

Statement of Reasons

PROJECT SEA DRAGON PTY LTD – PROJECT SEA DRAGON STAGE 1 HATCHERY

PROJECT

Project Sea Dragon Pty Ltd (the Proponent), submitted the Notice of Intent (NOI) for the Project Sea Dragon (PSD) Stage 1 Hatchery (the Project) to the Northern Territory Environment Protection Authority (NT EPA) on 31 October 2017 for consideration under the *Environmental Assessment Act* (EA Act).

The proposal involves the breeding, spawning and rearing of larval prawns to 15 day post-larval prawns. The hatchery would source approximately 1400 broodstock prawns per week from the PSD Broodstock Maturation Centre at Point Ceylon, Bynoe Harbour (a separate project) and be the source of post-larval prawns for the PSD Stage 1 Legune Grow-out Facility at Legune Station in the Victoria River District (also a separate project).

Both the Point Ceylon and Legune Projects have previously been assessed by the NT EPA at the level of Environmental Impact Statements.

The Project is proposed for vacant crown land zoned Future Development (FD) adjacent to areas zoned Conservation (CN), Rural (R) and Rural living (RL) on NT Portion 2626, Gunn Point. The site is contained within the Shoal Bay Site of Conservation Significance and borders the Tree Point Conservation Area.

The Project includes the following components and activities:

- clearing of up to 29 ha of native vegetation
- three buildings that house broodstock, spawning, hatching, and larval-rearing tanks
- two algal laboratories and two Artemia rooms
- two seawater intake pipelines, constructed by horizontal directional drilling (HDD) under the dune and intertidal zone, pumping facilities to pump an average of 954 kL per day, and three seawater storage ponds
- initial supply of up to 44.25 kL per day of freshwater from a Power and Water Corporation registered bore
- three wastewater settlement ponds
- one wastewater discharge pipeline, constructed by HDD under the dune and intertidal zone, terminating in Shoal Bay at approximately 2.5 km offshore, discharging an average of 954 kL of wastewater per day
- two diesel generators and fuel storage
- waste management storage areas and infrastructure
- incinerator
- road infrastructure, perimeter fencing and firebreaks
- ancillary infrastructure for two accommodation buildings and site administration.

The Project is proposed to commence construction in April 2019 and scheduled to be completed by February 2020 at which time stocking of the hatchery is planned. The Project represents Stage 1 of a larger hatchery development. At full scale PSD will require four hatchery modules, the location and timing of future hatchery modules has not been determined.

CONSULTATION

The NOI has been reviewed as a notification under the EA Act in consultation with Northern Territory Government (NTG) advisory bodies and the responsible Minister, in accordance with clause 8(1) of the Environmental Assessment Administrative Procedures (EAAP).

A development application for the Project was available for public comment in accordance with the *Planning Act*, from 3 November to 17 November 2017.

The Project was referred to the Department of Environment and Energy on 1 November 2017, for consideration under the *Environment Protection and Biodiversity Conservation Act 1999*. (EPBC Act)

JUSTIFICATION

The Notice of Intent was assessed against the NT EPA's environmental factors and objectives.

Terrestrial Flora and Fauna

Objective: Protect the NT's flora and fauna so that biological diversity and ecological integrity are maintained.

The Project has the potential to impact on flora and fauna through the removal of habitat for threatened plants (in particular, *Cycas armstrongii* and *Typhonium praetermissum*), clearing of wetland vegetation for perimeter fencing and associated firebreaks, and the introduction and spread of weeds.

Cycas armstrongii

The Project is located in an area of high environmental value for the cycad *C. armstrongii*. The area of highest value, where cycad densities are the greatest, is in the eastern portion of the Project. The Project will have a direct impact on cycads through clearing. It is estimated that approximately 8% of the total population of cycads on site will be cleared. The Proponent has located the majority of the Stage 1 hatchery infrastructure towards the western boundary to reduce the amount of clearing in the high density cycad area. However some infrastructure still overlaps the high density area (and although beyond the scope of this assessment, the Project may facilitate future growth of the hatchery at this site which is likely to further encroach on the high density areas). The Project proposes salvage of cycads in these areas (estimated at 6000 individuals based on density estimates presented in the NOI). While salvage allows valuable individual plants to be reused, it does not mitigate the loss of high value habitat. However, the NT EPA is of the opinion that removal or relocation is unlikely to significantly impact on the local or regional population.

Typhonium praetermissum

T. praetermissum has recently been recorded near the development site. The areas of "highest likelihood" habitat for this species have recently been reassessed by the Department of Environment and Natural Resources (DENR), and occur more extensively on the Project site than described in the NOI. The Proponent has committed to targeted surveys for *T. praetermissum* during the optimal period for detection of this cryptic plant (December – March) and providing location information for individual plants (should they be found on site) to the NT Herbarium. Project infrastructure has been located to avoid highest likelihood habitat for *T. praetermissum* however should individual plants be identified within areas proposed for habitat removal the Proponent proposes to relocate these under permit. While salvage allows valuable individual plants to be reused, it does not mitigate the loss of high value habitat. The NT EPA is of the

opinion that this proportional removal is unlikely to significantly impact on the local or regional population.

Other threatened species

The bladderwort, *Utricularia dunstaniae* and triggerplant *Stylidium ensatum* each occur in specific yet different seasonally wet habitats. There is a low likelihood of these species occurring in areas of constrained land (in the south eastern corner of the Project). The Project is unlikely to impact the remaining two threatened plant species provided wetland habitats are not disturbed.

The atlas moth *Attacus wardi* has been recorded in the Gunn Point area and is dependent on the sensitive monsoon vine thicket habitat that occurs to the west of main Project area where HDD is proposed. The use of HDD will mitigate disturbance to sensitive coastal vegetation.

The Proponent has committed to no direct impact to the two drainage areas (wetlands), located in the south east and south west of the Project area. The wetlands will be buffered consistent with the NT Land Clearing Guidelines. The NT EPA notes that both wetlands would be bisected by proposed fencing infrastructure and associated firebreaks. As the fence line does not avoid the conservation zoned land of Tree Point Conservation Area and the Priority Environmental Management (PEM) area associated with sandsheet heath and wetland to the east, management of direct and indirect impacts to these wetlands will need to be detailed by specific management actions in the Environmental Management Plan. The NT EPA considers that the implementation of standard environmental management measures would prevent a potentially significant impact to wetlands and drainage areas, and has made a recommendation to the Development Consent Authority (DCA) to this effect.

The NT EPA is satisfied that potential impacts and risks to sensitive habitats and threatened species will be mitigated through measures presented above and that its objective for terrestrial flora and fauna is likely to be met.

Terrestrial Environmental Quality

Objective: Maintain the quality of land and soils so that environmental values are maintained.

The Project has the potential to impact on terrestrial environmental quality through soil erosion from landscape modifications and earthworks (particularly in areas of high slopes), pollution from waste and spills and ineffective decommissioning and site rehabilitation.

Soil erosion

The hatchery facilities and water storage ponds are located on slopes up to 4% which provide a significant potential for severe erosion. The Proponent has committed to developing and implementing an Erosion and Sediment Control Plan (ESCP). The NT EPA supports this, subject to the ESCP being prepared in accordance with the International Erosion Control Association (IECA) 2008 Guidelines by a Certified Professional in Erosion and Sediment Control (CPSEC), and subsequently reviewed and approved by a suitably qualified and experienced CPSEC third party auditor. NT EPA has recommended to the DCA that the ESCP must be finalised to the satisfaction of DENR prior to approvals.

The NT EPA is satisfied that potential impacts and risks associated with erosion and sediment control will be mitigated through engineering of the proposed works in accordance with DENR reviewed site specific CPSEC approved ESCP.

Waste Management

The HDD has the potential to impact terrestrial environmental quality through potential loss of containments from cuttings and drilling fluids. The cuttings and drilling fluids have the potential to contain listed wastes under Schedule 2 of the *Waste Management and Pollution Control (Administration) Regulations*. The NT EPA acknowledges that this risk may be adequately addressed through the implementation of mitigation and management actions, which should be detailed in site specific management plans. NT EPA has recommended to the DCA that a HDD Spoil Management Plan must be finalised to the satisfaction of DENR prior to approvals.

Domestic sewage from accommodation, site administration and hatchery buildings will be managed on-site via sewage systems comprising of wastewater treatment plants and a land disposal system. The Power and Water Corporation (PWC) advised that all proposed on-site sewer treatment and disposal systems must be located away from bore buffer zones for future bores planned for this area.

Pond waste is proposed to be removed periodically from the settlement ponds and placed in a dedicated sediment storage area for solar drying and aeration. The sediment storage area is approximately 30 m² and located adjacent to the discharge settlement ponds. Stored sediment will be used as top dressing or fill on site after the salt has leached out. The combined pond waste accumulation per annum is estimated at 5 400 kg from both the seawater storage and discharge settlement ponds. Pond waste is likely to contain prawn effluent and residues that are categorised as listed wastes under Schedule 2 of the *Waste Management and Pollution Control (Administration) Regulations*. Accordingly, an environment protection approval and an environment protection licence will be required under the *Waste Management and Pollution Control Act (WMPC Act)* for the construction and operation of facilities for waste stockpiling, treatment and disposal.

The Proponent will be required to include the management of pond waste in a detailed Waste Management Plan that identifies the volumes and composition of wastes and describes measures to manage the various waste streams. NT EPA has recommended to the DCA that the Waste Management Plan is to incorporate conceptual site modelling and risk assessments for all waste handling processes to the satisfaction of DENR prior to approvals.

The NT EPA is satisfied that potential impacts and risks to terrestrial environmental quality can be mitigated through management measures proposed by the Proponent and recommended by the NT EPA. The NT EPA considers that its environmental objective for terrestrial environmental quality is likely to be met.

Marine Flora and Fauna

Objective: Protect marine flora and fauna so that biological diversity and ecological integrity are maintained.

The Project has the potential to impact marine megafauna directly from piling activities to anchor the intake and discharge pipes and from light spill and sky glow to the adjacent beach, and indirectly from changes to water quality from nutrient discharges. In addition there may be potential impacts to marine fauna from the seawater intake pipes.

Flora

Recent benthic habitat mapping by DENR has identified seagrass in Shoal Bay adjacent to the Project site. While the Project is unlikely to have a significant impact on seagrass as a result of its relatively small footprint of direct disturbance (for construction of the pipelines), the presence of seagrass increases the likelihood of dugong and turtles inhabiting the area. The Project has the potential to impact seagrass habitat as a result of discharges, discussed further below under Marine Environmental Quality.

Fauna

Three species of coastal dolphin (Australian humpback, Australian snubfin and bottlenose dolphin *Tursiops sp.*) have been recorded within 5 km of the discharge pipeline location. DENR advises that the marine megafauna present in Shoal Bay are likely to be resident in the Shoal Bay area, rather than transient as stated in the NOI. Monitoring of coastal dolphin populations in the greater Darwin Harbour region indicates that Shoal Bay, and particularly Hope Inlet, is an important calving area for the Australian humpback dolphin. The potential use of pile driving will produce underwater noise which could directly impact marine fauna, including dolphins by temporarily or permanently shifting hearing thresholds and displace them from important habitat areas. The Proponent identified the implementation of vessel speeds in the construction zone and marine megafauna observation and exclusion zones as potential mitigation measures. The NT EPA considers that with the implementation of appropriate mitigation measures during construction, significant impacts can be avoided.

The NOI incorrectly states that the nearest known turtle nesting beach is 18 km from the Project, as the Flatback turtle (*Natator depressus*) is known to nest on the beach 200 m from the Project boundary. The Proponent has adequately addressed risks of entrainment and light spill during operation, however there may be a short-term risk from light spill during construction and additional measures to manage this should be considered. The NT EPA has recommended to the DCA that the Proponent prepare and implement a Marine Megafauna Construction Mitigation and Management Plan, to the satisfaction of DENR, prior to commencing construction. The plan should include appropriate vessel speeds in the construction zone and marine megafauna observation and exclusion zones as potential mitigation measures, as well as appropriately sized screens on seawater intake pipes to minimise the entrapment of marine species.

The NT EPA is satisfied that potential impacts and risks associated with installation and operation of the seawater pipes on marine megafauna and shorebirds are unlikely to be significant and can be adequately managed through the implementation of a detailed fauna management plan. The NT EPA therefore considers that its environmental objective for marine flora and fauna is likely to be met.

Benthic Communities and Habitat

Objective: Protect benthic communities and habitats so that biological and functional diversity and ecological integrity are maintained.

The Project has the potential to impact benthic communities and habitat from increased nutrient levels to the receiving environment. Discharge wastewater would be released 2.5 km offshore into water of 7 m depth.

The NOI describes the marine habitat of Shoal Bay as soft sediments based on coarse scale habitat mapping. Advice from DENR, referencing recent surveys identifies very healthy coral communities extending north from 6.5 km to the north of the Project. Seagrass has been observed in the near coastal zone in the vicinity of the discharge pipeline. The presence of seagrass may provide feeding habitat for marine turtles and dugong. Installation of the seawater intake and discharge pipelines will have direct, localised impacts to benthic habitats, while discharge of wastewater has the potential to impact benthic communities more broadly during operation of the Project.

The presence of the values identified above warrants the development of a robust program of sufficient statistical power to monitor potential impacts to benthic communities and habitat from the construction of pipelines and subsequent discharge of wastewater. The NT EPA recommends the development and implementation of an appropriate Wastewater Discharge Monitoring Program to monitor potential impacts to biotic (benthic communities and habitat) and abiotic (physical and chemical) indicators from the discharge of wastewater. The monitoring program should include appropriate reference sites, and adhere to appropriate sampling protocols. The detail and extent of

the monitoring program should be informed by detailed benthic habitat mapping identifying all zones of seagrass, algae, coral communities and marine in-fauna. The baseline and ongoing data collection by this monitoring program will provide the mechanism for detecting any significant impact from wastewater discharge and allow development of site specific trigger values (SSTV) to inform the regulation of wastewater discharge.

The NT EPA is satisfied that potential impacts and risks to benthic communities and habitat associated with pipeline construction and discharge of wastewater will be mitigated through standard environmental management measures informed by the site specific wastewater discharge monitoring program. The NT EPA therefore considers that its objective for benthic communities and habitat is likely to be met.

Marine Environmental Quality

Objective: Maintain the quality and productivity of water, sediment and biota so that environmental values are protected.

The receiving environment (Shoal Bay) is characterised as slightly to moderately disturbed under the Darwin Harbour Water Quality Objectives (WQO). On a coarse scale, this classification is appropriate, as it acknowledges the discharge of the Leanyer Sewage Treatment Facility into Buffalo Creek (13.5 km from the Project), and contributions from the Howard River catchment. The NT EPA estimates that current discharges into Shoal Bay collectively contribute approximately 480 tonnes of total Nitrogen (TN) per year. The DENR advises that water quality at the Project site is not influenced by these discharges. This may indicate significant mixing and dilution, or a result of site specific hydrodynamics.

In comparison to existing contributions, the Project proposes to discharge 0.6 to 1.74 tonnes of TN per year representing approximately a 0.35% contribution to Shoal Bay.

The NT EPA is of the opinion that the limited additional nutrient loads identified above are unlikely to significantly impact water quality in the wider Shoal Bay.

The Project will discharge, on average, 954 kL per day of wastewater with elevated TN and Total Phosphorous. The proposed discharge of this wastewater from the Project into receiving waters has the potential to impact water quality, sediment and biota of the local receiving environment. The Proponent has not identified the condition or values of benthic habitats at the discharge point.

The NOI included numerical modelling to demonstrate that the proposed discharge will not cause any exceedance of WQOs for Aquatic Ecosystem Protection for Darwin Harbour, and infers that there will be no impact on marine biodiversity in Shoal Bay or Hope Inlet. However, the DENR advises that the reliance on meeting broadly defined WQOs may be overly simplistic and predicted near-field water quality data was not included in the NOI.

The modelling presented in the NOI is not considered sufficient as a basis to conclude that the risks to marine biota will remain within acceptable limits. The NT EPA recommends the development and implementation of an appropriate Wastewater Discharge Monitoring Program to monitor potential impacts to biotic (benthic communities and habitat) and abiotic (physical and chemical) indicators from the discharge of wastewater. The monitoring program should include appropriate reference sites, and adhere to appropriate sampling protocols. The detail and extent of the monitoring program should be informed by detailed benthic habitat mapping identifying all zones of seagrass, algae, coral communities and marine in-fauna. The baseline and ongoing data collection by this monitoring program will provide the mechanism for detecting any significant impact from wastewater discharge and allow development of SSTV to inform the regulation of wastewater discharge.

NT EPA has recommended to the Development Consent Authority that a robust wastewater discharge monitoring program should be developed and implemented to the satisfaction of DENR.

The NT EPA is satisfied that potential impacts and risks to marine environmental quality associated with the discharge of wastewater will be mitigated through standard environmental management measures informed by the DENR approved site specific wastewater discharge monitoring program. The NT EPA considers that its objective for marine environmental quality is therefore likely to be met.

Coastal Processes

Objective: Maintain the geophysical and hydrological processes that shape coastal morphology so that the environmental values of the coast are protected.

The intake and discharge pipelines will be constructed using HDD to avoid impacts to the coastal dunes, beach and a portion of the intertidal zone. The NT EPA considers that potential impacts and risks to coastal processes including impacts to the dunes and beach, and changes to scouring and deposition patterns, are largely avoided by using HDD, however it notes the final location of pipeline entry and exit has not been provided. The Proponent has not validated the reasons that it would decide to limit the use of HDD. The NT EPA is of the opinion that the project is unlikely to have a significant impact on coastal processes provided that the pipelines are buried below the sediment surface from an entry point behind the coastal dunes, to an exit point in the subtidal zone, and using HDD methods. Entry and exit points should avoid sensitive habitat including coastal vine thicket.

Provided that the pipeline is located to avoid the dunes, beach and intertidal zone, the NT EPA considers its environmental objective for coastal processes is likely to be met.

Air Quality and Greenhouse Gases

Objective: Maintain air quality and minimise emissions and their impact so that environmental values are protected.

There are currently no nearby sources of industrial pollution in the Project area, however smoke from distant and local vegetation burning during the Dry season contributes to regional emissions. The Project has the potential to generate air emissions through its construction (dust, odours) and operation phases (incinerator emissions and odours).

The NT EPA is satisfied that potential impacts and risks associated with dust generating activities will be mitigated through standard measures in the ESCP.

The Project will generate a potential incineration load of 140 kg each week, which will require incineration of 50 kg of waste prawns for one hour, three times per week. The Proponent notes that the incinerator and its operation will meet the requirements of the NT EPA Guideline for Disposal of Waste by Incineration, which provides specific operating and monitoring requirements for the use of multiple chamber incinerators.

The power facility comprising of two diesel generators will operate 24 hours per day. There is no consideration of renewable energy for this Project. The Proponent has conducted air quality modelling and located the power station 500 m from the nearest emissions and noise receptors to exceed required separation distances. The Project is not expected to generate significant greenhouse gases.

The NT EPA is satisfied that the Project will meet its objective for Air Quality and Greenhouse Gases.

Social Economic and Cultural Surroundings

Objective: Protect the rich social, economic, cultural and heritage values of the Northern Territory

The NT EPA is aware that the Project has attracted interest from the community as a result of its consultation under the *Planning Act*. Concerns with the Project include the potential for the Project to impact on the conservation and recreational values of the region. The Project is proposed on land zoned for Future Development, with adjacent coastal land on Gunn Point being zoned for Conservation and Public Open Space.

Gunn Point is highly utilised by locals as a beach camping and fishing area. The location of the Project is directly adjacent to the most favoured campsites along the beach. The development of the Project is inconsistent with bush camping continuing in close proximity, however, there is potential for the development of the Project to contribute to the management of a currently unmanaged area, including stabilisation of erosion on dunes and control of weed infestations in the vicinity of the Project.

The Project is likely to facilitate increased use of the area through the upgrade of the access road. It is reasonable to expect that the use of the area by the local community will change as a result of the Project. The community will be required to accept these changes, which are offset by the potential significant economic benefits to the region and broader Territory economy.

Heritage Branch has confirmed that all heritage and archaeological issues have been adequately addressed by the Proponent.

The NT EPA is of the opinion that its objectives for social, economic and cultural values are likely to be met.

CONCLUSION

The NT EPA considers that the potential environmental impacts and risks associated with the Project are not significant and that the Project does not require assessment under the EA Act. Comments from NTG advisory bodies have been provided to the Proponent and the NT EPA has provided recommendations to the Development Consent Authority to ensure that impacts and risks can be appropriately managed and responsibilities under other legislation can be met.

Furthermore, all environmental management and monitoring plans should be prepared to the satisfaction of the NT EPA on the advice of relevant government agencies and these, plus the results from implementation of such plans, should be publicly available.

DECISION

The proposed action, which was referred to the NT EPA by Project Sea Dragon Pty Ltd, has been examined by the NT EPA and preliminary investigations and inquiries conducted. The NT EPA has decided that the potential environmental impacts and risks of the proposed action are not so significant as to warrant environmental impact assessment by the NT EPA under provisions of the *Environment Assessment Act*. However, the proposed action will require assessment and approvals under the *Planning Act*, *Fisheries Act*, *Waste Management and Pollution Control Act* and *Water Act* to ensure the potential environmental impacts and risks associated with the proposed action are effectively managed.

This decision is made in accordance with clause 8(2) of Environmental Assessment Administrative Procedures, and subject to clause 14A the administrative procedures are at an end with respect to the proposed action.

A handwritten signature in blue ink, appearing to read 'P. Vogel', with a horizontal line underneath it.

DR PAUL VOGEL

CHAIRMAN

NORTHERN TERRITORY ENVIRONMENT PROTECTION AUTHORITY

13 DECEMBER 2017