



NSW GOVERNMENT
Department of Planning

***MAJOR PROJECT ASSESSMENT:
Oyster Lease Dredging – Wallis Lake
(05_0174)***



Director-General's
Environmental Assessment Report
Section 75I of the
*Environmental Planning and Assessment Act
1979*

February 2009

Cover Photo: Aerial view of Wallis Lake

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EXECUTIVE SUMMARY

Mr Trevor Dent (the Proponent) is proposing to dredge oyster lease No. 80-178 in the northern part of Wallis Lake, just south of Tuncurry at the mouth of the Wallamba River. The primary objective is to deepen the lease area, which is silted up, to allow oyster cultivation to be restored. The NSW Department of Primary Industries (DPI) considers that maximising the production of existing oyster lease areas is critical to maintaining oyster production levels in NSW.

The project involves:

- dredging approximately 8 hectares of the oyster lease to a depth of up to 2 metres;
- piping the dredged sand and silt material about 4 kilometres to an on-land stockpile and processing site;
- processing the sand and silt material in 2 settling ponds, and piping the process water back to the Wallamba River; and
- stockpiling the deposited sand (and silt) material on-site for subsequent sale.

The dredging operation would remove about 149,000 cubic metres of sand and silt over an 8 month period, with the stockpiled material to be gradually sold to market over a period of up to 15 years.

The project has a capital investment value of \$250,000, and would employ 7 people during dredging operations.

The proposal constitutes a major project under Part 3A of the *Environmental Planning and Assessment Act 1979*, as it is development for an extractive industry within the coastal zone, and consequently requires the Minister's approval.

The Department received 30 submissions in response to the public exhibition of the Environmental Assessment for the project: 6 from public authorities and 24 from the general public. The DPI and the Department of Environment and Climate Change (DECC) objected to the project as originally proposed, as did most of the public submissions. Key grounds for objection included impacts to aquatic ecology (including seagrass) and SEPP 14 wetlands (including endangered ecological communities), as well as soil and water impacts, and noise and dust impacts.

The Proponent subsequently prepared a Preferred Project Report which addressed the key issues by relocating the pipeline route to avoid the SEPP 14 wetlands, amending the dredge design to minimise impact on aquatic habitat and committing to rehabilitate seagrasses. Following the measures, both DECC and DPI removed their objections to the project.

With these project changes, the Department is satisfied that the environmental impacts of the project can be avoided, mitigated and/or managed to ensure an acceptable level of environmental performance. The Department has recommended a range of conditions to ensure this occurs.

The Department also acknowledges that the project would provide a number of benefits, as it would:

- contribute to achieving the objectives of the *NSW Oyster Industry Sustainable Aquaculture Strategy*;
- provide the opportunity for re-use of a degraded and unproductive oyster lease; and
- boost sand supplies for the region's construction industry.

On balance, the Department is satisfied that the project's benefits sufficiently outweigh its residual costs, and that it is therefore in the public interest and should be approved, subject to conditions.

- responses to submissions dated 12 December 2006, 5 January 2007 and 23 February 2007;
- correspondence to the Department dated 9 March 2007, 19 April 2007, 18 June 2007, 11 July 2007, 17 July 2007, 7 August 2007, 31 October 2007, 4 March 2008 (to DPI), 27 March 2008 (to DPI) and 21 July 2008; and
- Preferred Project Report dated August 2008.

The dredging site covers approximately 7.89 ha of the existing 9.24 ha lease. The lease is proposed to be dredged, primarily to a depth of 2 metres (m) below mean low water mark, over a 7 to 8 month period to yield approximately 149,000 m³ of material (see Figure 2). The area to be dredged to 2 m covers 7.16 ha. A further 0.73 ha of the site would be dredged to a lesser depth of 1.5 m. This lesser depth has been agreed between the Proponent and the Department of Primary Industries (DPI) and is designed to assist in rehabilitation of seagrass. In addition, two other areas within the lease would not be dredged for environmental reasons. These areas are:

- an area containing high quality seagrass, known as “Zone 1A” (0.05 ha); and
- areas within 10 m of mangrove habitat fringing Oaky Island.

In addition, an area of 1.06 ha, previously dredged to a sufficient depth for oyster cultivation and now containing high quality seagrass, would not be further dredged.

The transport of dredged material involves a pipeline being placed on the bed of the Wallamba River for 2.57 kilometres (km) and then traversing private land for 1.63 km to the sand stockpile and processing site. The dredge pipeline would generally be submerged and lie within 30-40 m of the western shore of the Wallamba River. Following concerns expressed by the Department of Environment and Climate Change (DECC) during the exhibition period, the pipeline route has been changed to avoid *State Environmental Planning Policy 14* (SEPP 14) wetlands.

The sand stockpile and processing site would cover a total works area of approximately 7.6 ha (which is a larger footprint than the 6 ha originally proposed in the EA). The area would include stockpiles, two settling ponds and a return water pipeline, and loading and parking areas (see Figure 3).

The key aspects of the project are further described in Table 1 below.

Table 1 – Key Aspects of the Project

Aspect	Description
Dredging	<i>Dredge 7.89 ha of Oyster Lease 80-178 to a maximum depth of 2 m below mean low water mark (MLWM), using a 200 millimetre (mm) cutter suction dredge with an estimated extraction rate of 100 m³/hr. Up to 149,000 m³ of material would be removed from the lease area over a 7 to 8 month operating period.</i>
Dredged material pipeline	<i>A new, flexible 200 mm poly pipe (rated to 630 kPa) approximately 4.2 km in length with approximately 2.57 km submerged in the lake and river until it emerges at the foreshore. On land, the pipeline would traverse existing cleared ground (mainly cleared fence line boundaries) for approximately 1.63 km to the dewatering and stockpile site. The pipeline would transfer the sand slurry (approx 33% solids) to the land-based treatment and stockpiling area.</i>
Booster pumps	<i>Three booster pumps to assist with the transfer of the dredged material in the dredge pipeline, two located on punts in the Wallamba River and one on land.</i>
Settling ponds	<i>Two settling ponds would be constructed with approximate areas of 17,500 m² and 7,800 m² and capacities of 45 ML and 18.4 ML respectively. The larger pond would have a sump at its base, which would be pumped out to the smaller pond. The smaller pond would be lined with plastic to retain water until it reaches a quality acceptable for discharge. Sand-sized particles would settle out in the larger pond along with some of the fines that are attached to the sand particles. The majority of the fines, as suspended material, would be pumped into the smaller pond to settle out. After settling, this water would be pumped back to the Wallamba River via a return pipeline running parallel to the dredge pipeline.</i>
Sand stockpiling	<i>Sand would be progressively removed from the larger pond using an excavator. Approximately 60% of all extracted material would be removed and stockpiled over areas primarily located on Lot 101, using a front end loader and truck to move the sand material around. The remaining 40% of the dredged material would be retained in the larger pond as a stockpile (see Figure 3).</i>
Sale and transport of material off site	<i>Up to 149,000 tonnes of sand would be transported from the stockpile site to market over a period of up to 15 years, resulting in up to 24 two-way truck movements per day. Customer-owned and contractor-owned trucks would use a transport route that follows Grey Gum Road and the Lakes Way to the Pacific Highway to transport material to market.</i>

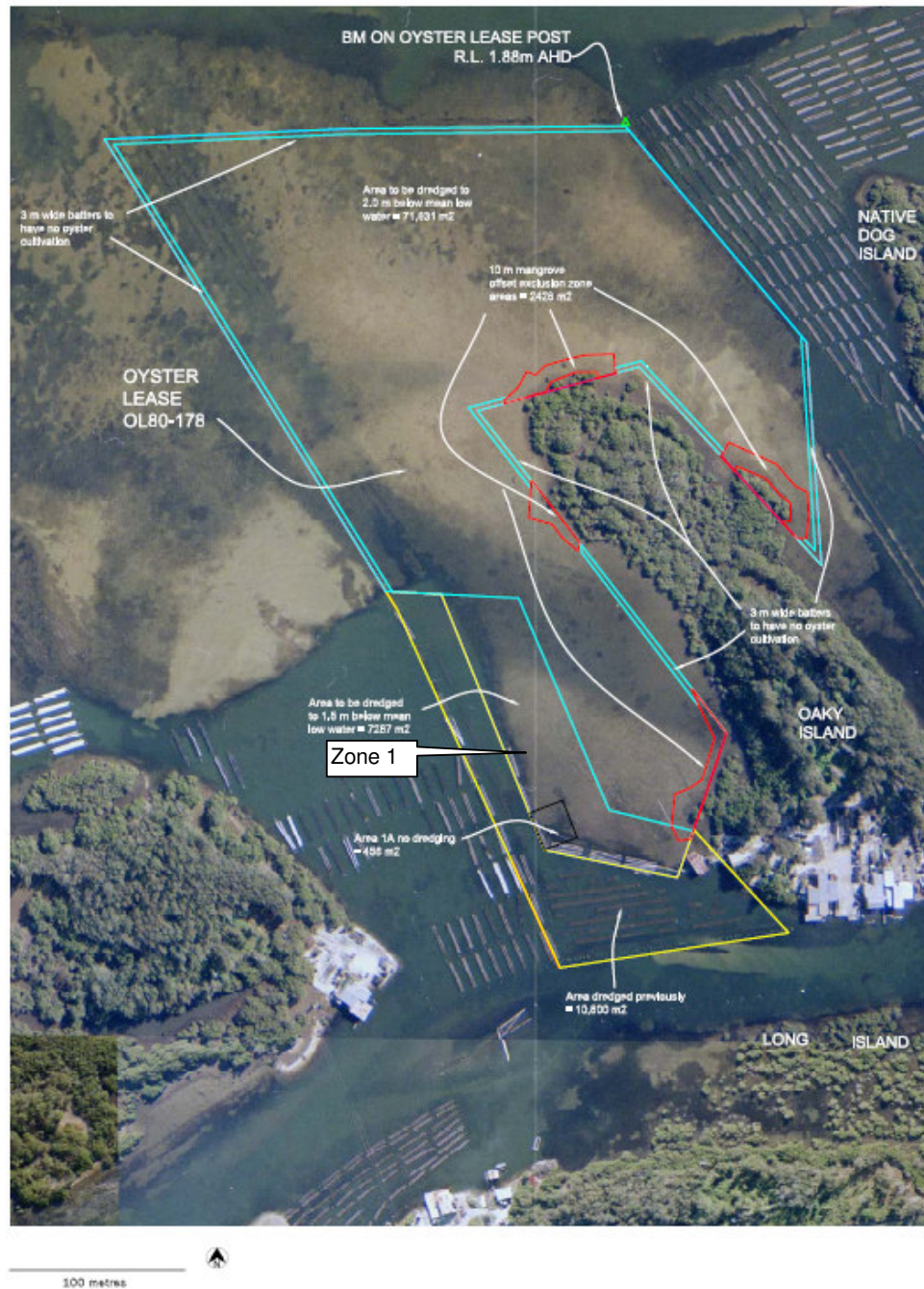


Figure 2 – Oyster Lease and Proposed Dredge Detail

1.2 Project Setting

The proposed dredging site (Oyster Lease 80-178) was originally established around 100 years ago and was last dredged in 1981. Over time, estuarine sands have accreted and the lease has become too shallow for oyster cultivation. No oysters have been farmed on the lease since the mid-1990s, although some oyster racks remain and oyster spat is grown from time to time.

The lease is located at the mouth of the Wallamba River and is adjacent to Oaky Island. Residential areas of Tuncurry are located to the north and east of the lease area.

The stockpile and processing site is located to the west of the Tuncurry Industrial Area. The site is primarily zoned as a future urban investigation area (see Section 2.2), but is currently used for low-intensity grazing. The site is flood-affected, with an elevation of between 1-2 metres AHD. Residential areas of Tuncurry are located to the north-east and south of the stockpile and processing site (Figure 1).

1.3 Project Need

The primary objective of the project is to re-establish use of an existing oyster lease which is currently unproductive. The DPI considers that maximising the productivity of existing oyster leases is critical to maintaining oyster production levels in NSW.

However, the Proponent argues that it is uneconomic to dredge the lease without in some way utilising the sand recovered, and considers that additional benefit could be gained through the commercial use of the dredged extractive material. Demand for sand products, particularly construction fill, is high in the region.

Use of dredged material is seen by the Proponent as a way to reduce the demand for higher quality sand products being used as construction fill. In this way the better quality sand can be used for higher value products such as brickies' sand or concrete products.

The Department is satisfied that there is a need for the project in terms of rehabilitating an existing oyster lease and generating a supply of sand for the construction industry.



Figure 3 – Schematic Layout of Stockpile Site

2 STATUTORY CONTEXT

2.1 Major Project

The proposal is classified as a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), because it is an extractive industry within the coastal zone (see clause 1 of Schedule 2 of the *State Environmental Planning Policy (Major Projects) 2005* (Major Projects SEPP)). The project is further classified as a major project under clause 7(1)(c) of Schedule 1 of the Major Project

SEPP, since the dredging component is located in an “environmentally sensitive area of State significance” as defined under that SEPP.

Consequently, the Minister for Planning is the approval authority for the project.

2.2 Permissibility

The project is located within the Great Lakes local government area and is governed by the *Great Lakes Local Environmental Plan 1996* (Great Lakes LEP). The project area falls within two land use zones, being Zone 1(c) Future Urban Investigation (stockpile area and parts of the dredge pipeline) and Zone 7(a) Wetlands and Littoral Rainforest (other parts of the dredge pipeline). The stockpile component and dredge pipeline components located on 1(c) lands are permissible with consent. However, the construction of the dredge pipeline on land zoned 7(a) is prohibited under the LEP. Parts of the project are also within a ‘sensitive coastal location’, as defined under *State Environmental Planning Policy 71 - Coastal Protection* (SEPP 71).

Under provisions in clause 8N of the EP&A Regulation that have been in effect since 20 July 2007, the Minister cannot approve projects, or parts of projects, under section 75J(3) of the EP&A Act that are:

- located in sensitive coastal locations; and
- prohibited by an environmental planning instrument.

However, a transitional provision associated with this change (clause 8OA of the EP&A Regulation, gazetted on 16 November 2007) establishes that the Minister is able to approve a project which is partly prohibited, so long as the Director-General’s requirements for that project’s EA had been issued before the commencement of clause 8N. The DGRs for the project were issued on 20 January 2006.

Consequently, the Minister may approve the carrying out of the project.

2.3 Exhibition

Under section 75H(3) of the EP&A Act, the Director-General is required to make the environmental assessment (EA) of a project publicly available for at least 30 days. After accepting the EA for the project, the Department:

- made it publicly available from 1 November 2006 until 1 December 2006:
 - on the Department’s website;
 - at the Department’s Information Centre in Sydney;
 - at the offices of Great Lakes Council; and
 - at the offices of the Nature Conservation Council.
- notified relevant State government authorities and Great Lakes Council by letter; and
- advertised the exhibition in the Forster Great Lakes Advocate.

This satisfies the requirements in section 75H(3) of the EP&A Act.

2.4 Objects of the EP&A Act

The Minister’s consideration and determination of the application must be consistent with all relevant provisions of the EP&A Act, including the objects set out in section 5 of the Act. The objects of most relevance to the Minister’s decision on whether or not to approve the project are found in section 5(a)(i),(ii),(vi) & (vii). They are:

- “(a) *to encourage:*
- (i) *the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*
 - (ii) *the promotion and co-ordination of the orderly and economic use and development of land,*
 - (vi) *the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*
 - (vii) *ecologically sustainable development”*

The Department has fully considered the objects of the EP&A Act, including the encouragement of ecologically sustainable development (ESD), in its assessment of the project. The assessment integrates all significant economic and environmental considerations and seeks to avoid any potential serious or irreversible damage to the environment, based on an assessment of risk-weighted consequences. The Proponent has also considered a number of alternatives to the proposed development, including the alternative of not proceeding, and considered the project in the light of the ESD principles.

The Department is satisfied that the project can be undertaken in a manner that is consistent with the objects of the EP&A Act.

2.5 Environmental Planning Instruments

Under Section 75I of the EP&A Act, the Director-General's report is required to include a copy of or reference to the provisions of environmental planning instruments that substantially govern the carrying out of the project.

The Department has considered the project against the relevant provisions of several State Environmental Planning Policies (SEPPs) (see Appendix B) and other environmental planning instruments, and is satisfied that none of these instruments substantially govern the carrying out of this project. While the Proponent originally proposed a pipeline route which passed through a SEPP 14 wetland, this route was varied to avoid the wetland.

The Department is satisfied that the project can be undertaken in a manner that is consistent with the aims, objectives and provisions of the relevant environmental planning instruments.

2.6 Statement of Compliance

Under section 75I of the EP&A Act, the Director-General's report is required to include a statement relating to compliance with the environmental assessment requirements established for the project's EA. The Department is satisfied that the environmental assessment requirements have been complied with.

3 SUBMISSIONS AND ISSUES RAISED

During the exhibition period the Department received 30 submissions on the project (see Appendix D), including:

- 6 from public authorities; and
- 24 from the general public (comprising 13 individual letters and 11 form letters).

3.1 Public Authorities

Section 75I(2)(b) of the EP&A Act requires that the Director-General's assessment report include advice provided by public authorities on the project. The key issues raised by the public authorities are summarised below.

The **Department of Environment and Climate Change** (DECC) initially did not support the project due to the impact of the proposed pipeline route on a SEPP 14 wetland which contains Coastal Saltmarsh, an Endangered Ecological Community (EEC) listed under the *Threatened Species Conservation Act 1995*. DECC prepared a detailed report on the potential impacts of the project on Coastal Saltmarsh. Subsequent to the Proponent's decision to realign the proposed dredge pipeline to avoid the SEPP 14 wetland and the EEC, DECC indicated that it no longer objected to the project. However, it recommended additional commitments and conditions of approval to address biodiversity conservation, including:

- conditions on site water discharges, including monitoring and concentration limits for total suspended solids;
- noise limits at residences and other sensitive receivers and noise monitoring requirements;
- limits on hours of operation; and
- bunding for fuels, oils and other chemicals.

DECC also reported that the Proponent would require an environment protection licence under the *Protection of the Environment Operations Act 1997* for the proposed dredging works.

The **Department of Primary Industries – Fisheries (DPI)** also initially objected to the project regarding:

- impacts on invertebrate habitat and seagrasses;
- appropriate rehabilitation and environmental bonds;
- impacts on juvenile fish habitat and bait collection opportunities and consequent potential impacts on commercial and recreational fishing; and
- inconsistencies between the project and policy on maintenance dredging of oyster leases as set out in the draft *NSW Oyster Industry Sustainable Aquaculture Strategy*.

The Proponent subsequently met with DPI officers a number of times. The outcome was an agreed approach to managing impacts on seagrass and subsequent rehabilitation measures. Key aspects of this agreement are addressed in section 4.1 of this report.

The **Department of Water and Energy (DWE)** did not object to the project but raised a number of issues relating to:

- whether the lease area had been previously productive for oyster growing and whether the project was more accurately characterised as an extractive industry;
- inconsistencies with the draft *NSW Oyster Industry Sustainable Aquaculture Strategy*;
- apparent discrepancies in EA figures showing the lease boundaries and proposed dredging area;
- minor discrepancies in proposed dredging depths and the necessity of dredging to 2 m;
- potential for changes in tidal flows following dredging, particularly between Oaky Island and Native Dog Island and in the landward channel east of Native Dog Island;
- potential impacts on a SEPP 14 wetland and Coastal Saltmarsh;
- potential stormwater management and flooding issues at the stockpile site; and
- potential groundwater impacts from the settling ponds at the stockpile site.

The **Department of Lands (DoL)** did not object to the project, but raised a number of issues relating to:

- proper identification of the affected land;
- the need for the Proponent to obtain DoL's consent as landowner of affected Crown land and confirm that the Proponent is the registered lessee of the oyster lease (both of which have since been provided);
- the need for the Proponent to obtain a licence under the *Crown Lands Act 1989* for dredging;
- the need for control of dredging operations so that they remain within any approved footprint;
- inadequate period used for numerical modelling of hydrodynamic behaviour;
- the need to model sediment transport during flood flows; and
- security bonding to ensure surveys of upstream and downstream islands which might be affected by changed tidal flows and erosion.

The **Great Lakes Council (Council)** did not object to the project, but raised a number of issues relating to:

- inadequacies in the EA's ecological surveys and assessment;
- the need for additional assessment of an EEC (on the western 2 ha of the sand stockpile site) and on the threatened fauna species Wallum Froglet;
- inadequate explanation or inconsistencies in respect of the type, nature and significance of potential environmental impacts; and
- unreasonable and unacceptable risk of serious harm to significant and sensitive ecological values.

The **RTA/Hunter Regional Development Committee** raised no objection to the project subject to the inclusion of a condition of approval requiring that access from Grey Gum Road to the stockpile site should be sealed, to Council's requirements, to prevent sand and soil being tracked onto the road.

3.2 General Public and Special Interest Groups

22 of the 24 public submissions objected to the project (including the 11 form letters, all from members of the Wallis Lake Fisherman's Co-Operative Ltd). The objections raised a broad array of concerns, including:

- the project should really be characterised as sand mining for residential purposes;
- noise and dust impacts arising from siting the sand stockpile near a residential area; and
- dredging damage to ecology, seagrass, invertebrates and a significant area of black swan habitat.

The submissions which supported the project indicated that Wallis Lake generally requires de-silting.

The Proponent's response to the issues raised in submissions and its Preferred Project Report (PPR) is provided in Appendix C. The Department's consideration of the issues raised in submissions is included in section 4 of this report.

4 ASSESSMENT

4.1 Aquatic Ecology

The project EA contains an Aquatic Ecology Assessment (AQA) prepared by Pacific Blue Design. The AQA identified that aquatic habitats and biota in the project area include sand flats, seagrass beds, mangroves, oyster racks and beds and channel areas.

Sand flats exposed at low tide make up 45% of the proposed dredging site. The Proponent considers the flats support few mobile invertebrate species and are devoid of vegetation. Aerial exposure is the primary reason why seagrasses do not develop.

Soft substrates, which include both the vegetated seagrass areas and non-vegetated areas, form a further 47% of the proposed dredging site. Areas of fine-grained silt form fairly stable substrates, suitable for burrowing animals and colonisation by seagrasses. These areas occur in more sheltered locations in the south of the dredging site and around existing oyster racks. Two species of seagrass occur in the dredging site - *Halophila ovalis* and *Zostera capricorni*. Both occur at depths from 0 – 1 m within the site. Seagrass coverage across the overall dredging site is 14%. For the purposes of survey, the site of proposed dredging was divided into 5 zones (with zone 1 divided into two subzones – Zone 1 and Zone 1A). Seagrass concentration varies between 8 – 14.7% in four of these zones but in one small zone (Zone 1), seagrass coverage is 37%.

The most common vertebrate found in the seagrass was the hairy pipefish (*Urocampus carinirostris*), which is protected under the *Fisheries Management Act 1994*. Largemouth gobies (*Redigobius macrostoma*), black rabbitfish (*Signanus nebulosus*) and numerous unidentified juvenile fish were also found. There was also an abundance of carid shrimp, and pistol prawn and bobtail squid are common. Small crabs, amphipods, isopods and mysids are found on the leaf blades of the seagrass.

Approximately 3% of the proposed dredging site comprises mangroves (dominant species is the grey mangrove, *Avicennia marina*). Vertebrates found in these areas included common toadfish, dusky flathead, largemouth gobies and the hairy pipefish. Diamond fish, jumping mullet and oyster goby were also observed. Oyster racks account for the remaining 5% of the dredging site.

Within the proposed pipeline route, deeper channels are known to contain juvenile flat-tail mullet, river garfish and perchlets. Invertebrates include sea hare, portunid crabs, prawns and squid. The entire pipeline route is reported as containing low density *Zostera* and *Halophila*.

The AQA indicates that threatened and/or protected species which potentially occur in Wallis Lake include mangroves, seagrasses (especially strapweed or *Posidonia australis*), black cod, estuary cod and Syngnathiformes (which includes all pipefish and seahorses). The AQA reported that neither black cod nor strapweed were found to occur on the dredging site and concluded that the oyster lease does not provide habitat for any threatened species. One small area was identified as a habitat area for the hairy pipefish, which is protected, although not listed as a threatened species.

Potential Impacts

The Proponent reported that impacts from the proposed project would include removal a total of 1.14 ha of seagrasses (*Zostera* and *Halophila*), but that this is an aggregated sum of areas containing mostly low-density seagrass. The impact would continue over the medium term as it was expected that it may take a number of years for seagrass to recolonise the site. However, the Proponent suggested that dredging would provide improved conditions for the seagrass to colonise and that previously dredged areas surrounding the lease now show higher density seagrass coverage. The Proponent expects that, after a few seasons, the overall coverage of seagrass is likely to be higher than currently exists. The Proponent considers this temporary impact on seagrass in Wallis Lake would be negligible since the area of seagrass predicted to be cleared is <0.04% of the total.

DPI's initial submission accepted that the lease area is identified as a priority oyster lease area under the draft *Oyster Industry Sustainable Aquaculture Strategy* (OISAS). However, DPI also indicated that the loss

of unvegetated soft substrates (45%) and low density seagrass area (14%) would have direct and indirect impacts on the fisheries environment. DPI also indicated that the proposed dredging was not consistent with the principles on maintenance dredging of oyster leases as set out in OISAS and that the proposed depth of dredging was almost twice that identified in OISAS. However, DPI subsequently clarified that the relevant current policy framework was provided by its 1999 *Policy and Guidelines for Aquatic Habitat Management and Fish Conservation*, which state that “dredging in shallow areas generally must not exceed 2 m below mean low water mark, to facilitate water mixing and to ensure that the substrate remains in the light penetration (euphotic) zone to allow decolonisation of algae, seagrass or macrophytes.”

The Proponent subsequently met with DPI officers and agreed to a mitigation and rehabilitation package which includes:

- an environmental bond of \$34,200 to be held by DPI until successful regrowth of seagrass is achieved within the project area. Return of the bond would be dependent on the results of regular monitoring of seagrass growth, which would in turn form part of a rehabilitation strategy;
- battered slopes from 2 m below MLWM to the natural seabed level around most of the perimeter of the dredging site (see Figure 2). These batters (a total of 3657 m²) would not be subject to floating oyster cultivation, thus allowing for increased seagrass regeneration due to increased light penetration;
- dredging to be limited to 1.5 m below MLWM in a further area of 7743 m² (see Figure 2); and
- deletion of the proposal to transplant seagrass within the dredge site, originally proposed to assist in impact mitigation and site rehabilitation.

The two mitigation areas noted above total 1.14 ha, equivalent to the area of seagrass proposed to be cleared under the project. In these areas, the Proponent must undertake seagrass rehabilitation in accordance with a rehabilitation strategy. DPI has requested that any approval include a condition for “development of a seagrass rehabilitation and monitoring program, approved by the DPI, that would outline monitoring conditions and rehabilitation targets and agreed conditions for the return of the environmental bond”. DPI also requested a condition of consent to confirm that the Proponent may not further dredge the area of 1.06 ha of the lease which has been previously dredged, and which now contains high quality seagrass beds (see Figure 2). The Proponent has indicated that it does not wish to re-dredge this area. Floating oyster cultivation would be permitted on all parts of the lease with the exception of the marginal batters.

Zone 1 (see Figure 2) provides good habitat for the protected hairy pipefish, which was found to be abundant amongst its higher-density seagrass. Syngnathids generally have low reproductive and dispersal potential, relatively limited distribution and a sedentary nature, with a preference for manmade structures (such as oyster racks) and shallow habitats. The Proponent’s AQA concluded that the proposed dredging operation has the potential to impact on numerous individual hairy pipefish. However, the majority of the hairy pipefish habitat would be retained and impacts on the species would not be significant. Nonetheless, it recommended that management strategies be developed to ensure long term survival of the hairy pipefish in the lease and surrounding area. The Proponent’s EA and PPR propose a number of seagrass and hairy pipefish impact mitigation measures, including:

- dredging along the south western edge of Zone 1 (the steeply sloping edge of the submerged silt flats) should be kept to a minimum;
- no dredging in the area designated as Zone 1A (see Figure 2), which should be left in its present state as it contains the highest cover of seagrass and the highest numbers of pipefish;
- prior to dredging, all seagrass areas to be dredged should be searched for pipefish and if they are found, pipefish should be collected with a fine-mesh scoop net and relocated to other areas of seagrass within the lease and surrounding areas;
- avoid dredging within 10 m of the mangroves on Oaky Island to ensure stability of the shoreline and protection of the mangroves; and
- lay the dredge pipe to the spoil site only on high tide to minimise the possibility of the watercraft damaging seagrass and the substrate.

The AQA states that, after dredging, the site would be permanently inundated with water, providing opportunity for seagrass to colonise alongside and in-between the floating oyster cultivation. Floating cultivation is more conducive to seagrass colonisation compared to traditional rack cultivation, as the cultivation is relatively mobile and is not permanent, being removed after 18 months for a period of 6 – 8 months before being re-instated. The EA reports that inspection of previously dredged areas near to the lease at depths similar to those proposed for dredging indicates higher density coverage of seagrass than within most of oyster lease 80-178. Therefore, seagrass could be expected to re-colonise the dredge site.

DPI also considers that the intertidal sand flat areas are highly productive habitat for invertebrates (“nippers”), which are the most significant prey species for whiting and are extensively collected by recreational fishers as bait. The project would remove around 4 ha of tidal flats and result in a consequent reduction of the nipper population and loss of opportunity for bait collection. Loss of nipper habitat may also have an impact on whiting populations. In response, the Proponent indicated that collection of nippers near the lease is infrequent and, given the extensive areas of tidal flats available for bait collection in the Lake, the impact of the habitat loss is negligible. The Proponent also provided additional information identifying at least five popular whiting fishing grounds in the lower estuary.

In respect of other aquatic ecology impacts, the Proponent considers that loss of benthic fauna due to dredging would be comparable to the natural loss due to flood scouring and smothering and that most populations are expected to recolonise the area from adjoining habitats.

The Department accepts that the project would result in impacts on aquatic ecology. The most significant of these are loss of seagrass beds and probable loss of hairy pipefish due to habitat loss. However, the Proponent’s mitigation strategies and commitments, including the mitigation and rehabilitation strategy agreed with DPI, provides an appropriate management regime with the following key elements:

- reduced impact on seagrasses in Zone 1 and avoidance of direct impacts in Zone 1A;
- collection and relocation of hairy pipefish from seagrass habitat across the dredge site;
- 10 m setback of dredging from the mangroves on Oaky Island;
- battering of slopes around the dredge site, with no oyster cultivation on these slopes;
- lesser dredge depth of 1.5 m over 0.77 ha of the site;
- seagrass rehabilitation strategy to be prepared in consultation with DPI; and
- \$32,400 environmental bond to be held by DPI until successful regrowth of seagrass occurs.

The Department has reviewed the mitigation and rehabilitation package and considers that it is adequate to offset the impacts of the proposed removal of 1.14 ha of seagrass. DPI’s proposed environmental bond has been determined on the basis that the Proponent reduces the depth of dredging in identified seagrass rehabilitation areas which would increase the probability of regrowth success. DPI has advised that, in the event that seagrass regeneration is not successful, the bond would be retained in the Fisheries Conservation Trust Fund, which is used to ensure priority fisheries conservation programs are progressed throughout the State. The Department considers that the impacts are acceptable and the mitigation strategies appropriate. It has recommended conditions to give effect to the proposed mitigation strategies.

4.2 Terrestrial Ecology

The EA contains a Flora and Fauna Survey and Assessment undertaken by Geolyse Pty Ltd.

Terrestrial Flora

The flora assessment found five terrestrial vegetation communities supporting 117 plant taxa within the project area (see Figure 4):

- Broad Leaved Paperbark (*Melaleuca quinquenervia*) – Swamp Mahogany (*Eucalyptus robusta*) Tall to Very Tall (Freshwater) Swamp Sclerophyll Forest;
- Broad leaved Paperbark (*Melaleuca quinquenervia*) – Swamp Oak (*Casuarina glauca*) Tall to Very Tall Swamp Sclerophyll Forest;
- Swamp Oak (*Casuarina glauca*) Tall to Very Tall Swamp Sclerophyll Forest;
- Saltmarsh Complex (comprising *Sarcocornia quinqueflora* subsp. *quinqueflora* – *Sporobolus virginicus* Chenopod Shrubland/Tussock Grassland; *Juncus kraussii* subsp. *australiensis* Rushland); and
- Grey Mangrove (*Avicennia marina* subsp. *australasica*) Woodland.

Four of these vegetation communities are recognised as representing three listed EECs under the *Threatened Species Conservation Act 1995* (TSC Act):

- Coastal Floodplain Swamp Sclerophyll Forest;
- Coastal Floodplain Swamp Oak Forest; and
- Coastal Saltmarsh.

The flora assessment reports that two endangered flora species have been previously recorded in the general vicinity of the project area. However, these species were not identified in the project area and it was considered unlikely that they would be present, since they occur in littoral rainforest and coastal heath environments. Two other species, *Pultenaea blakelyi* and *Galium liratium*, were identified in the Swamp Sclerophyll Forest and were considered to be locally/regionally significant. In the case of *Pultenaea*, this

was due to its occurrence at its known northern limit of distribution. In the case of the small population of *Galium*, it is due to the paucity of known records in the North Coast bioregion.



Map Not to Scale 

Map Codes	VEGETATION COMMUNITY
1	<i>Melaleuca quinquenervia</i> - <i>Eucalyptus robusta</i> Tall to very Tall (Freshwater) Swamp Sclerophyll Forest
1a	Disturbance ecotype (Woodland/Open Woodland)
1b	Disturbance ecotype (Pasture Grassland - Sedgeland)
1c	Disturbance ecotype (Juvenile Low Woodland)
1d	Disturbance ecotype (Open Woodland on imported fill)
2	<i>Melaleuca quinquenervia</i> - <i>Casuarina glauca</i> Tall to very Tall (Estuarine) Swamp Sclerophyll Forest
2a	Disturbance ecotype (Open Woodland)
3	<i>Casuarina glauca</i> Tall to very Tall (Estuarine) Swamp Sclerophyll Forest
4	Saltmarsh Complex (<i>Sarcocornia quinqueflora</i> ssp. <i>quinqueflora</i> - <i>Sporobolus virginicus</i> Chenopod Shrubland / Tussock Grassland; <i>Juncus kraussii</i> ssp. <i>australensis</i> Rushland)
5	<i>Avicennia marina</i> ssp. <i>australasica</i> Woodland

Figure 4 – Vegetation Map of Stockpile Site and Original Pipeline Route

The original pipeline route was located partly within or adjacent to each of the three EECs (see Figure 4). The Proponent stated that the pipeline would traverse 75 m of Swamp Sclerophyll Forest and 100 m of Coastal Saltmarsh, but that no direct clearing was proposed in regard to laying or removal of the pipeline. A number of agencies, particularly DECC, expressed concerns over the potential impacts of the pipeline, particularly on the Coastal Saltmarsh. Following a site visit by DECC and the Proponent in March 2007,

the Proponent varied the proposed pipeline route to avoid the SEPP 14 wetland and the Coastal Saltmarsh within it. DECC subsequently withdrew its objections to the project with respect to threatened species and EEC issues.

The terrestrial element of the final proposed pipeline route now parallels the proposed discharge pipeline route (see Figure 1). The EA indicates that this route comprises existing boundary fence alignments, and that these alignments have been “cleared”. However, it is not entirely apparent just how much clearing has been undertaken along these alignments. The EA indicates only that the “clearing” was simply felling of trees necessary to establish the fencing and that the “disturbed” groundcover remains. Later correspondence from the Proponent indicates that the pipeline would be located in “an existing 6 m wide, cleared boundary fence alignment.” However, no such alignment is apparent from air photos for the majority of the route. The air photos also suggest that much of the clearing has taken place on neighbouring allotments, rather than the lots subject to the project application.

One of the three EECs (Coastal Floodplain Swamp Sclerophyll Forest, map code 1) is found within the proposed stockpile and dispatch site (see Figures 1, 3 and 4). However, the EA also indicates that this area is highly disturbed, comprising cleared paddocks with remnant low woodland and exotic pasture-grassland-sedgeland that is regularly grazed and slashed, with a small number of regrowth trees (see Figures 3 and 4).

The Proponent is proposing mitigation measures to ensure minimal impact on existing vegetation from the project. The EA indicates that only “minimal” clearing would be required. The Proponent has also made revised commitments in the PPR regarding the management of potential impacts of the pipeline on terrestrial flora, as outlined, including quarterly inspections of the pipeline to ensure no impacts on surrounding vegetation communities and reporting the inspections in the annual report of the project. Seeing as the dredging component of the project is projected to last only 7 to 8 months, the Department considers that pipeline inspections should take place on a monthly basis. Other proposed mitigation measures include pre-clearing surveys, clearing supervision and placement of geotextile aprons beneath pipeline joins.

The EA states that further clearing for the stockpile site is restricted to the site of settling Pond 1, and that this may involve up to 31 mature trees and 28 saplings. The Department understands that all proposed clearing associated with Pond 1 is within the highly-disturbed variants of Coastal Floodplain Swamp Sclerophyll Forest, as shown on Figure 4, and would be limited to 0.5 ha. The PPR indicates that there is no requirement for additional clearing or filling as the new and revised project elements are in areas already cleared or covered by the flora and fauna assessments undertaken in the EA.

To minimise impacts on vegetation (particularly given the temporary nature of the project), the Department has recommended conditions requiring the Proponent to:

- restrict out-of-pond stockpiling to the cleared area to the east of Pond 2; and
- not undertake any vegetation clearing outside the footprint of the ponds, except in accordance with an approval from Council under its Tree Preservation Order.

The most significant potential impacts on flora associated with the project as originally proposed have been removed by the Proponent's decision to avoid the SEPP 14 wetland and Coastal Saltmarsh. The Department is satisfied that due to the relatively cleared nature of the stockpile area and proposed access road that the site is otherwise suited for the purpose and that, subject to the Proponent's commitments and the additional conditions proposed, the impacts on flora would be limited.

Terrestrial Fauna

The Proponent's fauna assessment reported a total of 52 vertebrate species during surveys of the project area (33 birds, 22 mammals (including 14 bats), 10 frogs, 1 snake and 1 turtle). Overall, eight threatened species were detected – Grey Headed Flying Fox, Little Bentwing-bat, Eastern Bentwing-bat, Eastern Freetail-bat, Southern Myotis, Wallum Froglet, Osprey and Pied Oystercatcher.

Four threatened species were detected in the area of the pipeline route vegetated with Swamp Oak Sclerophyll Forest and Broad leaved Paperbark – Swamp Oak Sclerophyll Forest (map codes 2 and 3 on Figure 4). These were the Grey Headed Flying Fox, Little Bentwing-bat, Eastern Freetail-bat and Southern Myotis, which are all bat species. These forests contain numerous hollow-bearing trees that provide potential breeding habitat for forest owls and gliders, as well as for hollow-dependent microchiropteran bats. Key species are therefore arboreal, with most being flyers. No clearing is proposed for the pipeline route, and the EA reports that impacts on threatened and other species is therefore expected to be very low. The Department agrees with this assessment.

Five threatened species were found in the area of the stockpile and processing site – the Grey Headed Flying Fox, Eastern Bentwing-bat, Little Bentwing-bat, Southern Myotis and the Wallum Froglet. The 59 scattered trees and saplings on the site are species (primarily Swamp Mahogany and Blackbutt) that are known or considered likely to provide foraging resources for the Squirrel Glider, Brushed-tailed Phascogale, Regent Honeyeater, Powerful Owl, Masked Owl, Koala, Grey Headed Flying Fox and microchiropteran bats. However, less than 5 of these trees were observed to contain small hollows, which might provide habitat for smaller fauna such as gliders and microchiropteran bats. The Proponent considers the number of trees and their potential habitat value is negligible compared to the abundance of suitable trees within the adjoining Swamp Sclerophyll Forest. The Department is proposing conditions which further limit clearing on the site.

The Wallum Froglet was detected at up to 6 sites during the fauna surveys, in one case calling from near the proposed site of Pond 1, but generally further west, near the proposed pipeline route, and to the southwest. The Proponent indicates that heavily-disturbed sedgeland near the proposed site of Pond 1 contains an area of suitable breeding habitat for the Wallum Froglet. This area is approximately 0.5 ha and is located at the northwestern corner of the stockpile site (see Figure 3). Most of this area is likely to be absorbed within Pond 1. However, the Proponent considers that this area is negligible in relation to the larger areas of relatively-undisturbed, high-quality Wallum Froglet habitat to the west and southwest. A small pond present at the proposed stockpile site (0.24 ha in size) is also proposed to be removed. Impacts are also likely to be negligible, largely because the pond is not considered to be suitable Wallum Froglet habitat and no calls were heard coming from this area.

The Proponent's proposal to lay the pipeline on the surface using winching methods throughout its route would limit surface disturbance and minimise potential impacts on the Froglet. The Proponent has also proposed to elevate the pipeline by about 10-15 cm in known and potential Wallum Froglet habitat by placing it on wooden blocks at regular intervals in, in order to facilitate the free movement of the frogs. The Proponent also proposes to use this technique in potential habitat for the Eastern Chestnut Mouse in the Swamp Sclerophyll forests.

Swamp Sclerophyll Forest is considered to potentially provide appropriate habitat for Koalas. The fauna assessment involved assessment of 7 quadrats within these forests, each containing between 10 – 34 mature trees, to determine whether potential Koala habitat existed. Two quadrats just west of the proposed stockpile site, which were dominated by Swamp Mahogany, were found to be potential Koala habitat. A search for Koala scat beneath 43 mature Swamp Mahogany trees close to these quadrats was then undertaken. No Koala scat was found, although Koalas have been recorded within 2 km of the site.

The Proponent considers that, as no clearing is proposed for the pipeline route and clearing would be less than 0.5 ha of disturbed habitat at the stockpile location, that overall impacts on fauna and their habitat would be low. The Department agrees with this assessment, and subject to the conditions proposed, considers that impacts on threatened fauna by the land-based component of the project would be low.

Two threatened species were detected in the dredging site – the Pied Oystercatcher and the Osprey. The Pied Oystercatcher was detected foraging at low tide just north of Oaky Island on the proposed dredging site. The Osprey was detected flying over the site.

The dredging site is within estuarine and intertidal habitat, which do not represent potential breeding habitat for shorebirds and waders as the area is inundated at high tide. However, at low tide, it is potential foraging habitat for threatened species such as the Pied Oystercatcher (observed on the site) and the Little Tern, Terek Sandpiper and Lesser Sand Plover (known from the area). At high tide, the site represents potential foraging habitat for the Osprey (seen flying over the site) and also the Green Turtle (known to forage in Wallis Lake).

The proposed dredge area would remove around 7 ha of area suitable for foraging for waders and shorebirds at low tide. The Proponent considers that this area is negligible compared to the area of similar habitat associated with the estuarine environment in the region. The Proponent also considers that dredging would provide deeper water hunting areas for the Little Tern and Osprey and may provide additional habitat for the Green Turtle. The Department accepts that the removal of the tidal flats would have a negligible effect on foraging opportunities for waders and shorebirds (including threatened species) in the Wallis Lakes area.

In summary, the Department is satisfied that the proposed project would have acceptable impacts on terrestrial flora and fauna and that these impacts can be adequately avoided, mitigated and managed through the implementation of the Proponent's commitments and recommended conditions of approval.

4.3 Soil and Water

The site on which it is proposed to operate the stockpile is relatively flat, with an elevation varying between 1–2 m AHD. The EA reports that the ground surface has been extensively modified, having been ploughed and sown with pasture grasses since the area was first settled and used as a dairy 80 – 90 years ago. The site is underlain by old beach and foredune sands, with the western section draped by a thin layer of organics and very fine intertidal silts and muds. The area proposed for use in the stockpile operations has been filled previously (10–15 years ago) with reworked dune sands excavated from an adjoining residential subdivision east of the site. This area is up to 1.6 m above natural ground surface elevations.

Water Quality Impacts

Stockpile and Processing Site and Pipeline Route

The main potential water quality impact associated with the project is the potential for the release of saline and turbid waters close to the settling ponds, either due to rupture, overtopping or flooding of the ponds. Other significant risks involve potential breach of the pipelines carrying dredged slurry from the oyster lease to the stockpile site and return waters to the Wallamba River or release of excessively turbid discharge waters into the River.

To ensure settlement ponds have sufficient capacity to store all dredged material and water transported via the pipeline, the Department sought clarification from the Proponent of proposed dredge extraction rates and the capacity of each settling pond. The PPR clarifies that the total capacity of each pond, excluding a 1 m freeboard to allow for heavy rain events, is:

- Pond 1 - 45,017 m³; and
- Pond 2 - 18,369 m³.

The Proponent also confirmed the following maximum extraction and pumping quantities:

- 5,500 m³ sand, over a 5.5 day week; and
- 11,000 m³ water, over a 5.5 day week.

The dredged material from the oyster lease would be piped to the stockpile site in the form of a slurry comprising two parts of water for every part of dredged sand and silt. After receipt of the slurry in Pond 1, excess water would be pumped to Pond 2. Once the fines in that decant water were settled in Pond 2, excess water would be returned to the Wallamba River via a discharge pipeline. Based on the pond capacities and maximum extraction rate estimates, the PPR concludes that Pond 1 has sufficient capacity to cater for approximately 16 days of pumping (ie both sand and water) and that Pond 2 has 10 days capacity for decant water from Pond 1. Water from Pond 2 is likely to be discharged to the River after a residence time of several days, depending on how quickly acceptable water quality criteria are met. The Proponent has made a commitment that water would only be discharged after meeting requirements for turbidity (less than 30 NTU) and pH (between 6.5-8.5).

The EA proposes that the base of Pond 1 would be composed of “in situ silts and clays to depth of approximately 1–1.5 m”. However, elsewhere the EA states that the site is underlain by “old beach and foredune deposits”, albeit that the western section is “draped by a thin layer of organics and very fine intertidal ... silts and muds”. However, it is understood that this statement is based on 1991 geological mapping by the then Department of Mineral Resources, at a scale of 1:100,000 (ie 1 cm = 1 km). The EA also states that runoff from the stockpile areas would be minimal, “given the highly permeable nature of the extracted sand and underlying highly siliceous Podzol soils”. In addition, no sub-surface coring or sampling, nor any permeability tests, have been undertaken at the proposed site. Thus there can be no assurance that the base of Pond 1 (which is proposed to comprise the existing surface, rather than to involve excavation) has the hydrogeological characteristics appropriate to satisfactorily contain large quantities of saline water.

Further, it is proposed that the walls of Pond 1 would be “constructed from an “existing stockpile of sand on the site”. Pond walls would be approximately 4 m high (including 1 m of freeboard) and 7 m in width. Notwithstanding, it is proposed to construct shallow swale drains around each stockpile to direct any runoff from the stockpiles back to the settling ponds.

The Department believes it is imperative that the ponds and pipelines are constructed in a manner that would effectively minimise the potential for leakage, spillage or discharge of saline water to the surrounding environment.

Accordingly, the Department has recommended conditions that would require the Proponent to design and construct the ponds to ensure that they are impermeable, and to design and construct the pipelines to ensure that they would not leak or rupture. The recommended conditions require the Proponent to certify that the ponds and pipelines have been constructed to meet these requirements.

The Department has also recommended conditions requiring the Proponent to:

- not discharge any water from the site, except in accordance with an Environmental Protection Licence from the DECC;
- not use saline water on the stockpile and processing site for dust suppression or any other purpose outside the ponds;
- prepare and implement a Surface Water Monitoring Program (including an inspection program for the pipelines), Groundwater Monitoring Program and Erosion and Sediment Control Plan for the project; and
- store and handle dangerous goods and hazardous substances in accordance with relevant standards.

With the implementation of these measures, the Department is satisfied that the project can be managed in a manner that would not result in any significant water quality impacts.

Dredging Site and Return Water Discharge

Potential water quality impacts of dredging relate mainly to fuel spills from the dredge refuelling barge. The Proponent has committed to isolating and preventing any spills from entering the estuary through the use of bunding of all fittings. In addition the Proponent's commitments also include ensuring the refuelling barge would also be fitted with DECC-approved spill kits.

Pollution of return waters by pH and turbidity would be managed through monitoring of return water and Pond 2 in accordance with the DECC discharge licence. The Proponent has committed to keep daily discharges between 6.5 – 8.5 pH before water release. 30 NTU is considered by the Proponent as a reasonable turbidity value and well within the natural background variability of the river. DECC also recommended that standards for total suspended solids (50 mg/L) and oil and grease (10 mg/L) should also be used as a determinant of appropriate discharge quality.

The Department is satisfied that water quality impacts of the project can be adequately managed and mitigated via the Proponent's commitments and the recommended conditions of approval.

Flooding

The stockpile site is subject to inundation during low-frequency flood events. The location of the stockpile area and settling pond are said to be in a low-peak flood flow area and the height of the settling pond walls are to be constructed to 4 m, which is above predicted peak flood events. Dredging would be suspended where flood events lead to increases in tidal levels greater than 150mm above spring high tide levels. The Proponent has committed to preparation of an emergency management plan detailing warning and emergency procedures for personnel and plant. The plan would form part of the Environmental Management Strategy (EMS) for the project.

Off-site flooding impacts are also expected to be low due to the very slow rise and fall of flood waters in the area. The Department is satisfied that the EA and additional points of clarification adequately demonstrate that, during the modelled peak flood event, displacement of floodwaters from Pond 1 would equate to a negligible increase in flood height.

Hydrodynamics and Sediment Transport

The Proponent modelled hydraulic and sediment transport within the Wallamba River for the scenarios of present conditions and post-dredging (based on the maximum 2m deepening). The model was calibrated using a refined 2006 hydrodynamic model adopted as the present condition.

Hydrodynamic Change

The hydrodynamic model showed no change in water levels, discharge and hydrodynamic behaviour in the vicinity of the dredge proposal across the Wallamba River. Velocities are expected to decrease slightly in Jonnel Channel to the north of the proposed dredging site and at the north-western end of Native Dog Island. Velocities are expected to increase slightly in the southern part of the channel between Oaky

Island and Native Dog Island and in a small area immediately north-west of the proposed dredging site. Flow balance is expected to change with increased conveyance between Native Dog Island and Oaky Island and over the dredging site and a decreased conveyance through Jonnel Channel to the north.

Council suggested that a peer review of the modelling be undertaken, and the Department of Lands raised concerns regarding the modelling process. However, DWE was generally satisfied with the modelling, and that the project was likely to have only limited effects on the flows and hydrodynamics of the Wallamba River. DWE noted that the project's effects would be localised in nature, whilst also acknowledging that the project may exacerbate community concerns about shoaling in the vicinity of Jonnel Cove.

The Department is satisfied with the Proponent's assessment of hydrodynamic impacts and the prediction that the project is not likely to result in any significant accumulation of sediment in Jonnel Cove. The Department is further satisfied that the project is unlikely to have any significant effect on the overall flows or hydrodynamics of the Wallamba River and Wallis Lake estuary.

The Department acknowledges the Proponent's commitments to buoy off the dredging site to ensure the dredge is kept within the confines of the lease area, and to undertake a hydro-survey on completion of dredging to confirm dredging depths and extents.

Sediment Transport Changes

Accretion of sandy silts within or near the proposed dredging site is expected to take place gradually over time. Initiation of transport of consolidated silts is expected in the channel between Oaky and Native Dog Islands. Coarse sediment transport between Oaky and Native Dog Islands is not expected.

Turbidity associated with the proposed dredging activity is expected to be minor with fines making up just over 5% of dredged material. In addition, three-year monitoring of a similar dredging process at a larger scale (Harrington Water, Manning River) showed little dredging impact on turbidity. The dredge operator and crew would however monitor turbidity in a daily log. Any plumes detected would lead to ceasing operations, the cause would be determined and, once the risk is eliminated, dredging would continue. This is consistent with DECC expectations and likely EPL requirements.

Batter Stability

The Proponent proposes a batter slope of 34° on the dredge boundary. The basis for this batter slope is on the findings of the hydraulic modelling supporting the EA and the angle of repose of dry sand being 34° and the suggestion that the angle of repose of sand underwater is greater than 34°, due to the pressure exerted on the batter face by water.

The Proponent's hydraulic modelling concludes that the peak bed shear would be reduced at all locations within the dredging site and that accretion would be expected over time. The Proponent's geotechnical assessment provides an analysis of the sand quality but does not provide an analysis of the cohesive nature of the sand. DPI and DWE have advised the Department that the stability of dredge batters are determined by the tidal flows and the cohesive nature of batter slope materials. DPI generally supported the Proponent's views on tidal movements and that it was unlikely that there would be significant erosion of batters based on a 34° angle. DWE suggests that a geotechnical understanding of the cohesive nature of batter slope material and stability under water at a nominated slope angle should be required prior to dredging.

The Department considers that, based on the conclusions drawn from the Proponent's assessment and discussion with DPI and DWE, the slope batter proposed at 34° should be supported by a geotechnical assessment that confirms the predicted stability of the proposed batter slope. The Department has recommended a condition in this regard, with the assessment to be provided prior to the commencement of dredging operations.

Acid Sulfate Soils

The works associated with the stockpile and settling ponds would not occur either below natural ground level or beyond 1m below sea level and therefore are not expected to disturb Acid Sulphate Soils (ASS).

The Proponent undertook ASS testing from cores taken from the proposed dredging area. Soil was determined to not be ASS, but was 'potential ASS'. Lime was not recommended for neutralisation as the material was determined to have in-situ neutralising capacity. The Proponent would store lime on site if needed for the management of pH in return waters.

The Department is satisfied that the risk of disturbing and generating ASS is able to be effectively managed, and has recommended a condition requiring the Proponent to prepare and implement an Acid Sulfate Soil Management Plan for the project. The plan would be required to be prepared in accordance with the *NSW Acid Sulphate Soil Advisory Committee's Acid Sulfate Soil Manual*.

Conclusion

The Department is satisfied that, subject to the implementation of the Proponent's commitments and the recommended conditions of approval, potential impacts of the project on soil and water are able to be satisfactorily managed and minimised.

4.4 Other Issues

Other environmental issues associated with the project, and the Department's consideration of these issues, are summarised in Table 2 below.

Table 2 – Assessment of Other Issues

Impact	Consideration
Noise	<p>The Proponent undertook a noise assessment in accordance with the Director-General's requirements and the <i>NSW Industrial Noise Policy</i>.</p> <p>The Proponent has committed to restricting the dredge and stockpile operations to 7 am to 5 pm Monday to Friday and 8 am to 1 pm Saturdays.</p> <p>The noise assessment predicts that the operation of the project would comply with the project's noise criteria at all receiver locations under all weather conditions.</p> <p>The project would involve up to 24 two-way daily truck movements along Grey Gum Road through an existing industrial site with no residential land uses along its length. The noise assessment concludes that there would be no significant additional impact from traffic noise generated by the project.</p> <p>The DECC and the Department are satisfied that the Proponent has adequately assessed the project's potential noise impacts. The Department considers the project is unlikely to result in any significant noise impact on surrounding receivers subject to the implementation of the Proponent's commitments, which include:</p> <ul style="list-style-type: none"> • attenuate noise from the dredge so that the sound power level is limited to 97 dB(A); • prior to commissioning, erect a 3m high noise wall around the return water pump and the booster pump; • plant and equipment to be maintained in good working order to reduce noise emissions; and • dredge and stockpile operations to be restricted to proposed operating hours. <p>The Department has recommended conditions that would further require the Proponent to:</p> <ul style="list-style-type: none"> • comply with strict hours of operation and noise criteria; • prepare and implement a noise monitoring program during dredging operations; and • seek to continually improve the noise performance of the project.
Air Quality	<p>The Proponent indicated that the main source of emissions from the proposed project would be dust from the stockpile area. No odour emissions are expected as dredged material would be primarily fine to medium sand.</p> <p>The Proponent modelled air quality impacts of the project at residential receptors. The model showed that the predicted dust emissions from the project would fall well within DECC standards for 24-hour maximum PM10 concentration of 50µg/m³, annual average PM10 concentration of 30µg/m³ and maximum deposited dust standard of 4g/m²/month.</p> <p>The Proponent has committed to implementing a number of management measures to minimise dust emissions. Measures include:</p> <ul style="list-style-type: none"> • vegetation removal would be undertaken during damp conditions or when the winds are not from the southwest; • covering all loads leaving the site to prevent dust being blown from trucks during transit; • stockpiles to be kept in a moist condition to minimise wind-blown and traffic-generated dust; • all roads and trafficked areas to be watered to minimise dust generation; and • proposed maximum of 24 two-way daily truck movements from the stockpile site. <p>DECC and the Department are satisfied that the project is unlikely to result in any significant air quality impacts on surrounding receivers. The Department has recommended conditions that would</p>

Impact	Consideration
	<p>require the Proponent to:</p> <ul style="list-style-type: none"> • comply with the relevant air quality criteria; and • ensure that all trucks minimise dust emissions.
<i>Traffic and Transport</i>	<p>The impact of the project on traffic and transport is limited to equipment deliveries and truck movements associated with the proposed stockpile area. Grey Gum Road services the Tuncurry industrial area, and the Proponent estimates that sand product delivered from the site would result in up to 24 two-way deliveries a day (this is a worst case scenario based on the transportation of all sand product from the site within two years).</p> <p>The traffic study undertaken by the Proponent indicates that the capacity of the existing intersection to meet existing traffic demands is adequate and that given the adequate operation of the intersection there is no need for any upgrade to the intersection as a result of the project.</p> <p>The RTA/Hunter Regional Development Committee did not object to the project, however the committee recommended that access from Grey Gum Road to the stockpile site should be sealed to Council's requirements to prevent material from being trucked onto the road. The Department agrees, and has recommended a condition requiring the Proponent to complete these works to the satisfaction of Council prior to any transport of materials.</p> <p>The recommended conditions and/or the Proponent's commitments also require:</p> <ul style="list-style-type: none"> • an upper limit of 24 two-way daily truck movements from the site; • no truck haulage outside of normal working hours; • avoiding compression braking in proximity to residences; and • covering loads and ensuring all tailgates are secured to eliminate rattling noises. <p>The Department is satisfied that, subject to the implementation of the recommended conditions and the Proponent's commitments, the project would not have any significant traffic impacts.</p>
<i>Heritage</i>	<p>There are no listed heritage items in the vicinity of the site and Forster Local Aboriginal Land Council had no objections to the project. However, the Proponent has made the commitment that should any items of indigenous cultural heritage be uncovered during the project, work in the area would cease immediately and the area would be cordoned off. A representative of the Forster LALC and a NPWS representative would be contacted to provide advice regarding appropriate action. The Department is satisfied that the project is unlikely to affect any indigenous or non-indigenous heritage values of the area.</p>

5 RECOMMENDED CONDITIONS OF APPROVAL

The Department has prepared recommended conditions of approval for the project (see Appendix A).

These conditions are required to:

- prevent and minimise adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- provide for regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

The Proponent does not object to the recommended conditions of approval.

6 CONCLUSION

The Department has assessed the merits of the project in accordance with the requirements in the EP&A Act.

This assessment has found that the environment impacts of the project can be avoided, mitigated and/or managed to ensure an acceptable level of environmental performance.

In particular, the Department recognises that the Proponent has made a number of amendments to the project as originally proposed to address the concerns of the authorities and the community. These include relocating the pipelines to avoid a sensitive SEPP 14 wetland, and amending the dredge plan to minimise and rehabilitate impacts on seagrasses and aquatic habitat.


- contribute to achieving the objectives of the *NSW Oyster Industry Sustainable Aquaculture Strategy*;
- provide the opportunity for re-use of a degraded and unproductive oyster lease; and
- attract a capital investment of \$250,000 to the region, and generate 7 temporary jobs.

On balance, the Department is satisfied that the project's benefits sufficiently outweigh its residual costs, and that it is therefore in the public interest and should be approved, subject to conditions.

7 RECOMMENDATION

It is RECOMMENDED that the Minister:

- consider the findings and recommendations of this report;
- approve the project application, subject to conditions, in accordance with section 75J of the *Environmental Planning and Assessment Act 1979*; and
- sign the project approval (see Appendix A).




26.2.09

Chris Wilson
Executive Director



Sam Haddad
Director-General



Howard Reed
A/Director MDA
25.2.09