are likely to be elevations above background in the Zone but that this would not lead to a significant impact on marine environmental quality. The predicted impacts from organic deposition and dissolved inorganic

nitrogen are likely to result in a moderate level of impact directly beneath and downstream of the sea cages, however these impacts are not predicted to extend outside the Zone. The other scenarios modelled showed a similar or lesser impact. Overall, the DoF has concluded that the proposal will not result in any significant impacts on marine environmental quality (DHI, 2013).

The DoF's EMMP has applied the EPA's Environmental Quality Management Framework by identifying the environmental values (EVs) that are to be protected. These EVs are Ecosystem Health, Fishing and Aquaculture, Recreation and Aesthetics, Industrial Water Supply, and Cultural and Spiritual Values.

Environmental quality is assessed and managed by establishing benchmarks in the form of environmental quality criteria. Each criterion consists of an environmental quality guideline and an environmental quality standard to ensure that investigation and management measures are taken at appropriate times should an exceedance occur (Department of Fisheries, 2014a).

In the EMMP, the DoF has applied the environmental quality criteria for Ecosystem Health, the objective of which is the *maintenance of ecosystem integrity (naturally diverse and health ecosystems)*. Although all EVs identified above need to be protected, the DoF considers that, as the environmental quality criteria of the Ecosystem Health EV are the most conservative, the objectives of all other EVs (such as Fishing and Aquaculture) would therefore also be protected (Department of Fisheries, 2014a).

The levels of ecological protection and their spatial allocation have been proposed in accordance with the EPA's Environmental Quality Management Framework. The different levels of ecological protection for ecosystem health that will apply within and directly outside the Zone are 'Moderate', 'High' and 'Maximum' as described below in Table 2.

Table 2: Levels of ecological protection to be achieved in marine waters

Area	**Level of ecological protection for the maintenance of ecosystem health**
Outside the KADZ, extending 300 metres (m) beyond each of the KADZ boundaries	**Maximum Ecological Protection Area** A maximum level of ecological protection would require that there be no change beyond natural variation in ecosystem processes, biodiversity, abundance, and biomass of marine life or in the quality of water, sediment and biota.
KADZ and extending 300 m beyond each of the KADZ boundaries	**High Ecological Protection Area** To allow small changes in the quality of water, sediment and biota (e.g. small changes in contaminant concentrations with no resultant detectable changes beyond natural variation in the diversity of species and biological communities, ecosystem processes and abundance/biomass of marine life).
Within aquaculture leases in the KADZ	**Moderate Ecological Protection Area** To allow moderate changes in the quality of water, sediment and biota (e.g. moderate changes in contaminant

Area	Level of ecological protection for the maintenance of ecosystem health
	concentrations that cause small changes, beyond natural variation, in ecosystem processes and abundance/biomass of marine life, but no detectable changes from the natural diversity of species and biological communities).

Individual operators will be able to apply for an aquaculture lease anywhere within the KADZ, provided they are greater than one kilometre (km) away from other operators and greater than 50 m away from the KADZ boundary. Within each specific lease area, a 'Moderate' level of ecological protection will apply and will need to coincide with all aquaculture infrastructure and production units. However, to ensure the environmental objective of Ecosystem Health can be met, no more than 33 per cent of a lease area can be designated as 'Moderate'. The DoF has provided a conceptual figure of how the moderate ecological protection areas could be assigned for a hypothetical scenario at full production (refer Figure 2). The DoF has also calculated that there is a low likelihood of the 33 per cent limit being exceeded at full production (20,000 tpa). As described in Table 2, the 'High' level of ecological protection will cover the remaining area of the KADZ and extend 300 m beyond the KADZ to ensure that any potential indirect impacts are monitored.

A 'Maximum' level of ecological protection has been applied outside the KADZ in recognition of special values of the area within the Buccaneer Archipelago and the need to ensure consistency with the conditions on the approved proposal in Cone Bay and the practical aspects of implementation.

The EPA acknowledges, however, that the EPA's policy and approach to assigning levels of ecological protection to marine waters will continue to develop over time and that there are provisions in the EP Act which provide for changes to environmental conditions to reflect contemporary environmental policies and the decisions of Government with respect to the Kimberley marine environment.

The EMMP is designed to provide early-warning of potential impacts, using suitable indicators, to trigger pre-emptive management that will ensure that the above levels of ecological protection will not be compromised. The monitoring program provides for different monitoring intensities (number of sites and transects to be monitored) based on production densities; that is, as production increases, additional monitoring will be required. Monitoring sites will be located within each ecological protection area in addition to two reference sites located outside Cone Bay, measuring the stressors and toxicants used to establish the baseline conditions. Monitoring will be undertaken during eight incoming neap tides per year and monthly during both the wet and dry seasons (Department of Fisheries, 2014a). The EPA is satisfied with the monitoring program proposed in the EMMP.

In relation to the number of sediment cores that need to be taken at each site, the EPA strongly encourages future proponents to undertake a pilot study to determine the optimum number of cores needed to capture the natural variability of the site and hence ensure the ongoing monitoring program is fit-for-purpose and cost effective. Future proponents should be aware that a greater number of cores sampled are

likely to be more representative of a site, thereby reducing the risk of sampling extremes in environmental variability.

Should environmental quality criteria be exceeded, the EMMP outlines mitigation measures. These include fallowing (moving or de-stocking) of sea cages, moving or partial harvesting of stock, reduction of stocking densities and reduction of feed input rates (Department of Fisheries, 2014a). The EPA considers that the mitigation measures proposed will be sufficient to ensure that baseline conditions can be re-established should an exceedance occur.

As the EMMP has already been prepared by the DoF during the EPA's assessment, the EPA has recommended condition 6 which requires future operators to implement the EMMP during the implementation of future derived proposals. To facilitate the timely consideration of the lease applications under the FRM Act and derived proposals under the EP Act, it has been agreed that, once the DoF has received a satisfactory aquaculture lease/licence application, future proponents will be requested to refer their request for a derived proposal to the EPA, so that the two approvals processes can occur concurrently.

Summary

In summary, the EMMP prepared by the DoF, on behalf of the proponent, is a clear and comprehensive document that is suitable to manage the cumulative environmental impacts of future aquaculture proposals in the proposed KADZ.

The EPA considers that marine environmental quality has been adequately addressed and that the implementation of future proposals in the Zone can meet the EPA's objective for this factor provided that the EMMP is satisfactorily implemented by the proponents of future aquaculture proposals. The EPA has therefore recommended conditions 6-1 to 6-4, which require proponents to:

- implement the EMMP to ensure adequate monitoring is undertaken and that the moderate, high and maximum levels of ecological protection are not compromised;
- submit reports to the Chief Executive Officer of the Office of the EPA when criteria are triggered; and
- submit annual reports on the implementation and effectiveness of the EMMP to the Chief Executive Officer of the Office of the EPA.

4.2 Benthic communities and habitat

The EPA's environmental objective for this factor is *to maintain the structure, function, diversity, distribution and viability of benthic communities and habitats at local and regional scales*.

The potential impacts to this environmental factor are from the same threats and through the same pathways as described for the key factor of marine environmental quality in section 4.1.

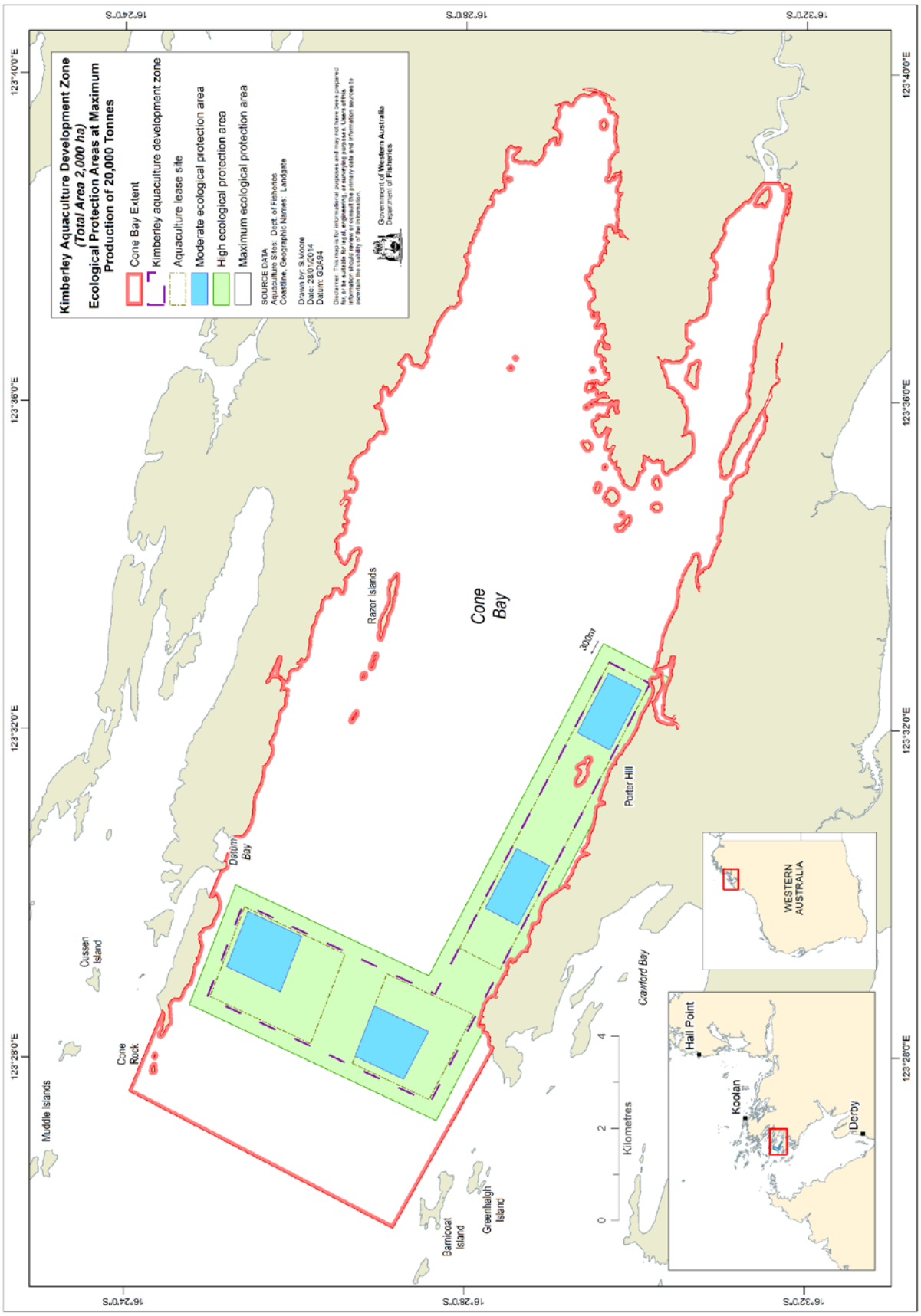

Figure 2: Conceptual diagram of notional Ecological Protection Areas when production reaches full capacity of 20,000 tonnes per annum

Benthic surveys undertaken on behalf of the DoF were completed using underwater towed videos and sediment sampling, and show that the substrate of most of the KADZ is bare and composed of fine to coarse sediments. The extent of coral and seagrass communities is very small (approximately 0.3 per cent of the KADZ) and only found in proximity to the islands and coastline. The communities most likely to be impacted by the proposal are filter feeders and benthic infauna (refer Figure 3) (Oceanica, 2013).

Benthic filter feeders were detected in the south-western portion of the KADZ on hard low profile reef (DHI, 2013). Sampling revealed a highly diverse infauna assemblage. Infauna abundance was greatest at sampling sites in the western portion of Cone Bay, suggesting that the conditions in the western end of the bay, such as higher rates of flushing, lower levels of organic enrichment and larger grain sizes, are more favourable for infauna (DHI, 2013).

Modelling undertaken by the DoF (and described above in Section 4.1 Marine environmental quality), showed that there is likely to be a moderate impact on the infauna community directly beneath, and downstream of sea cages due to feed residues and fish faeces and therefore, changes in organic deposition.

The EMMP will establish baseline conditions prior to the stocking of sea cages through taking underwater images beneath and along a transect from the edge of the cage. Should the relevant environmental quality criteria be exceeded further imagery will be required at set distances along transects. This will establish the presence or absence of bacterial mats, black sediments, gas bubbles (which indicate hydrogen sulphide production) and whether a significant reduction in animal tracks, bioturbation burrows and/or benthic macrofauna has occurred. It is expected that future proponents will clearly describe how they have determined, through the evaluation of (before and after) sea bed images, whether a significant reduction has occurred, in consultation with the DoF.

The EMMP will also implement sediment infauna monitoring should the relevant criteria be exceeded (Department of Fisheries, 2014a). The DoF predicts that influences from organic deposition may be detectable outside the KADZ but not to an extent that is expected to have impacts on infauna.

To avoid and prevent irreversible impacts to benthic communities and habitats, the EMMP provides for the following:

- encouraging future proponents to apply for lease areas that exclude filter-feeder and coral communities during the application process
- locating all sea cages at least two metres above the seafloor to minimise scouring and allow for sufficient flushing;
- fallowing (i.e. moving) the sea cages and stock if relevant criteria are triggered in the EMMP;
- requiring a 50 m buffer between the outer KADZ boundary and Aquaculture Lease Areas to ensure any impacts are contained within the KADZ. This buffer creates further distance between potential sea cages locations and the headlands that support fringing corals; and

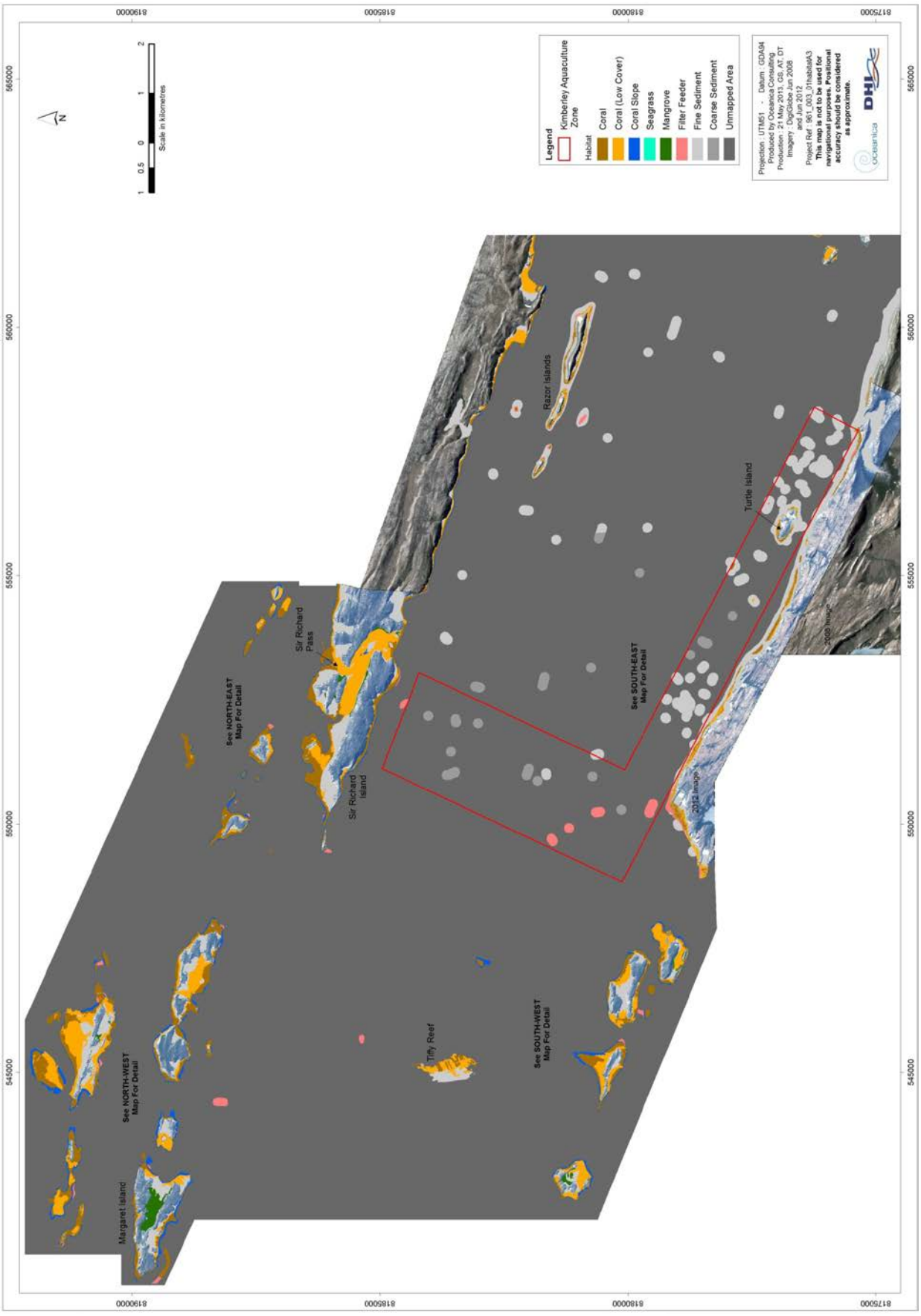

Figure 3: Benthic habitats mapped by underwater video

- implementing the EMMP to ensure marine environmental quality is being maintained and therefore that benthic communities are not being significantly impacted.

The DoF considers that future proposals can be implemented and managed to ensure there are no permanent or irreversible impacts to any benthic communities, including coral and filter-feeding communities in Cone Bay. The EPA agrees but recognises there is a small degree of uncertainty regarding the likely extent and severity of impacts to filter-feeder communities in particular.

The EMMP provides a framework that aims to protect both of these important benthic communities. However, in order to ensure that no irreversible impacts occur, the EPA recommends avoiding putting pressure on them wherever possible.

Consistent with this approach, the EPA has recommended condition 6-1 which requires the proponent to ensure that future proposals cause no irreversible loss of benthic communities. Irreversible has the same meaning as in the EPA's Environmental Assessment Guideline 7 *Marine Dredging Proposals* and is defined as *lacking a capacity to return or recover to a state resembling that prior to being impacted within a timeframe of five years or less.*

Summary

In view of the DoF's predictions that there will be no permanent loss of benthic communities and habitat, and any impacts will be recoverable within five years, the EPA considers that future proposals can be managed to meet the EPA's objectives for benthic communities and habitat provided the EMMP is satisfactorily implemented by future proponents. The EPA has therefore recommended condition 6-1 which requires the proponent to ensure that the implementation of the proposal causes no irreversible loss of benthic communities and achieves the levels of ecological protection set out in Schedule 3 of Appendix 2. The EPA also recommends conditions 6-2 to 6-4, which require future proponents to implement the EMMP, submit reports to the Chief Executive Officer of the Office of the EPA when criteria are triggered, and submit annual reports on the implementation and effectiveness of the EMMP to the Chief Executive Officer of the Office of the EPA.

5. Recommended conditions

Having considered the information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed on future derived proposals, if the strategic proposal by the Minister for Fisheries to establish a 2,000 ha aquaculture development zone within Cone Bay in the Kimberley is approved for implementation. These conditions are presented in Appendix 2.

6. Other advice

The EPA considers there is merit in the DoF, as the manager of the KADZ, assuming responsibility for coordinating the monitoring reports received under recommended environmental condition 6-4 when two or more aquaculture leases and licensees have been granted. This has been discussed with the DoF and is reflected in the latest draft version of the KADZ Management Policy.

The reporting should include:

- reviewing and auditing the monitoring undertaken by aquaculture operators to outline how the Environmental Objectives and Environmental Quality Criteria listed in the EMMP have been achieved at the KADZ level;
- outlining any mitigation measures applied within the KADZ and assessing the success of these measures to restore environmental quality to the specified level of ecological protection in condition 6-1 and Schedule 3 of the recommended environmental conditions; and
- providing information to show that no more than 33 per cent of an aquaculture lease area is designated a ‘Moderate’ ecological protection area. This can be achieved by providing the geographic coordinates of the Moderate Ecological Protection Areas within each Aquaculture Lease Area.

7. Conclusions

The EPA has considered the strategic proposal by the Minister for Fisheries to establish a 2,000 ha aquaculture development zone within Cone Bay in the Kimberley, and the identified future proposals in the zone for commercial sea cage aquaculture.

The approach to assessing the Zone as a strategic proposal means that the EPA is able to assess the cumulative impacts of future aquaculture proposals, rather than assessing impacts on a case-by-case basis as individual aquaculture projects are received, or expansion of existing operations is proposed.

The EPA has concluded that the future proposals can be managed to meet the EPA’s environmental objectives, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 2.

8. Recommendations

The EPA submits the following recommendations to the Minister for Environment:

1. that the Minister notes that the strategic proposal being assessed is the establishment of a 2,000 ha aquaculture development zone in Cone Bay in the Kimberley. Future proposals that have been identified in the assessment include aquaculture operations as set out in Schedule 2 of Appendix 2;
2. that the Minister considers the report on the key environmental factors as set out in Section 4;
3. that the Minister notes that the EPA has concluded that the future proposal can be managed to meet the EPA's environmental objectives, provided there is satisfactory implementation by the proponents of future proposals of the recommended conditions set out in Appendix 2;
4. that the Minister imposes the conditions and procedures recommended in Appendix 2 of this report on future proposals; and
5. that the Minister notes the other advice in Section 6 of this report on the role of the DoF in coordinating annual environmental compliance reports to the Office of the EPA.

Appendix 1

References

Department of Fisheries (2013) *Kimberley Aquaculture Development Zone Project, Assessment of Proponent Information Environmental Review Document.* December 2013

Department of Fisheries (2014a) *Kimberley Aquaculture Development Zone Environmental Monitoring and Management Plan*. Version 1 January 2014

Department of Fisheries (2014b) *Kimberley Aquaculture Development Zone Management Policy*. Final draft as at 24 January 2014.

DHI (2013) *Kimberley Aquaculture Development Zone Environmental Field Studies and Numerical Modelling in Support of an EIS.* DHI Water & Environment Pty Ltd, May 2013.

EPA (2011) *Environmental Assessment Guideline for Marine Dredging Proposals*.

Oceanica (2013) *Kimberley Aquaculture Development Zone Strategic Assessment Marine Habitat*, Oceanica Consulting May 2013.

Appendix 2

Identified Decision-making Authorities
and
Recommended Environmental Conditions

Identified Decision-making Authorities

Section 44(2) of the *Environmental Protection Act 1986* (EP Act) specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with decision-making authorities, and if possible, agree on whether or not the proposal may be implemented, and if so, to what conditions and procedures, if any, that implementation should be subject.

The following decision-making authorities have been identified for this consultation:

Decision-making Authority	Approval
1. Minister for Lands	Concurrence is required from the Minister administering the *Land Administration Act 1997* regarding the declaration of an aquaculture development zone
2. Minister for Fisheries	Granting of aquaculture leases under the *Fish Resources Management Act 1994*
3. CEO of the Department of Fisheries	Granting of aquaculture licenses under the *Fish Resources Management Act 1994*

Note: In this instance, agreement is only required with DMAs #1 and #2 since these DMAs are Ministers.

Statement No. XXX

RECOMMENDED ENVIRONMENTAL CONDITIONS

STATEMENT THAT A FUTURE PROPOSAL(S) IDENTIFIED IN A STRATEGIC PROPOSAL MAY BE IMPLEMENTED
(Sections 40B and 45 of the *Environmental Protection Act 1986*)

Kimberley Aquaculture Development Zone

Strategic Proposal: A 2000 hectare aquaculture development zone located within Cone Bay, as defined by spatial coordinates provided in Table 2 of Schedule 1, as represented in Figure 1 and described in Table 1 of Schedule 1 (Kimberley Aquaculture Development Zone) with a maximum production capacity of 20,000 tonnes per annum of marine finfish of a species that occurs naturally within the Pilbara and Kimberley Region.

Proponent: Minister for Fisheries

Proponent Address: Locked Bag 39
Cloisters Square WA 6850

Assessment Number: 1930

Report of the Environmental Protection Authority Number: 1504

Pursuant to sections 40B and 45 of the *Environmental Protection Act 1986* (the Act), it has been agreed that in the event of a declaration by the Environmental Protection Authority (EPA) pursuant to section 39B of the Act that it is a derived proposal, a proposal meeting the specifications defined in Schedule 2 of this Statement and which was identified in the Strategic Proposal to which Report 1504 relates, may be implemented. Upon declaration that the proposal is a derived proposal, subject to the Minister for Environment's identification of relevant conditions under section 45A(3) of the Act, the implementation of the proposal shall be subject to the following implementation conditions and procedures:

Note: Words and expressions used in these conditions shall have the same respective meanings as in the Act or as provided for in Schedule 4.

1 Derived Proposals

1-1 Proposals referred to the Environmental Protection Authority and declared to be derived proposals shall not exceed the specifications and characteristics provided for in Schedule 2.

Note: It may be that more than one proponent implements the Proposal identified in Schedule 2.

2 Contact Details

2-1 The proponent shall notify the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within 28 days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

3 Time Limit for Proposal Implementation

3-1 The proponent must ensure that the Proposal is substantially commenced within five years of the date of the section 45A Notice.

3-2 The proponent shall provide the CEO with written evidence which demonstrates that the Proposal has substantially commenced on or before the expiration of five years from the date of the section 45A Notice.

4 Compliance Reporting

4-1 The proponent shall prepare and maintain a compliance assessment plan to the satisfaction of the CEO.

4-2 The proponent shall submit to the CEO the compliance assessment plan required by Condition 4-1 at least six months prior to the first compliance assessment report required by Condition 4-6, or prior to implementation, whichever is sooner.

The compliance assessment plan shall indicate:

(1) the frequency of compliance reporting;

(2) the approach and timing of compliance assessments;

(3) the retention of compliance assessments;

(4) the method of reporting of potential non-compliances and corrective actions taken;

(5) the table of contents of compliance assessment reports; and

(6) public availability of compliance assessment reports.

4-3 The proponent shall assess compliance with conditions in accordance with the compliance assessment plan required by Condition 4-1.

4-4 The proponent shall retain reports of all compliance assessments described in the compliance assessment plan required by Condition 4-1 and shall make those reports available when requested by the CEO.

4-5 The proponent shall advise the CEO of any potential non-compliance within seven days of that non-compliance being known.

4-6 The proponent shall submit to the CEO the first compliance assessment report 15 months from the date of issue of this Statement addressing the 12 month period from the date of issue of this Statement and then annually from the date of submission of the first compliance assessment report.

The compliance assessment report shall:

(1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf;

(2) include a statement as to whether the proponent has complied with the conditions;

(3) identify all potential non-compliances and describe corrective and preventative actions taken;

(4) be made publicly available in accordance with the approved compliance assessment plan; and

(5) indicate any proposed changes to the compliance assessment plan required by Condition 4-1.

5 Public Availability of Data

5-1 Subject to Condition 5-2, within a reasonable time period approved by the CEO of the issue of this statement and for the remainder of the life of the proposal the proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)) relevant to the assessment of this proposal and implementation of this Statement.

5-2 If any data referred to in Condition 5-1 contains particulars of:

(1) a secret formula or process; or

(2) confidential commercially sensitive information;

the proponent may submit a request for approval from the CEO to not make this data publically available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publically available.

6 Benthic Communities and Marine Environmental Quality

6-1 The proponent shall ensure that implementation of the Proposal causes no irreversible loss of benthic communities and achieves the levels of ecological protection for each of the ecological protection areas as specified in Table 1 of Schedule 3 and referred to in the *Kimberley Aquaculture Development Zone*, *Environmental Monitoring and Management Plan (Version 1, January 2014)*.

6-2 The proponent shall implement the *Kimberley Aquaculture Development Zone Environmental Monitoring and Management Plan (Version 1, January 2014),* or its revisions as approved by the CEO and continue implementation until otherwise agreed by the CEO.

6-3 In the event that monitoring required by the *Kimberley Aquaculture Development Zone Environmental Monitoring and Management Plan (Version 1, January 2014)* or its revisions as approved by the CEO indicates the levels of ecological protection as specified in Table 1 of Schedule 3, environmental quality guidelines or environmental quality standards as specified in the *Kimberley Aquaculture Development Zone Environmental Monitoring and*

Management Plan (Version 1, January 2014) are not being met, the proponent shall:

(1) report such findings to the CEO within two working days of the exceedance being identified;

(2) investigate to determine the likely cause(s) of the exceedance of the criteria defined in the *Kimberley Aquaculture Development Zone Environmental Monitoring and Management Plan (Version 1, January 2014),* or its revisions as approved by the CEO;

(3) if the exceedance(s) is determined by the CEO to be a result of implementation of the Proposal, the proponent shall immediately implement the mitigation measures identified in the *Kimberley Aquaculture Development Zone Environmental Monitoring and Management Plan (Version 1, January 2014),* or its revisions as approved by the CEO; and

(4) continue implementing the mitigation measures required by Condition 6-3(3) until criteria defined in the *Kimberley Aquaculture Development Zone Environmental Monitoring and Management Plan (Version 1, January 2014),* or its revisions as approved by the CEO, are no longer being exceeded, or until advised otherwise by the CEO.

6-4 The proponent shall submit to the CEO and the Department of Fisheries annual compliance reports in accordance with Condition 4-6 and which includes:

(1) the monitoring results required by the *Kimberley Aquaculture Development Zone Environmental Monitoring and Management Plan (Version 1, January 2014)* or subsequent approved revisions under Condition 6-1;

(2) an assessment of the effectiveness of the management and contingency measures implemented to ensure compliance with the requirements of Conditions 6-1 and 6-2; and

(3) providing evidence that the Moderate Ecological Protection Area defined in Table 1 of Schedule 3 comprises no more than 33 per cent of the proponent's Aquaculture Lease Area.

Schedule 1 – Strategic Proposal

Table 1: Description of the Kimberley Aquaculture Development Zone

Column 1	Column 2	Column 3
Element	**Location**	**Authorised Extent**
Kimberley Aquaculture Development Zone	Zone Boundaries as defined by the spatial coordinates provided in Table 2 of Schedule 1 and delineated by the red line in Figure 1.	2000 hectares.
Ecological Protection Area Boundaries	Defined in Table 1 of Schedule 3 and depicted in Figure 2	Levels of ecological protection as defined in Table 1 of Schedule 3
Maximum total aquaculture production capacity	Within the Kimberley Aquaculture Development Zone	20,000 tonnes per annum
Aquaculture Species produced	Within the Kimberley Aquaculture Development Zone	Marine finfish of a species that occurs naturally within the Pilbara and Kimberley Region.

Table 2: Spatial coordinates for the boundary of the Kimberley Aquaculture Development Zone

Coordinates defining the Kimberley Aquaculture Development Zone are from the dataset prescribed below, noting that the correct recreation of the boundaries below requires the sequential connection of the coordinates as per its coordinate number. All coordinates are listed in Map Grid of Australia Zone 51 (MGA Zone 51), datum of Geodetic Datum of Australia 1994 (GDA94). This dataset is held by the OEPA and is dated 15 January 2014 (CRN: A51478).

Coordinate No.	Easting	Northing
1	558388.38	8176245.06
2	557924.24	8175359.52
3	548834.73	8180124.02
4	551114.43	8184957.45
5	553051.08	8184209.37
6	553148.09	8184171.89
7	553148.97	8184171.55
8	553149.29	8184171.43
9	551190.07	8180017.53
10	552016.98	8179584.36
11	552062.9	8179560.3
12	558388.38	8176245.06

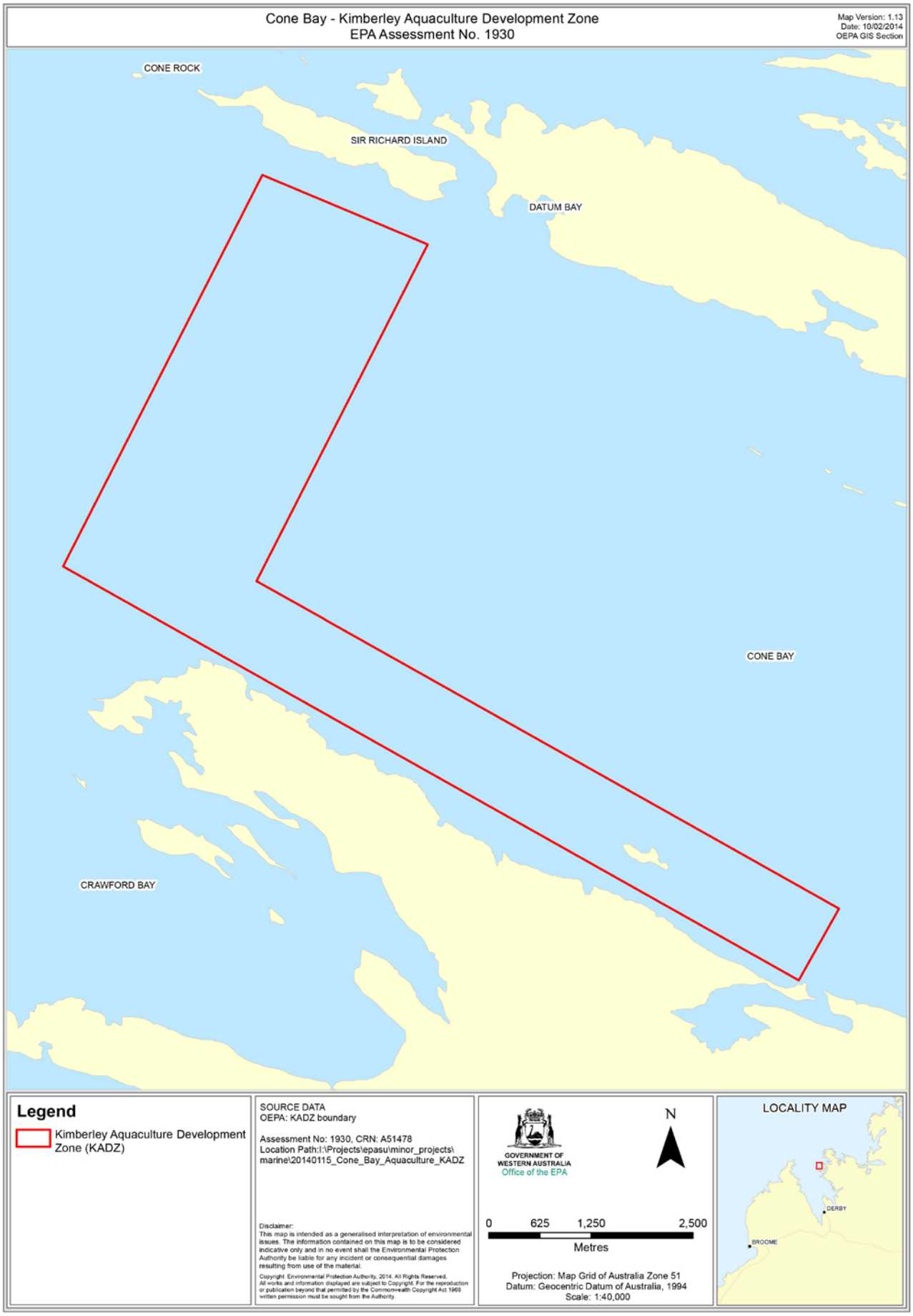

Figure 1: Boundaries of the Kimberley Aquaculture Development Zone

Schedule 2 – Specifications and Characteristics of the Future Proposals identified in the Strategic Proposal

Element	Description and authorised extent
Proposed aquaculture lease area	The proposed aquaculture lease area must be within the Kimberley Aquaculture Development Zone, with at least a 50 m separation distance between the boundary of the Kimberley Aquaculture Development Zone and boundary of the proposed aquaculture lease area.
Proposed aquaculture licence	Proposed aquaculture licence with a production capacity not exceeding 20,000 tonnes per annum having considered the existing aquaculture licences already issued in the Kimberley Aquaculture Development Zone.
Aquaculture operations	Including: • installation and maintenance of floating sea cages; • stocking of marine finfish of a species that occurs naturally within the Pilbara and Kimberley Region; and • finfish feeding, husbandry and harvesting.
Floating sea cage specifications	Including: • predator nets or equivalent to prevent fish escapes; • at least a two metre difference between the bottom of the sea cage and the seafloor at lowest astronomical tide; and • anchorage and mooring infrastructure associated with the sea cages must be used in such a way so as not to physically damage any reef or coral habitat.
Feed inputs	Only commercial pellet feeds manufactured within Australia to the standard specified in the Kimberley Aquaculture Development Zone Management Policy or if imported fish feed or ingredients then only with the approval of the Australian Quarantine Inspection Service.
Seed stock	From a facility certified by the Supervising Scientist Biodiversity and Biosecurity, Department of Fisheries or with a health certificate issued or approved by the Department of Fisheries.

Schedule 3

Table 1: Ecological Protection Areas and the Levels of Ecological Protection Specified for those Areas (Referenced in Condition 6)

Area Description	Spatial extent	Level of Ecological Protection for the Maintenance of Ecosystem Health
Maximum Ecological Protection Area		
The Maximum Ecological Protection Area is all that water which lies outside High Ecological Protection Area (as defined below)	Refer Figure 2	A maximum level of ecological protection would require that the implementation of the Proposal is managed such that there would be no change beyond natural variation in ecosystem processes, biodiversity, abundance, and biomass of marine life or in the quality of water, sediment and biota.
High Ecological Protection Area		
The High Ecological Protection Area includes waters in the Kimberley Aquaculture Development Zone and waters within 300 metres of the boundary of the Kimberley Aquaculture Development Zone but excludes the Moderate Ecological Protection Areas as defined below	Refer to Figure 2 and the relevant spatial data co-ordinates provided in Table 2 in Schedule 3	To allow small changes in the quality of water, sediment and biota (e.g. small changes in contaminant concentrations with no resultant detectable changes beyond natural variation in the diversity of species and biological communities, ecosystem processes and abundance/biomass of marine life). For this protection level the 99% species protection guideline trigger values for toxicants in water apply (except for cobalt for which the 95% species protection guideline should apply) and for discharges that contain a mixture of toxicants, the sum of the concentrations of the primary toxicants (up to 5 toxicants) should not exceed the sum of the relevant trigger values. For other physical and chemical parameters the trigger values are based on the 80th percentile of natural background measurements. Trigger values should be derived in accordance with the recommended approaches in ANZECC & ARMCANZ guidelines. For sediments the ISQG-low applies.

Moderate Ecological Protection Area		
The Moderate Ecological Protection Area includes waters within the Kimberley Aquaculture Development Zone	No more than 33 per cent of an Aquaculture Lease Area may be designated as a Moderate Ecological Protection Area	To allow moderate changes in the quality of water, sediment and biota (e.g. moderate changes in contaminant concentrations that cause small changes, beyond natural variation, in ecosystem processes and abundance/biomass of marine life, but no detectable changes from the natural diversity of species and biological communities). For this protection level the 90% species protection guideline trigger values for toxicants in water apply and for discharges that contain a mixture of toxicants, the sum of the concentrations of the primary toxicants (up to 5 toxicants) should not exceed the sum of the relevant trigger values. For other physical and chemical parameters the trigger values are based on the 95th percentile of natural background measurements. Trigger values should be derived in accordance with the recommended approaches in ANZECC & ARMCANZ guidelines. For sediments the ISQG-low applies.

Table 2: Coordinates defining the High Ecological Protection Area

Coordinates defining the High Ecological Protection Area as described in Table 1 above and shown in Figure 2 are for the marine waters within the area the dataset below prescribes, noting that the correct recreation of the boundaries below requires the sequential connection of the coordinates as per its coordinate number. All coordinates are listed in Map Grid of Australia Zone 50 (MGA Zone 50), datum of Geodetic Datum of Australia 1994 (GDA94). This dataset is held by the OEPA and is dated 15 January 2014 (CRN: A51478).

Coordinate No.	Easting	Northing
1	551584.14	8180149.77
2	558793.21	8176371.41
3	558337.82	8175502.43
4	558141.76	8175128.26
5	558137.07	8175138.57
6	558130.09	8175146.55

Coordinate No.	Easting	Northing
7	558119.08	8175152.57
8	558102.07	8175153.57
9	558063.09	8175167.56
10	558043.09	8175182.55
11	558038.08	8175192.55
12	558038.08	8175205.55

Coordinate No.	Easting	Northing
13	558029.07	8175225.55
14	558022.09	8175231.56
15	558017.07	8175240.54
16	558016.09	8175282.55
17	558020.09	8175294.56
18	558026.07	8175300.57
19	558027.08	8175311.56
20	558019.09	8175319.57
21	557999.08	8175331.55
22	557976.07	8175326.57
23	557970.07	8175302.56
24	557951.08	8175305.56
25	557942.08	8175310.56
26	557904.07	8175310.54
27	557894.09	8175302.55
28	557881.08	8175282.55
29	557873.09	8175277.56
30	557851.09	8175276.55
31	557803.07	8175267.55
32	557794.08	8175262.56
33	557765.08	8175260.55
34	557723.08	8175276.55
35	557676.08	8175282.55
36	557622.07	8175304.54
37	557569.08	8175335.56
38	557532.09	8175349.55
39	557510.08	8175365.53
40	557493.08	8175371.54
41	557465.08	8175377.54
42	557435.09	8175393.54
43	557406.08	8175419.55
44	557381.09	8175431.54
45	557362.07	8175447.54
46	557348.09	8175453.54
47	557320.07	8175473.53
48	557298.07	8175483.54
49	557256.07	8175509.53
50	557222.07	8175532.54
51	557209.09	8175533.53
52	557198.08	8175539.55
53	557185.09	8175538.54

Coordinate No.	Easting	Northing
54	557157.07	8175548.54
55	557120.07	8175560.53
56	557085.07	8175573.53
57	557073.09	8175572.55
58	557050.08	8175583.52
59	557036.07	8175586.53
60	557022.07	8175596.53
61	557010.09	8175596.53
62	556981.07	8175606.53
63	556975.07	8175612.54
64	556962.09	8175614.54
65	556949.09	8175621.52
66	556884.09	8175648.52
67	556865.07	8175665.53
68	556851.07	8175673.52
69	556838.09	8175677.52
70	556816.09	8175687.54
71	556780.08	8175713.54
72	556755.09	8175725.53
73	556724.07	8175743.52
74	556700.07	8175757.54
75	556680.09	8175770.53
76	556655.08	8175785.53
77	556614.08	8175809.51
78	556589.07	8175836.53
79	556588.92	8175837.32
80	556577.61	8175851.77
81	556564.84	8175868.02
82	556546.84	8175878.03
83	556538.83	8175886.01
84	556505.82	8175903.03
85	556497.56	8175907.17
86	556483.67	8175913.99
87	556469.73	8175920.61
88	556454.83	8175928.02
89	556448.83	8175934.03
90	556424.83	8175939.01
91	556398.82	8175956.01
92	556381.82	8175963.03
93	556382.83	8175976.02
94	556376.83	8175995.03

Coordinate No.	Easting	Northing
95	556340.82	8176020.01
96	556327.84	8176024.01
97	556309.82	8176038.01
98	556294.84	8176055.99
99	556254.83	8176085.02
100	556241.82	8176086.00
101	556212.84	8176081.01
102	556201.82	8176083.00
103	556173.83	8176080.00
104	556164.82	8176083.01
105	556159.84	8176094.02
106	556164.82	8176105.01
107	556161.82	8176115.00
108	556164.84	8176124.00
109	556159.82	8176133.02
110	556127.83	8176153.01
111	556116.82	8176163.00
112	556106.84	8176164.01
113	556079.84	8176181.01
114	556071.83	8176189.02
115	556059.83	8176193.01
116	556051.82	8176201.02
117	556022.83	8176213.02
118	556001.84	8176224.02
119	555994.83	8176231.01
120	555979.84	8176235.01
121	555968.83	8176241.99
122	555955.84	8176241.99
123	555936.82	8176246.00
124	555919.17	8176243.22
125	555912.56	8176243.58
126	555906.84	8176245.99
127	555888.84	8176265.00
128	555866.82	8176270.00
129	555838.82	8176274.01
130	555828.82	8176270.99
131	555817.83	8176273.02
132	555808.83	8176269.01
133	555794.84	8176268.00
134	555785.83	8176271.99
135	555780.84	8176279.99

Coordinate No.	Easting	Northing
136	555763.82	8176289.99
137	555752.83	8176302.99
138	555732.82	8176315.00
139	555725.84	8176323.00
140	555707.82	8176335.00
141	555694.83	8176333.99
142	555686.84	8176338.99
143	555623.84	8176348.99
144	555599.84	8176368.99
145	555590.84	8176372.98
146	555584.84	8176380.00
147	555571.82	8176378.99
148	555556.83	8176381.00
149	555547.82	8176384.98
150	555519.84	8176384.99
151	555493.83	8176394.99
152	555479.84	8176396.01
153	555439.82	8176419.00
154	555398.82	8176431.98
155	555389.82	8176427.00
156	555388.84	8176412.99
157	555390.82	8176399.98
158	555387.83	8176390.99
159	555368.84	8176371.00
160	555366.45	8176362.13
161	555269.30	8176413.06
162	555267.83	8176451.99
163	555240.83	8176489.97
164	555211.84	8176512.97
165	555137.83	8176510.98
166	555123.82	8176515.99
167	555071.10	8176516.99
168	553349.36	8177419.60
169	553339.83	8177436.42
170	553328.83	8177461.43
171	553323.81	8177470.45
172	553323.82	8177473.43
173	553321.81	8177475.43
174	553321.82	8177478.44
175	553319.83	8177479.43
176	553319.82	8177487.42

Coordinate No.	Easting	Northing
177	553315.02	8177499.04
178	553309.83	8177499.43
179	553294.81	8177515.44
180	553285.81	8177521.43
181	553267.81	8177544.43
182	553265.82	8177554.42
183	553245.82	8177569.43
184	553229.82	8177585.42
185	553224.84	8177609.43
186	553217.82	8177615.44
187	553185.82	8177621.42
188	553176.83	8177632.44
189	553166.83	8177651.43
190	553140.83	8177663.44
191	553127.84	8177665.44
192	553110.82	8177675.44
193	553095.82	8177676.43
194	553088.84	8177682.44
195	553075.83	8177686.44
196	553062.82	8177687.42
197	553011.82	8177698.42
198	553002.82	8177704.44
199	552989.84	8177704.44
200	552979.83	8177710.43
201	552977.84	8177721.43
202	552967.82	8177722.44
203	552967.83	8177726.03
204	552951.83	8177719.44
205	552936.83	8177717.44
206	552925.84	8177722.42
207	552906.83	8177721.42
208	552895.34	8177714.44
209	552887.81	8177713.42
210	552860.82	8177711.42
211	552849.82	8177708.44
212	552837.82	8177711.42
213	552834.82	8177710.44
214	552833.82	8177712.44
215	552828.81	8177714.42
216	552823.81	8177719.41
217	552819.81	8177720.41

Coordinate No.	Easting	Northing
218	552818.81	8177724.43
219	552809.81	8177727.41
220	552801.82	8177733.42
221	552800.82	8177736.43
222	552770.81	8177747.41
223	552756.81	8177745.42
224	552741.81	8177747.42
225	552727.82	8177773.42
226	552726.83	8177780.43
227	552723.81	8177782.41
228	552721.81	8177788.43
229	552713.83	8177800.41
230	552707.84	8177812.40
231	552697.84	8177819.44
232	552691.84	8177828.42
233	552690.83	8177839.43
234	552692.83	8177843.42
235	552693.82	8177859.42
236	552690.82	8177872.43
237	552683.82	8177882.43
238	552676.83	8177884.42
239	552675.83	8177886.42
240	552670.82	8177887.41
241	552668.84	8177890.43
242	552651.83	8177892.41
243	552624.84	8177889.43
244	552602.83	8177897.41
245	552598.84	8177902.43
246	552590.83	8177900.42
247	552567.84	8177908.41
248	552559.83	8177918.41
249	552546.83	8177924.44
250	552519.83	8177931.42
251	552499.82	8177941.42
252	552488.82	8177941.42
253	552481.83	8177947.43
254	552469.84	8177951.42
255	552464.84	8177958.41
256	552455.83	8177960.43
257	552448.84	8177960.41
258	552443.82	8177956.43

Coordinate No.	Easting	Northing
259	552417.83	8177952.41
260	552373.82	8177935.43
261	552367.21	8177934.40
262	552100.76	8178074.04
263	552100.82	8178074.40
264	552096.83	8178088.42
265	552089.83	8178102.42
266	552074.82	8178121.41
267	552058.84	8178134.42
268	551943.82	8178230.42
269	551930.82	8178237.43
270	551910.82	8178252.41
271	551896.83	8178256.41
272	551881.83	8178257.42
273	551879.82	8178272.43
274	551880.84	8178287.42
275	551878.83	8178304.42
276	551867.82	8178311.42
277	551851.82	8178317.42
278	551845.83	8178330.40
279	551849.84	8178344.40
280	551866.84	8178360.40
281	551879.82	8178368.42
282	551891.83	8178372.42
283	551904.84	8178367.41
284	551916.83	8178372.42
285	551907.84	8178382.40
286	551873.82	8178403.41
287	551822.83	8178430.42
288	551795.84	8178440.41
289	551782.82	8178438.41
290	551792.84	8178411.41
291	551781.83	8178406.42
292	551769.82	8178409.40
293	551745.84	8178422.40
294	551703.84	8178440.41
295	551687.83	8178442.42
296	551667.83	8178459.40
297	551653.82	8178463.42
298	551626.84	8178452.40
299	551594.83	8178447.40

Coordinate No.	Easting	Northing
300	551588.84	8178457.40
301	551595.84	8178485.41
302	551591.84	8178498.42
303	551582.82	8178508.40
304	551562.84	8178522.40
305	551519.83	8178538.38
306	551496.82	8178551.41
307	551441.84	8178570.41
308	551433.83	8178579.40
309	551394.82	8178610.40
310	551367.82	8178628.41
311	551323.82	8178650.40
312	551283.82	8178663.40
313	551252.82	8178658.40
314	551211.82	8178684.40
315	551164.83	8178699.39
316	551154.82	8178692.41
317	551144.84	8178682.41
318	551144.82	8178652.39
319	551148.82	8178637.42
320	551155.84	8178621.39
321	551176.83	8178582.41
322	551180.83	8178568.42
323	551178.60	8178557.28
324	551162.26	8178565.84
325	551155.84	8178570.41
326	551145.84	8178579.41
327	551132.83	8178585.40
328	551113.83	8178599.39
329	551104.84	8178609.40
330	551100.82	8178624.41
331	551098.84	8178642.39
332	551100.84	8178673.39
333	551103.82	8178690.41
334	551105.82	8178722.39
335	551107.84	8178737.41
336	551118.83	8178758.40
337	551119.82	8178773.40
338	551100.84	8178796.40
339	551092.86	8178807.48
340	551087.42	8178815.82

Coordinate No.	Easting	Northing
341	551068.83	8178853.41
342	551060.82	8178862.40
343	551027.84	8178885.41
344	550990.83	8178906.39
345	550958.83	8178930.40
346	550945.83	8178935.41
347	550884.83	8178945.39
348	550836.82	8178967.38
349	550791.82	8178983.40
350	550758.84	8178980.38
351	550731.84	8178995.38
352	550717.82	8178999.40
353	550707.84	8178990.39
354	550704.83	8178973.38
355	550698.84	8178961.41
356	550673.84	8179007.40
357	550665.82	8179014.40
358	550641.82	8179022.38
359	550628.84	8179024.38
360	550595.82	8179031.40
361	550569.84	8179041.39
362	550556.84	8179044.40
363	550528.84	8179053.38
364	550521.83	8179051.39
365	550529.83	8179045.38
366	550532.84	8179041.38
367	550536.84	8179016.39
368	550534.84	8178994.39
369	550532.82	8178957.40
370	550527.82	8178948.38
371	550522.83	8178943.38
372	550506.82	8178933.40
373	550498.84	8178932.38
374	550479.84	8178931.37
375	550461.82	8178935.38
376	550453.82	8178937.40
377	550452.21	8178937.93
378	550443.89	8178942.29
379	550443.84	8178942.40
380	550440.67	8178943.98
381	550440.65	8178943.99

Coordinate No.	Easting	Northing
382	549617.37	8179375.34
383	548440.69	8179991.77
384	550962.19	8185337.84
385	553558.19	8184335.06
386	551584.14	8180149.77

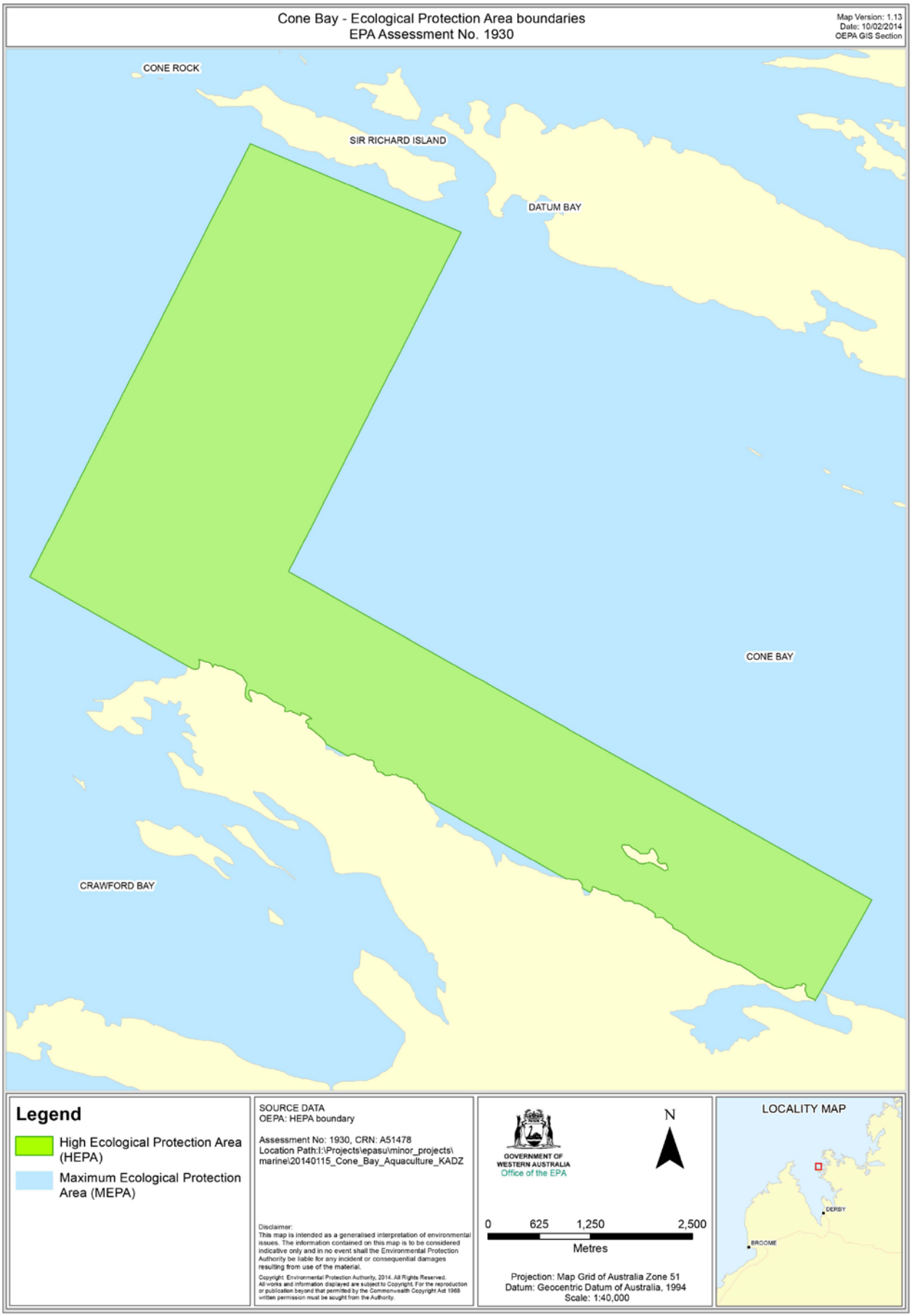

Figure 2: Depiction of Maximum and High Ecological Protection Area boundaries

Schedule 4 – Defined Terms

Term or Phrase	Definition
ANZECC & ARMCANZ guidelines	The water and sediment quality guidelines contained within the document: Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000) *Australian Water Quality Guidelines for Fresh and Marine Waters, National Water Quality Management Strategy*, Australian and New Zealand Environment and Conservation Council, Canberra.
Aquaculture Lease Area	An area that is within the boundaries of the Kimberley Aquaculture Development Zone defined in Schedule 4 and is authorised under section 97 of the *Fisheries Resource Management Act 1994* to be used for the purposes of aquaculture.
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the *Environmental Protection Act 1986*, or his delegate.
EPA	Environmental Protection Authority.
EP Act	*Environmental Protection Act 1986.*
ISQG-low	Has the meaning given to it in the ANZECC & ARMCANZ guidelines.
Irreversible	As defined in the EPA's Environmental Assessment Guideline No 7. *Marine Dredging Proposals*, as amended or updated from time to time.
Pilbara and Kimberley Region	As defined in Regulation 3 of the *Fish Resources Management Regulations 1995.*

Appendix 3

Preliminary key factor not requiring further evaluation in the EPA report

The EPA identified the following key environmental factor in the scope of the API which, at the conclusion of the assessment, was not considered to be a key environmental factor warranting discussion and evaluation in the EPA's assessment report.

Preliminary Key Factor and EPA objective	Activities and potential impact	Relevant legislation and policy	Assessment, management and mitigation of impacts
Marine Fauna			
To maintain the diversity, geographic distribution and viability of fauna at the species and population levels.	**Vessel strike & collision** Vessel strike has the potential to result in injury or death of mammals, reptiles and large fish. **Entanglement** Entanglement could result in injury or death of mammals, reptiles and fish.	*Environment Protection and Biodiversity Conservation Act, 1999* *Wildlife Conservation Act 1950* *Fish Resources Management Regulations 1995*	Licensees must work in accordance with the Zone Management Policy, their MEMP and their licence conditions. The likelihood and severity of vessel strike can be reduced with the following measures (which are outlined in the EMMP): • Reduction of vessel speeds • Appointment of a marine fauna watch person • Preferred vessel routes established and used • Minimise boating activities • Abide by all relevant wildlife regulations such as safe distances from whales Record and report all negative interactions with wildlife to DPaW Licensees must work in accordance with the Zone Management Policy, their MEMP and licence conditions and implement control measures to minimise interactions with all wildlife. The likelihood and severity of entanglement can be reduced with the following measures (which are outlined in the EMMP): • Record and report all negative interactions with wildlife to DPaW

			• All infrastructure must be in good order and maintain the tautness of nets, lines and ropes to avoid entanglement • Regular inspections of net integrity and immediate repairs when necessary are required • Predator exclusion systems on sea-cages are mandatory. The ACWA Code of Conduct (the Code) recommends the use of predator netting that is highly visible by ensuring the twine is of a mesh diameter easily seen by wildlife. • Licensees are encouraged to use electric fencing, raised railing, jump nets and/ or, bird netting to prevent predators from entering the cages. • Dead fish must be removed and excessive feed minimised to avoid attraction and predation.
	Disease Fish translocated to the area could introduce new diseases to the natural marine environment, which could infect wild populations of fish. Similarly, fish feeds may be a vector for introduction of disease.		AQIS administers the Quarantine Act 1908, Export Control Act 1982, Imported Food Control Act 1992 and various other Acts. Translocation approval is required before moving fish into commercial aquaculture systems. Juvenile stock need to be sourced from a certified facility or be accompanied by a health certificate. Within each operators approved MEMP, the biosecurity procedures must include: • records such as translocation approvals,

			health certificates, disease management records and unusual mortality reports; • stocking practices, including stock acquisition, translocation, rotation and harvest; • emergency procedures; • disease testing protocols and quarantine; • equipment hygiene; and, • removal/disposal of dead fish or infected fish. The FRMR requires diseases to be reported to the Department of Fisheries within 24 hours.

Appendix 4

Proponent’s API documentation

Provided on CD in hardcopies and available on the EPA’s website