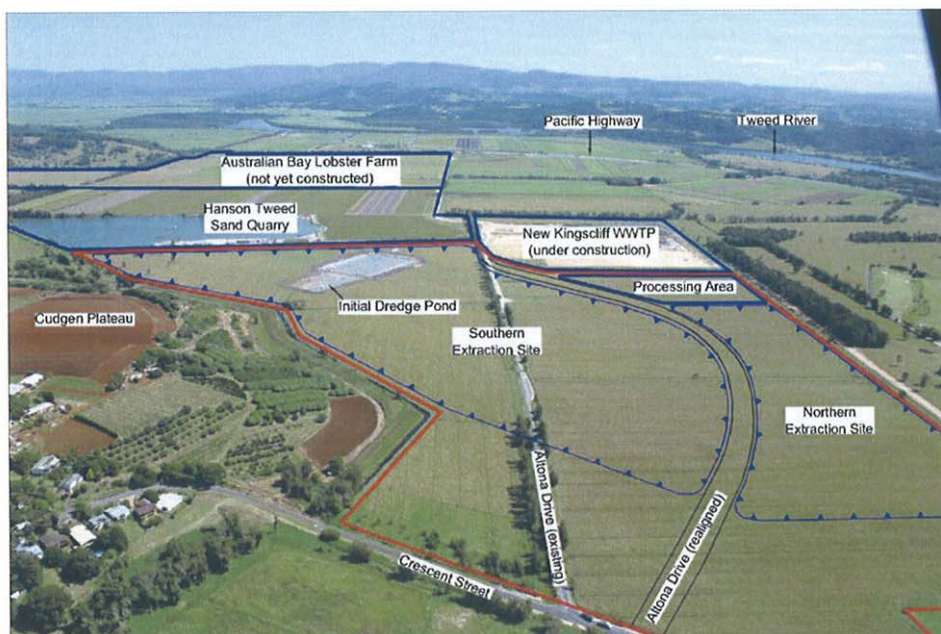




NSW GOVERNMENT
Department of Planning

**MAJOR PROJECT ASSESSMENT:
Cudgen Lakes Sand Extraction
Project**



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

May 2009

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Cover: oblique aerial photograph of the project site - courtesy of RW Corkery & Co

EXECUTIVE SUMMARY

Gales–Kingscliff Pty Ltd (the Proponent) is a major landowner in the Tweed local government area. The landholdings include a sand quarry at Cudgen and approximately 220 hectares of floodprone land in the Kingscliff/Chinderah/Cudgen area.

The Proponent seeks approval to extract sand from the Cudgen sand quarry site and hydraulically deliver it by pipeline to various filling sites to the north and east, and supplying sand as a construction material within the region. In addition, the Proponent proposes to receive virgin excavated natural material (VENM) for processing and blending and for use in backfilling the extraction area.

The filling sites are subject to separate development applications progressively being submitted to Tweed Shire Council. Some of the filling sites have already been approved.

The extraction area occupies 46 ha to the north and south of Altona Drive. The adjoining processing plant covers 3.7 ha. Sand would be transported to the fill areas in slurry pipelines. Two pipeline corridors have been proposed to serve the Proponent's properties to the north and east of the extraction site. The pipelines traverse road reserves and land owned by the Proponent. An intermediate booster pump would be installed on the eastern pipeline. Each corridor would contain a slurry pipe and a return water pipe.

The total in-situ sand resource is some 5 million cubic metres of which it is proposed to extract 650,000 m³ per year over 20 years. About two thirds of the extracted material would be used for filling with the remainder transported off site by truck for use in construction projects. Up to 45,000 tonnes of VENM would be transported to the site each year. The project would generate an average of 124 heavy vehicle movements per day.

The proposal constitutes a 'major project' under Part 3A of the *Environmental Planning and Assessment Act 1979* and consequently the Minister is the approval authority. Following exhibition of the project, the Department received 40 submissions (including a petition) from public authorities, organisations and individuals.

The public authorities did not object to the project and sought clarification on a number of issues (noise, flooding, acid sulphate soils, biodiversity and traffic). Over half the public submissions (21/36) objected to/raised concerns about the project, including traffic, noise, dust, acid sulphate soils and groundwater impacts, and just under half (15/36) supported the Proponent's future development of its landholdings for retail, residential and recreational uses.

The key issues considered during the assessment include control of amenity impacts on residents in the area, disposal of potential acid sulphate soil, impacts on groundwater level and quality, flora and fauna impacts associated with the eastern pipeline route, site rehabilitation, traffic and road improvements. The Proponent has made minor modifications to the project during the assessment.

The Department has assessed the merits of the project in accordance with the requirements of the *Environmental Planning and Assessment Act 1979*. Based on this assessment the Department is satisfied that the impacts of the project can be managed to ensure an acceptable level of environmental performance.

The project would permanently alter the landscape of the area from low lying agricultural land to a largely aquatic landscape. This alteration would change the historical agricultural use of the land, however, this loss is not considered to be significant and is justified, given the importance of the sand resource, and existing and approved industrial developments on neighbouring land.

Importantly, the Department recognises that the project would provide economic and social benefits for the Tweed region by guaranteeing a local supply of sand for the construction industry, as well as creating 19 jobs and injecting \$3 million into the local economy.

The Department recommends approval of the project, subject to recommended conditions which address sand mining operations, on-going environmental monitoring and management, rehabilitation, traffic management, compliance mechanisms, independent reviews and performance audits.

1 BACKGROUND

Gales–Kingscliff Pty Ltd (the Proponent) together with an associated company, Gales Holdings Pty Ltd, own the Cudgen sand quarry and approximately 220 hectares of land in the Kingscliff/ Chinderah/ Cudgen area in the north east corner of New South Wales, as shown on Figure 1. The companies plan to develop about half of these holdings for a range of specified uses, subject to planning approval from Tweed Shire Council. Much of the land requires filling to make it suitable for development. The Proponent seeks project approval to extract sand from two of its holdings (Cudgen sand quarry) and deliver it to identified fill sites. With such an approval in place the Proponent submits it can proceed with confidence to pursue development approval to fill the nominated land and undertake the desired development.

The Proponent seeks approval to extract sand from Lot 21 DP 1082482, Lot 2 DP 216705 and the Altona Drive road reserve and to hydraulically transport it via two pipelines to the various allotments nominated for future filling. In addition, the Proponent proposes to supply sand products to the construction industry and receive virgin excavated natural material (VENM) at the extraction area for processing or disposal. The project site comprises the above allotments nominated for extraction and the land traversed by the northern and eastern pipelines, as shown on Figure 2.

The environmental assessment (EA) states that the Proponent and its associated company together hold development approvals issued by Tweed Shire Council or the Land and Environment Court to:

- extract 400,000 cubic metres of sand from Lot 2 DP 216705 and hydraulically transport it to nearby Lots 1 and 2 DP 828298 (DA 96/518);
- fill Lots 1 and 2 DP 828298 and subdivide the land to create 89 lots (DA S93/76); and
- realign Altona Drive, where it runs between Lot 21 DP 1082482 and Lot 2 DP 216705, the site of the current application (DA 05/1450).

The Proponent states that the first and second development consents have been activated, but the realignment of Altona Drive would proceed only if a satisfactory project approval is granted in respect of the current application. In that situation the Proponent intends to surrender the existing extraction consent, as it would have been superseded. The Department notes that pursuant to clause 8M(1) of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), the existing extraction consent would cease to have effect should the current application be approved.

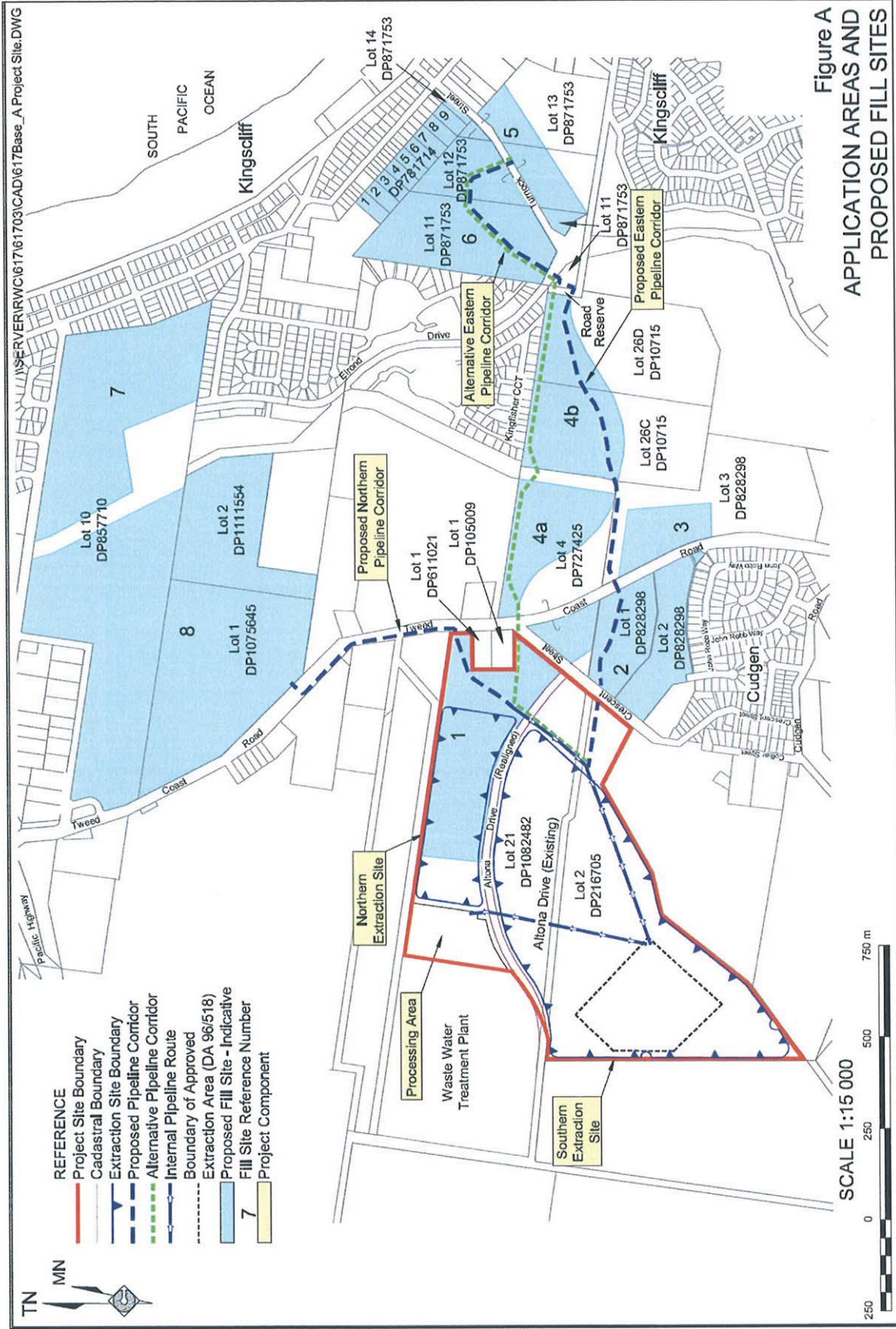
According to the EA, should the current project application be approved, the Proponent would be permitted to extract sand, and hydraulically transfer it to fill Lots 1 and 2 DP 828298 as approved by development consent DA S93/76. The Proponent would need to obtain further development approvals for filling other land to enable the sand extraction project to proceed to its intended completion. The Proponent advises in its Submissions Report (see Appendix D) that subsequent to the exhibition of the EA, the Land and Environment Court has granted approval for filling areas within nominated fill sites adjacent to Turnock Street. This area would be accessed by the proposed eastern pipeline.

The project site has an area of 67 ha, of which 46 ha would be extracted and 3.7 ha used for processing facilities. It is essentially triangular in shape and bisected by Altona Drive. The land is poorly drained and currently used for grazing. Preparatory works for sand extraction under DA 96/518 took place in 2003 and 2006 creating a bunded dredge pond and an extracted materials stockpile. Operational dredging has not commenced. Other uses over the last 50 years have included a tropical grass and seed nursery and a sugar cane farm, both of which suffered from the high water table on the site. The two pipeline corridors are 0.8 and 1.5 kilometres long by 20 metres wide.

The proposed extraction site adjoins the Hanson Tweed sand quarry and a wastewater treatment plant. Other land surrounding the site is in agricultural use for grazing, cropping and orchards, vacant land intended for future residential development and the site of an approved lobster aquaculture facility. Residences are located to the south, east and north of the site. The Minister recently granted approval for planned pipelines associated with the lobster development to be relocated further north, avoiding the previously approved route on Altona Drive that would have conflicted with the current sand extraction project.



Figure 1: Project Location



2 PROPOSED PROJECT

The principal purpose of the proposal is to extract and hydraulically deliver sand to various land holdings owned by the Proponent and an associated company for the purpose of raising levels in preparation for future development. Further business opportunities identified for the project include:

- processing and sale of sand products from the extraction site for use in construction projects; and
- development of a licensed facility to receive virgin excavated natural material (VENM) at the site for processing and blending, for use in rehabilitation works on the site and for interring within the excavation, where the VENM has acid sulphate characteristics rendering it unsuitable for re-use.

The key components of the proposal are set out in Table 1 and Figure 3. Figure 4 shows the existing topography of the site.

Table 1: Key Components of the Project

Component	Description
Summary	A sand extraction and processing operation near Cudgen to: • extract and process up to 650,000 m³ of sand per year • transport 450,000 m³ of sand per year through 2 pipelines to filling sites • transport 300,000 tpa¹ of processed products by road
Site statistics	Total area: 67 ha Northern extraction area: 9 ha Southern extraction area: 37 ha Processing area: 3.7 ha In situ resource: 5,080,000 m ³ Sand volume required for identified fill sites: 2,500,000 m ³
Pipelines	Northern corridor: 0.8 km long and 20 m wide Eastern corridor: 1.5 km long and 20 m wide High Density Polyethylene (HDPE) pipelines - 300 mm diameter for slurry and 500 mm diameter for tailwater return, with some steel sections for road and watercourse crossings. Laid on the surface of the Proponent's land but buried in the road reserve.
Project life	20 years
Resource	The site contains a thin sandy topsoil layer (0.3 m) underlain by loamy sand (0.5 to 1.0 m). The principal resource occurs beneath and is a fine grained sand extending to a depth of about 20 m across most of the site.
Extraction method	Northern area: excavator to a depth of 5 m Southern area: excavator and cutter suction dredging to a depth of 20 m
Processing	Wet and dry plants for various types of material. Tailwater containing fines returned to the base of the extraction pond.
Imported Material	Accept up to 45,000 tpa of VENM for processing and backfilling. Non-acid generating material, VENM(a), would be either processed in the wash plant and blended, if suitable or used for backfill and surface profiling. Potential acid generating material, VENM(b), would be interred in the extraction pond if unsuitable for any other use.
Road Transport	Product and VENM movement would generate up to 124 truck movements on an average day. A further 24 movements per day would occur directly across Altona Drive during campaigns to transport loamy sand to the processing plant.
Water Management	Operational water sourced from the southern extraction pond which is recharged from the high water table. Annual water use estimated to total 45 to 55 ML.
Staging	Northern and southern areas would commence simultaneously. After about 2 years the northern area would be extracted and progressive backfilling would commence.
Hours of Working	Loading and transportation: 7.00am to 6.00pm Mon to Fri; 7.00am to 1.00pm Sat Dredging and processing: 7.00am to 10.00pm Mon to Fri; 7.00am to 4.00pm Sat Hydraulic transport to fill sites: 7.00am to 6:30 pm Mon to Fri; 7.00am to 1.00pm Sat Pipeline filling: 6.30am to 7.00am Mon to Sat Construction: 7.00am to 6.00pm Mon to Fri; 7.00am to 1.00pm Sat
Employment	Estimated 5 full time equivalent persons and approximately 14 truck drivers.

¹ The Proponent refers to in-situ resources or pumped product in cubic metres and trucked material in tonnes, according to how they are measured in practice. The conversion rate is variable in the vicinity of 2 t/m³.

Component	Description
Final Landform and Rehabilitation	Northern area: re-create the existing landform, with pasture where the land is to be used for grazing. Southern area: create a lake with adjoining wetland areas. Wetland species to be planted in appropriate locations around the lake with particular attention to avoiding foreshore erosion.

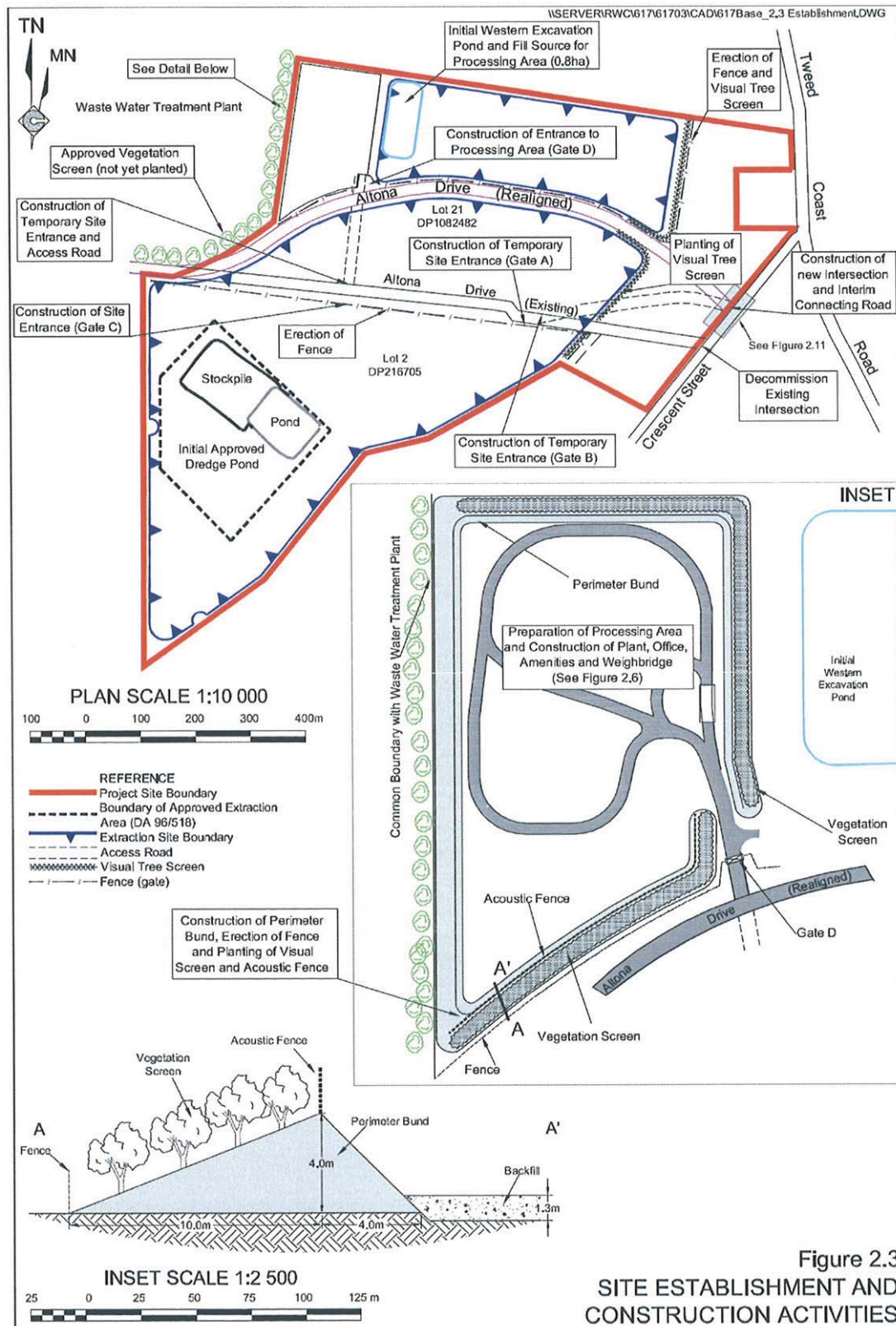


Figure 3: Site Layout

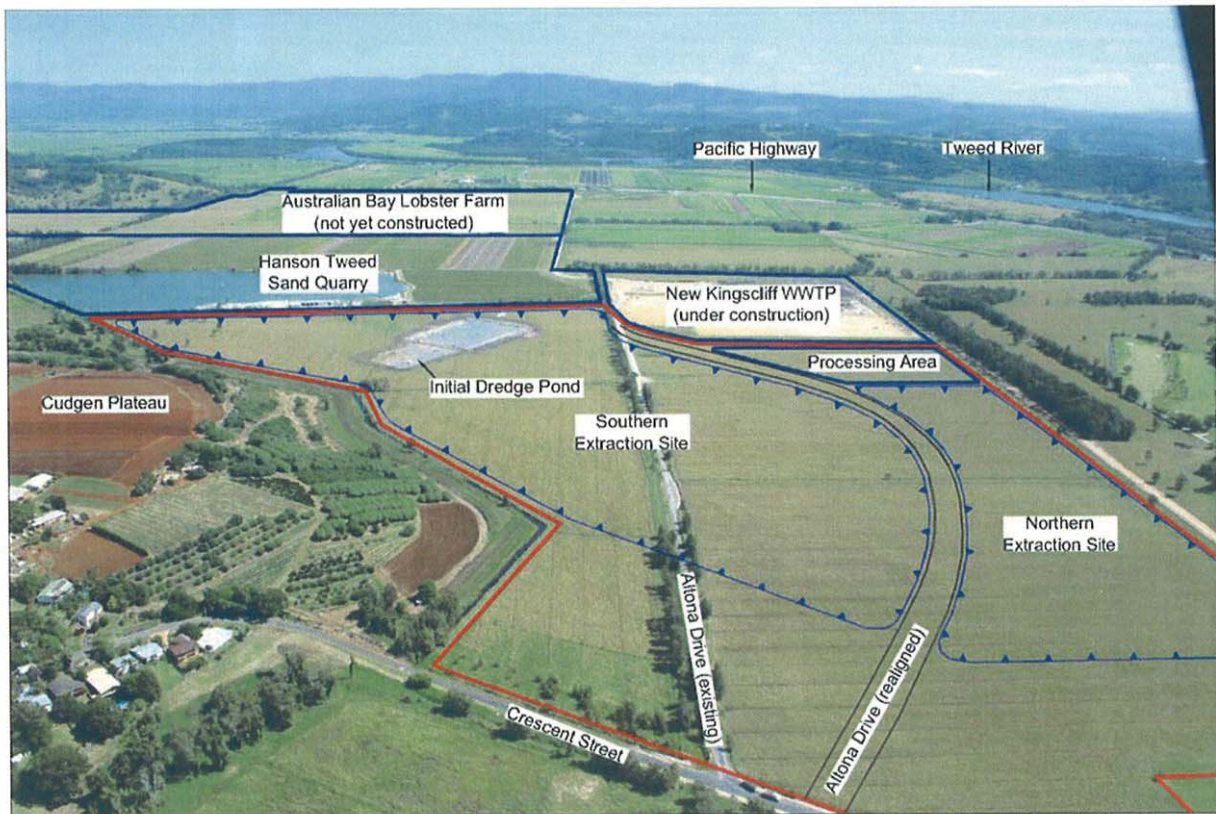


Figure 4: Local Topography and Surrounding Land Use

3 STATUTORY CONTEXT

3.1 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 meets the criteria in clause 7(1)(a) of Schedule 1 of *State Environmental Planning Policy (Major Projects) 2005*, being development for the purpose of an extractive industry that extracts more than 200,000 tonnes of extractive material per year.

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

3.2 Permissibility

The extraction site is located on land zoned 1(b2) Agricultural Protection under the *Tweed Local Environmental Plan 2000* (Tweed LEP). Within this zone extractive industries are permissible with development consent.

The pipeline is considered to be ancillary to extractive industries as it would be used to transport sand between the extraction site and the fill (destination) sites. The eastern pipeline is located on land zoned part 2(c) Urban Expansion, part 5(a) Special Uses (Drainage Reserve) and part is unzoned land under the Tweed LEP. The pipeline is temporary and is ancillary to extractive industries, which is permissible with consent in the 2(c) zone. In the 5(a) zone the pipeline is permitted on the basis that it is compatible with adjacent uses and the uses permitted (with or without consent) in adjacent zones. The pipeline is permissible with consent on unzoned land. The northern pipeline is located on land zoned part 4(a) Industrial and part is unzoned land under the Tweed LEP. The pipeline is permissible with consent in the 4(a) zone and on unzoned land.

The project is therefore wholly permissible with development consent and consequently may be approved by the Minister.

3.3 Exhibition

Under section 75H(3) of the EP&A Act, the Director-General is required to make the 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 Friday 23 May 2008 until Friday 27 June 2008:
 - via a link from the Department's website;
 - at the Department's Information Centre in Sydney;
 - at Tweed Shire Council;
 - at the Richmond-Tweed Regional Library, Kingscliff; and
 - at the Nature Conservation Council in Sydney;
- notified relevant State government authorities and Tweed Shire Council by letter; and
- advertised the exhibition in the *Tweed Link* and the *Tweed Daily News* on 23 May 2008.

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

3.4 Objects of the EP&A Act

The Minister's consideration and determination of the application must be consistent with the 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:

"The objects of this Act 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 social 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 proposal in the light of the ESD principles.

3.5 Environmental Planning Instruments

Under section 75I(d) of the EP&A Act, the Director-General's report is required to include a copy of, or reference to, the provisions of any State Environmental Planning Policy (SEPP) that substantially governs the carrying out of the project.

The Department has considered the proposal against the relevant provisions of SEPPs 33, 44, 55, 71 and SEPP (Mining, Petroleum Production and Extractive Industries) and is satisfied that none of these SEPPs substantially govern the carrying out of this project (see Appendix C).

Under section 75I(e) of the EP&A Act, the Director-General's report is required to include a copy of, or reference to the provisions of any environmental planning instrument that would (but for Part 3A of the EP&A Act) substantially govern the carrying out of the project and that have been taken into consideration in the environmental assessment of the project.

The Department has considered the proposal against the relevant provisions of the Tweed LEP and *North Coast Regional Environmental Plan* and is satisfied that none of these planning instruments substantially govern the carrying out of this project (see Appendix C).

3.6 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.

4 ISSUES RAISED IN SUBMISSIONS

During the exhibition period, the Department received 40 submissions: 4 from public authorities, 2 from community groups, 33 private submissions and one petition with 55 signatures.

4.1 Public Authorities

None of the public authorities objected to the
Most of the public authorities raised concerns about the project, but requested further commitments or resolution on a number of issues. The key issues raised by the authorities are summarised below.

Department of Primary Industries (DPI):

- supported development of a regionally significant source of construction sand;
- was concerned that a large proportion of the valuable resource would be used for land filling;
- requested the approval to require operator to provide annual production data to the Department;
- requested the approval process consider that future aquatic habitat rehabilitation works may take place in the main drain connecting the site with the Tweed River; and
- advised there are no substantial agricultural issues.

Department of Environment and Climate Change (DECC) advised it would be able to vary the environment protection licence for the existing extractive operation in relation to:

- noise;
- potential acid sulphate soils; and
- chemical limits for material transported from the premises.

DECC could support the proposal subject to further commitments from the Proponent, in particular:

- prepare a rehabilitation management plan including pipeline routes;
- location of proposed pipeline corridors; and
- include more detailed measures relating to Aboriginal cultural heritage.

Tweed Shire Council (TSC) raised a number of matters in relation to the proposal, in particular:

- effect on future playing fields nominated for the northern extraction area;
- need for flood modelling to determine the effects on flood behaviour;
- intersection of Crescent Street and Tweed Coast Road;
- effect of excavations on the wastewater treatment plant and current and future mains;
- commitment to rehabilitation and management of the area;
- hours of operation;
- noise impacts at the adjoining wastewater treatment plant;
- proposed means of disposal of VENM(b); and
- duration of surface and groundwater monitoring.

In subsequent correspondence Council suggested conditions dealing with:

- ecological protection and restoration;
- subsequent approvals under other legislation;
- intersection upgrade works;
- flooding; and
- financial contributions.

The Roads and Traffic Authority (RTA) does not object to the project but advised:

- specific requirements for improving the intersection of Crescent Street and Tweed Coast Road and the intersection of Crescent Street and Altona Drive; and
- a request that the Proponent make a contribution for maintenance of the road network affected by the proposal.

4.2 Public Submissions

Of the 36 public submissions, 21 (including the petition) objected or raised concerns about the project, including the following key issues:

- increase in traffic, particularly heavy vehicles, for noise and safety reasons;
- noise impacts on the community and excessive operating hours;
- effect of extraction on farm dam levels and groundwater in the area;
- effect of the proposal on ecosystems and threatened species;
- threat to waterways and groundwater from acidic water;
- effect of the proposal on local flooding and drainage;
- impact of airborne dust and exhaust fumes; and
- inconsistency with local planning strategies.

The remaining 15 submissions supported the development of the Proponent's landholdings for retail, residential and recreational uses.

4.3 Response to Submissions

The Proponent has provided a response to issues raised in submissions in its Submissions Report (see Appendix D), as well as a revised Statement of Commitments for the project. The Proponent included the results of additional flood modelling and noise assessment undertaken in response to submissions.

In its assessment of the project (see Section 5), the Department has considered the issues raised in submissions and the Proponent's response.

5 ASSESSMENT

5.1 Noise

Operational Noise Assessment

The EA described the existing acoustic environment, referring to background noise monitoring conducted at four nearby residential locations in August 2005. Background measurements were conducted for a 7 day period using unattended noise loggers, followed by operator-attended surveys. The recorded daytime background level ranged between 41 dB(A) and 51 dB(A), mostly dominated by traffic noise. The evening (6.00pm to 10.00pm) background level ranged between 39 dB(A) and 42 dB(A) and the night (10.00pm to 7.00am) background level ranged between 35 dB(A) and 38 dB(A). The evening and night periods are relevant because proposed site activities commence at 6:30am and extend to 10.00pm. Project specific noise criteria were determined for five receptors considering both intrusive and amenity limits as defined in DECC's *Industrial Noise Policy*.

Operational noise modelling considered five scenarios including one during site establishment and four during operations. The modelling predicted that in the absence of mitigating measures, noise emissions would comply with criteria under most operating conditions. During some scenarios, particularly under downwind and inversion conditions, noise emissions were predicted to exceed the criteria by between 1 and 4 dB(A). To avoid this exceedence the following mitigation measures have been included in the project:

- acoustically treating the dredge to reduce the sound power level emitted to 97 dB(A) or lower;
- increasing the height of the noise barrier on the southern side of the processing area by installing an acoustic fence on the bund; and

- enclosing noisier components of the processing plant, designed in conjunction with the noise barrier, to achieve a noise reduction of 5 dB(A) at relevant receptors.

A number of submissions from community members expressed concern that the project would create excessive noise in the area. The DECC proposed that the Proponent's Environment Protection Licence would be altered to limit noise from the premises during hours of operation to an L_{eq} (15 minute) criterion of 47 dB(A). Council requested that the Proponent assess the noise impact at the control building and visitors centre at the Kingscliff Waste Water Treatment Plant (WWTP).

The Proponent in its Submissions Report (see Appendix D) accepts DECC's limit for most receptors, but argues that the proposed limit should not apply at Residence G (216 Tweed Coast Road) and other residences in that location (see Figure 5). The Proponent contends that a limit of 55 dB(A) is appropriate for residence G because the higher background noise in that location has led to determination of a higher goal in accordance with DECC's *Industrial Noise Policy*.

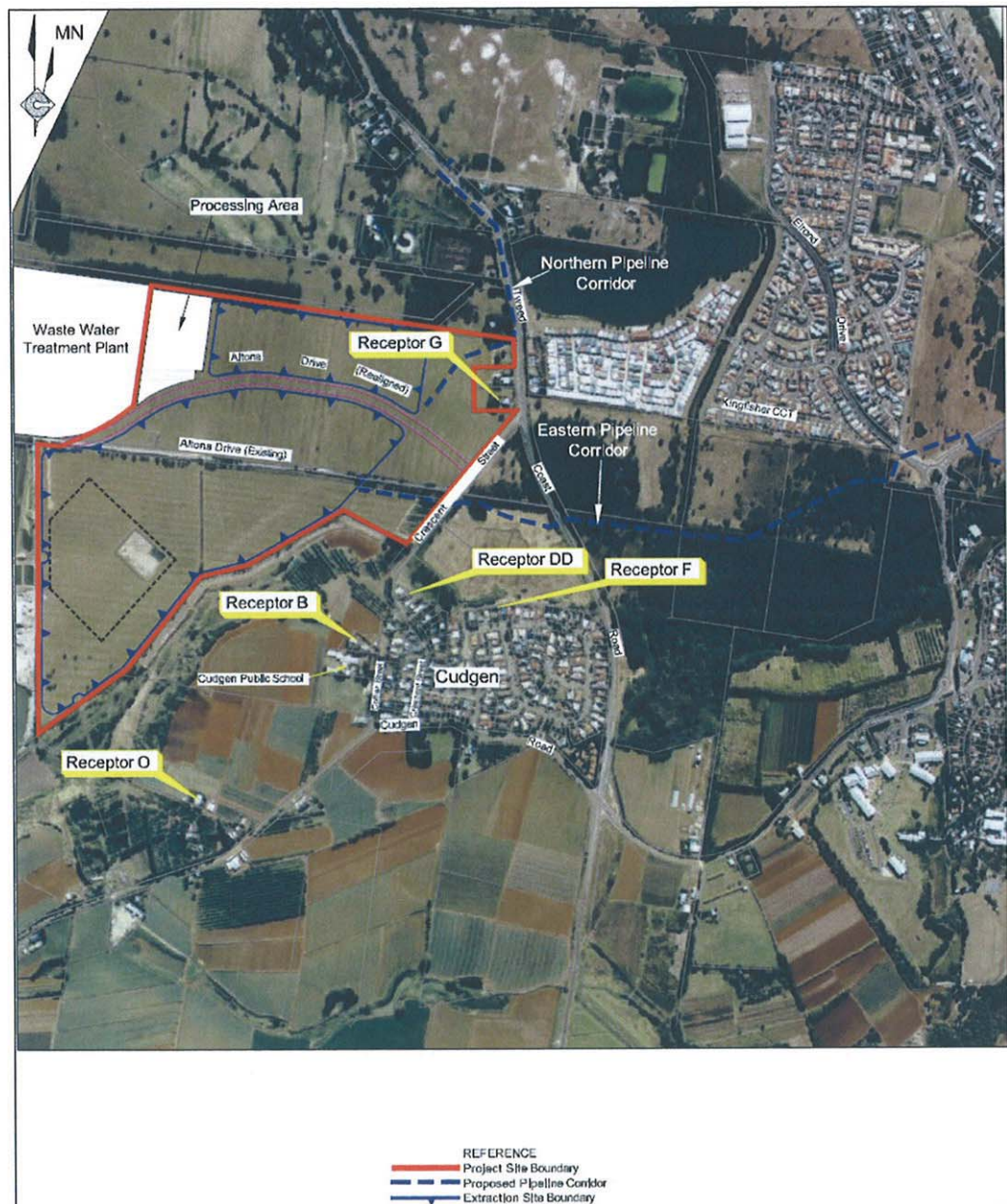


Figure 5: Noise Receptor Locations

The Department is satisfied that the noise limit recommended by DECC would require the Proponent to control the noise from the project at residences on properties not associated with quarrying to within acceptable levels. The Department notes that notwithstanding the Proponent's request for a higher

limit at Residence G, the EA predicts (Table 4.31) that the DECC limit of 47 dB(A) would be achieved at Receptor G under all operating conditions. Hence the noise limit recommended by DECC is considered appropriate.

A supplementary noise assessment was included in the Proponent's Submissions Report describing additional noise modelling undertaken to assess noise at the WWTP. The findings of the assessment are that relevant noise criteria would be achieved at the WWTP without any additional attenuation measures and that noise monitoring would not be required at this location.

A condition has been included to require the Proponent to prepare a Noise Monitoring Program to assess compliance with noise criteria and validate noise modelling predictions. The program would also detail specific actions for responding to exceedances of criteria and complaints should they occur.

Cumulative Noise Assessment

The EA considered the cumulative effect of the proposal with the Hanson Tweed sand extraction operation, identifying Receptor O as the location most potentially affected. The assessment considered the range of noise levels predicted at this receptor in the assessment of the Hanson Tweed project and calculated the resulting noise from the combined sand mining operations. On the basis of this consideration, the predicted cumulative noise impact for all modelled scenarios of the current project remained below project specific noise limits.

The Department notes that the EA did not in its calculations consider the worst case in the range of noise levels predicted at Receptor O for the Hanson Tweed project and that consequently there is some potential for cumulative noise predictions to be exceeded. However this depends upon the relative location of dredging activities in the two operations from time to time which the Proponent was unable to predict. In response to this shortcoming the Department has added Receptor O to the list of locations recommended by DECC where noise monitoring is to be carried out. The noise management plan is to include an appropriate response protocol should monitoring reveal that noise limits are exceeded. With this qualification the Department is satisfied that the noise assessment has demonstrated that the proposal would not result in unacceptable cumulative noise impacts in the area. The Department has recommended a condition which requires the Proponent to comply with cumulative noise criteria.

Pipeline Booster Pump

The eastern pipeline would require a booster pump part way along the corridor because of its length. The exact location of the pump would be determined at the commencement of pumping, consequently an indicative location of about 240 m south of residences in Kingfisher Circuit has been used for noise assessment purposes. The location of the booster pump on the alternative eastern corridor is approximately 30 m south of residences in Kingfisher Circuit.

To comply with the early morning shoulder noise limit of 43 dB(A), the booster pump would need to have a sound power level of 90 dB(A) L_{WA} or 81 dB(A) L_{WA} for the alternative eastern corridor. The sound power level of the booster pump used for the noise assessment was 101 dB(A) L_{WA} . The Proponent states the actual size and capacity of the booster pump would be determined prior to pumping commencing. Reductions in sound power level could be managed through acoustic cladding and orientation of the pump with the quieter end towards residences.

The Department is satisfied that the Proponent's mitigation measures would ensure that noise from the operation of the eastern pipeline booster pump does not significantly impact on nearby residences.

Road Noise Assessment

The EA considers noise emissions from project traffic on collector roads. The realigned Altona Drive is considered to be a new collector road where the DECC publication *Environmental Criteria for Road Traffic Noise* (ECRTN) provides the following standards for road traffic noise:

- Daytime (7:00am to 10:00pm) $L_{Aeq(1 \text{ hour})}$ 60 dB(A); and
- Night time (10:00pm to 7:00am) $L_{Aeq(1 \text{ hour})}$ 55 dB(A).

Tweed Coast Road is an existing collector road where the ECRTN criterion is that traffic arising from the development should not lead to an increase in existing noise levels of more than 2 dB.

The EA predicts noise emissions from combined truck traffic on Altona Drive from the project and the nearby Hanson Tweed sand extraction operation to be at least 2 dB less than the ECRTN daytime criterion at all receptors. The increase in noise from additional trucks on Tweed Coast Road has been calculated to fall within 0.3 and 0.4 dB(A), also within the relevant ECRTN criterion.

The Department is satisfied that the road noise assessment has not identified any significant issues requiring further mitigation measures.

Conclusion

The Department is satisfied that the project is unlikely to result in any significant noise impacts. Notwithstanding, the Department has recommended conditions that would require the Proponent to:

- comply with applicable site and cumulative noise criteria and strict hours of operation;
- seek to continually improve noise performance, and investigate and report on measures to reduce noise emissions; and
- prepare and implement a Noise Monitoring Program for the project.

5.2 Soil and Water

Groundwater

Groundwater monitoring on the site indicates the water table has an average level of about 0.25 m AHD, seasonally fluctuating about 0.5m above and below this level. The sand aquifer is located in quaternary sands extending to an average depth of about 20 m below the site and is recharged from rainfall and inflow from the tertiary basalt aquifer below, driven from the Cudgen Plateau.

Groundwater is fresh near the surface and near the Cudgen Plateau, but becomes more saline towards the base of the sand body and towards the Tweed River to the north. There are approximately 30 registered bores and five unregistered spears recorded within a 4 km radius.

During operations the Proponent would pump a sand-water slurry from the southern extraction pond to the processing plant and to various fill sites to the north and east. A proportion of the pumped water would return to the dredge pond, but water losses involved in this process would reduce the pond level causing a drawdown on the surrounding groundwater table. Modelling indicated that the water level in the pond would fall to about -1.5 m AHD during the early years and gradually recover as the size of the pond increases. Modelling predicted the greatest effect beyond the project site would occur at two unregistered spears on the adjacent property to the south (R. Julius) where the drawdown would be between 0.75 m and 1.75 m at one spear and between 0.5 m and 1.0 m at the other.

The Proponent acknowledges that during the initial years of sand extraction lower groundwater levels at the base of the Cudgen Plateau could result in lower yields from bores or spears and lower levels in dams excavated below the water table level. The operation would also reduce groundwater levels in the adjoining Hanson Tweed sand quarry. To minimise groundwater drawdown the Proponent has restricted the extraction rate from the southern extraction area to 450,000m³ per year for the first two years, ramping up to this level in increments while the extraction pond is being developed. Following the cessation of extraction in the northern extraction area, the extraction rate in the southern dredge pond would increase to 650,000 m³ for the remainder of its operational life. In the EA the Proponent gives an undertaking to replace any reduction in available groundwater supplies to surrounding landowners by suitable means such as extending bore depth or providing water from the Proponent's land.

Groundwater drawdown would also potentially expose PASS to oxidation and acid generation. The EA considers adverse impacts from this source to be unlikely, noting that during the life of the quarry, groundwater would flow down gradient to the southern extraction pond where the buffering capacity of the sand should be sufficient to maintain neutral conditions. Any excessive acidity in the pond would be treated with lime or similar alkaline additive.

Submissions expressed concern at the potential effects of groundwater drawdown on water levels and water quality in areas surrounding the project site, requesting that increased monitoring and a reduction in extraction rate be considered. In its Submissions Report (see Appendix D) the Proponent indicated that an agreement had been reached with the potentially affected property owner, R. Julius, covering ongoing monitoring of water levels and water quality and provision of an alternate water supply if its is adversely affected. A copy of the agreement has been supplied to the Department.

The Department is satisfied that the potential impact of the project on groundwater has been adequately assessed. Conditions have been included to require preparation of a groundwater monitoring program with details of corrective action to be taken if groundwater levels or quality do not remain within predicted limits.

Surface Water

Surface water quality monitoring has been carried out in various locations on the site, including the initial dredge pond and agricultural drains to the north and south of the site. Water quality monitoring in the dredge pond did not record any acute acidification, with pH ranging from 6.3 to 8.2 (mean value of 7.2). The water was fresh (salinity levels 120-1390 $\mu\text{S}/\text{cm}$ (mean 639)), however nutrient levels were elevated, and most likely due to the presence of cattle on the grazing land. Water samples from the northern drain were variable, especially during dry conditions when electrical conductivity (EC) levels were recorded at 32,100 $\mu\text{S}/\text{cm}$. This drain also had tidal influences which could explain the high salinity levels. The drain to the south of the dredge pond was generally fresh, however, brackish to saline conditions have been recorded during low flow conditions. The EA notes that the adjoining Hanson Tweed dredge pond has been regularly monitored for over 10 years and during that period pH levels have been consistently in the range of 6.5 to 9.0 and EC indicating a fresh to brackish range. The Proponent expects that the southern dredge pond would have similar water quality levels, given the same depth (20 m) and large pond area.

To ensure that the extraction and processing operation does not have a negative impact on the surface water quality of the dredge pond, the Proponent would implement a number of management safeguards, including:

- directing stormwater drainage to the extraction ponds;
- discharging fines from the processing area and return water from the fill sites into the pond at a minimum depth of 3 m below the water surface; and
- using flocculants to treat suspended solids in the pond should the adopted criteria be exceeded.

The Proponent would also undertake monitoring of surface water quality in the dredge pond and surrounding surface drains.

Nutrient levels in the initial dredge pond were slightly elevated, which would be expected given the surrounding agricultural activities. The Department notes that blue-green algae is a potential concern for water bodies on the North Coast and has been an issue for the adjoining Hanson Tweed quarry. This is particularly important for the project as the dredge pond does not have a significant source of flushing, and is surrounded by agricultural land uses. There is potential that the dredge pond could present a long term risk of pollution through nutrient enrichment, algal blooms or other bacterial contamination.

Previous advice received by the Department has indicated that dredge ponds can be successfully managed to greatly reduce the long term risk of bacterial and algal problems, through creating a healthy, diverse, functioning ecosystem in the ponds.

The Department is satisfied that the dredge pond would be able to be managed to minimise blue-green algae risk to established guidelines levels, and support a holistic, integrated approach to algae management. The Department has recommended a condition requiring the Proponent to develop a comprehensive Blue-Green Algae Management Plan for the project, which includes:

- measures to prevent and control the sources of algal blooms over the short, medium and long term, ensuring algae levels comply with applicable guidelines; and
- procedures for the management and notification of identified algal blooms.

Flooding

The site is located in the Tweed River floodplain and is subject to inundation from local catchment floods and river overbank floods. The area is drained by a network of drains with floodgates that lead to the Tweed River. The main drain in this catchment flows in an east-west direction beside Altona Drive and would be relocated as part of the project when Altona Drive is relocated.

From previous modelling, the EA estimates that a water depth of up to 0.5 m could occur across the site from a 100 year ARI rainfall event in the local catchment and overbank flooding of the Tweed River would result in a flood depth of up to 2.5 m across the project site. It is expected that the site would be flooded on more than one occasion during the period of quarrying operations. Shallow spillways are to be provided in the 1.8 m AHD high bunds surrounding the extraction ponds with a

level 0.5 m below the bund crest to allow water levels inside and outside the bund to equalise during floods, minimising scour when the bunds overtop. The Proponent intends to implement other measures to protect the site from the effects of flooding, such as raising the level of the processing area, blocking its entrance when floods are anticipated and maintaining drainage paths outside the bunded area.

The EA states that the project would be minimally affected by local catchment flooding and have minimal effect on such floods owing to its small area in relation to the floodplain. Tweed River overbank floods however, could inundate the site but the long warning time would allow preparations to be made including moving machinery to higher ground. The EA states that the residual impacts on the operation would again be minimal. There would be no loss in flood storage capacity once the perimeter bunds were overtopped as sand extraction would create a void in the floodplain.

Submissions from residents and the Department of Primary Industries were primarily concerned with the flood implications of raising the level of the fill sites. Council requested the Proponent to carry out flood modelling for several scenarios identified in its submission.

In its Submissions Report (see Appendix D) the Proponent referred to the flooding and drainage assessment in the EA which indicates that both the sand extraction project and the filling of nominated fill sites would not have any significant adverse impacts on adjoining properties. The Proponent commissioned additional modelling as requested by Council with the findings that the project would have no significant impact on flood levels for major flooding anywhere on the lower Tweed floodplain. The maximum impact in a 1 in 100 year flood event was a 10 mm increase in flood levels. The Council is satisfied with the additional flood study and recommended a bund height of 1.8 m AHD around the extraction areas.

The Department is satisfied that the flooding impacts of the proposal have been adequately assessed. Further assessment of specific fill sites would be required when the Proponent submits subsequent applications for filling to the relevant approval body.

Soil

The Proponent intends to accept up to 45,000 tpa of virgin excavated natural material (VENM) at the site for processing or use as backfill. This material would be tested at source to determine its characteristics and delivered to the site by truck. Material that does not generate acid, referred to as VENM(a), would either be stockpiled for processing or if unsuitable for processing used for backfilling and surface profiling to create the final landform.

Acid generating material, referred to as VENM(b) would be either processed or disposed of in the extraction voids. If the material is suitable for washing it would be placed in the dredge pond at the current working face where it can be collected by the dredge. If the material is reusable and does not require washing it would be stockpiled in a bunded area and treated over a period of months with alkaline material such as lime. VENM(b) which is not suitable for treatment or processing would be disposed of in the extraction voids. The proposed disposal of VENM(b) on the site has attracted comment in submissions.

The EA states that VENM(b) would initially be disposed of in the northern extraction pond from below approximately -1 m AHD. This excavation is to be fully backfilled so the VENM(b) placed there would be covered with VENM(a) to approximately 1 m AHD as part of the site rehabilitation. VENM(b) would subsequently be placed on the bed of completed sections of the lake being created in the southern dredge pond.

Submissions from DECC and Council expressed concern at the Proponent's method of disposing of VENM(b). The Council noted that at -1 m AHD the deposited VENM in the northern extraction area would still be within seasonal fluctuation levels of the groundwater table. The Proponent in its Submissions Report (see Appendix D) acknowledged that the groundwater level in the completed northern extraction area could be drawn down below -1 m AHD due to the influence of ongoing extraction in the southern extraction area and consequently modified the project to require disposal of VENM(b) below -2 m AHD.

DECC proposed a condition that PASS or hydraulically separated sulphidic fines must be discharged into the pond at a depth of not less than 3 m from the permanent water surface such that all fines are deposited to a final depth of 8 m below the permanent water surface. The Proponent does not believe

the proposed fines discharge/internment depths are warranted. The Proponent states that at another sand quarry on the south coast of the State, fines are approved to be disposed of at a shallower depth and that in 18 years of operation there have been no problems. The Proponent would ensure that fines are discharged into the southern extraction pond at a minimum depth of 1 m below the water surface, settle silts and fines at a minimum of 2 m and place VENM(b) in the extraction pond within 24 hours of it being excavated at the originating site.

Notwithstanding the commitments made by the Proponent to manage acid sulfate soils and sediments, the Department considers that DECC's proposed internment depths are appropriate to ensure that water quality in the extraction pond (and the surrounding groundwater) is not contaminated by acidic material. These internment depths are consistent with those required for the adjoining Hanson Tweed sand quarry.

Conclusion

The Department is satisfied that the project is able to be managed such that it would not result in any significant impact to soil and water resources. To ensure this occurs, the Department has recommended conditions requiring the Proponent to:

- comply with water quality objectives that are consistent with the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2000*, and the NHMRC's *Guidelines for Managing Risks in Recreational Water* (for blue-green algae);
- minimise flooding impacts;
- manage fines to prevent acid sulphate soil risks; and
- establish and implement a comprehensive Soil and Water Management Plan, which includes a Water Balance, Erosion and Sediment Control Plan, Acid Sulphate Soil Management Plan, Blue-Green Algae Management Plan, and detailed Surface Water and Groundwater Monitoring Programs.

5.3 Flora and Fauna

Extraction Site

The vegetation in the extraction site consists of exotic grasslands previously used for cattle grazing and sugar cane farming. Apart from the occasional relic tree, no other native vegetation exists on the site.

The flora and fauna assessment concluded that no threatened species, populations or ecological communities, or their habitats would be impacted by the proposed extraction and processing areas.

Pipeline Corridors

Two pipeline corridors would extend north and east of the extraction site (see Figure 2). The northern pipeline would extend for 0.8 km in the road reserve on the western side of Tweed Coast Road. The pipeline would be buried in the road reserve, which is vegetated by mowed exotic grassland with the occasional relic tree,

The eastern pipeline corridor commences at the southern extraction area and proceeds for 1.5 km to Turnock Street, crossing Crescent Street, Tweed Coast Road, Elrond Drive and Turnock Street. Except where it crosses road reserves, the corridor is located on land owned by the Proponent and its associated companies. The corridor is 20 metres wide to provide space for construction and maintenance access and to create some flexibility in precisely locating the pipeline. The eastern pipeline would be above ground except at road crossings.

A significant section of the eastern pipeline corridor passes through Swamp Open Forest vegetation, described in the EA as a groundwater dependent community dominated by Paperbark and Swamp Oak. Swamp Sclerophyll Forest, which is an endangered ecological community (EEC) under the *Threatened Species Conservation Act 1995*, is known to occur within the Swamp Open Forest vegetation community. Consequently, the EA has considered the Swamp Open Forest vegetation to be an EEC. A cleared corridor through this EEC vegetation would be required for the pipeline to be constructed.

The EA indicates the precise alignment of the eastern corridor would follow a proposed road reserve across the Proponent's land. An alternative eastern pipeline corridor is described in the EA which does not require clearing, but is closer to residences. The EA states that this alternative corridor

would be used in the event that the proposed road followed by the eastern pipeline corridor is not approved. Subsequent to publication of the EA the Land and Environment Court has approved filling of the Proponent's land at Turnock Street including a temporary haul road generally along the alignment of the proposed eastern pipeline corridor. The Proponent has stated that the eastern pipeline corridor would either coincide with the approved temporary haul road or another approved area of disturbance.

DECC in its submission requested that the eastern pipeline corridor be deleted because of the likely impacts on native vegetation and potential impacts to threatened species, in the absence of any cleared path having been established as part of another approval. DECC stated it should be assumed that the threatened species *Oldenlandia galioides* exists within the Swamp Open Forest vegetation community. There is also concern that a surface pipeline in this corridor may create a barrier to movement of the threatened Wallum Froglet. Other submissions questioned the adequacy of the flora and fauna assessment, particularly in relation to the eastern pipeline corridor.

The Proponent in its Submissions Report (refer to Appendix D) rejected DECC's request to remove the eastern pipeline corridor, stating that no clearing of vegetation would be undertaken as part of the sand extraction project. Earth ramps and underpasses would be created along the eastern pipeline to provide opportunities for the Wallum Froglet to cross.

The Department notes that the EA states that the proposed and alternative pipeline corridors have been located to avoid the need for native vegetation clearing. The Proponent does not seek approval for native vegetation clearing for pipeline construction or operation. Consistent with this submission the Department believes the eastern pipeline corridor should be used only if its route has already been lawfully cleared in accordance with another approval.

Conditions are recommended to require the Proponent to submit a survey plan of the eastern pipeline corridor with evidence that this remains within a cleared route through the vegetation that has been created in accordance with another approval. Conditions also require the Proponent to submit as part of the landscape management plan, details of measures to protect vegetation adjoining the pipeline and measures to facilitate Wallum Froglet movement across the pipeline.

Rehabilitation

Progressive rehabilitation is proposed to stabilise disturbed areas, create a low maintenance, stable and visually attractive landform suitable for future uses. The northern extraction area is planned for recreational uses including sporting fields and the southern extraction area is intended to be a permanent wetland with parkland surrounds. The EA proposes that the vegetated bund walls be retained and incorporated into the final land use for the area.

A conceptual final land use plan is included in the EA (see Figure 6) but the Proponent cautions that particular features would be subject to approvals being obtained at the appropriate time. Council has not endorsed the Proponent's land use concept plan at this time.

The below-ground northern pipeline would be removed following completion of filling in the northern area except where the pipeline passes under roads. The void would be backfilled with sand from the project and topsoil replaced and seeded with grass. The above-ground eastern pipeline would be removed following completion with little rehabilitation work needed in this corridor. The pipelines would remain in place for a period of between 11 and 20 years, depending on staging of approvals for development of the various fill sites.

Council raised a number of matters in relation to site rehabilitation. The Council was concerned that the land north of Altona Drive had been previously identified for sporting field development and would now be unavailable for that purpose for an indefinite period. A more thorough assessment of the post development land management was requested, including management of the fresh water lake.

The Proponent in its Submissions Report (refer to Appendix D) responded to Council's concerns indicating a precise rehabilitation timetable could not be provided because it was dependent upon factors beyond the Proponent's control. Nevertheless land would be made available for sporting field development as soon as possible. In the interim the Proponent was prepared to continue discussion for provision of temporary sporting fields on its property. The fresh water lake would remain under the Proponent's control with landscaping detail to be developed in the rehabilitation management plan.

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Figure 6: Conceptual Final Land Use

The length of foreshore able to be backfilled to create wetlands would depend on the amount of VENM(a) received, with preference given to creating foreshore wetlands on the southern edge. The perimeter bund would be retained and incorporated into the long term land use for the site. A range of native tree and shrub species would be planted on the site, which currently does not have any native vegetation species.

The Department is satisfied that the information provided in the EA adequately describes proposed rehabilitation for the purposes of project assessment. The level of detail is appropriate for a quarrying project where there is time for final land uses to be refined and agreed as the project progresses. Conditions are recommended requiring preparation of a comprehensive Landscape Management Plan for the project that would detail rehabilitation procedures and objectives.

5.4 Traffic and Transport

The Proponent intends to transport up to 300,000 tpa of products from the site and import up to 45,000 tpa of VENM for backfilling or processing which together with other heavy vehicles visiting the site would generate an average of 124 truck movements per day (20 tonne truckloads). In practice product would be transported in truck and dog trailer units carrying on average 30-tonnes. Based on these truck units the project would generate on average 74 product truck movements per day. Traffic generation on a peak day may be up to one third higher. In addition, up to 24 movements per day would be required to move dry material from the southern extraction area across Altona Drive to the processing area, generally occurring in 5-day campaigns up to six times per year. Gates C and D have been positioned directly opposite each other to allow vehicles to cross Altona Drive directly without turning.

Roadworks to be undertaken by the Proponent include realigning Altona Drive together with a new intersection between Altona Drive and Crescent Street, constructed to Council's requirements. The new intersection would be constructed prior to despatch of products from the site, but would be temporarily connected to the existing Altona Drive until significantly later in the project when the advancing southern excavation requires Altona Drive to be relocated.

The Proponent would mandate a travel route for heavy vehicles utilising Altona Drive between the site entrance and Crescent Street and then Crescent Street between Altona Drive and Tweed Coast Road. Heavy vehicles would not be permitted to use Altona Drive west of the site or Crescent Street south of Altona Drive. Furthermore heavy vehicles would not be permitted to turn right from Crescent Street into Tweed Coast Road. South-bound vehicles would travel northwards along Tweed Coast Road to the Pacific Highway where a U-turn manoeuvre can be performed at the Chinderah Roundabout.

The EA predicts that by 2011, in the absence of project-related traffic, the level of service of the intersection of Tweed Coast Road and Crescent Street would have deteriorated to poor level during the am peak. The EA states that Council intends to duplicate Tweed Coast Road in the period 2011 to 2016, which would address the poor intersection performance.

The traffic assessment estimates that by 2011 the project would increase traffic on Tweed Coast Road during the morning peak hour by 1.0%, having very little impact on the functioning of the road network and on other road users.

The Proponent indicates in the EA a willingness to contribute towards improvements to the intersection of Tweed Coast Road and Crescent Street in proportion to a similar contribution made in 2001 to Council by the Hanson Tweed sand extraction operation, which utilises the same route.

Council in its submission stated that a ban on right turning movements from Crescent Street to Tweed Coast Road is not part of Council's traffic planning and requested the Proponent to investigate a roundabout at that location. The RTA requested the Proponent to upgrade the intersection as follows:

- right turn - AUSTROADS CHR treatment; and
- left turn - AUSTROADS figure 6.24 left turn treatment.

A number of private submissions expressed concern that additional truck traffic from the development would cause deterioration to roads, increase congestion and reduce safety for other road users.

The Proponent in its Submissions Report (refer to Appendix D) indicated that its drivers would be banned from turning right from Crescent Street into Tweed Coast Road, even if the Council allows that movement to remain for other road users. The Proponent did not accept that it should be solely responsible for providing improvements to the intersection of Tweed Coast Road and Crescent Street specified by the RTA as these works would be required regardless of whether the project proceeds and should be incorporated within Council's future upgrade of Tweed Coast Road. The Proponent considers that Council should give priority to this intersection. In its Submissions Report the Proponent states that its traffic consultant believes the AUSTROADS CHR treatment for vehicles turning right from Tweed Coast Road into Crescent Street could be more economically achieved by line marking and signage.

Council has advised that the construction of Tweed Coast Road to a four-lane road and upgrading of the Crescent Street and Tweed Coast Road intersection do not form part of Council's current 5-year (2009/10–2013/14) works program for the Tweed Road Contribution Plan No. 4 (TRCP), although these future works have been identified within the TRCP. Council has no need to upgrade the Crescent Street and Tweed Coast Road intersection at this time. The upgrade of the intersection is required by the project and it is not possible for the contributions paid by the Hanson Tweed quarry for the upgrade of the intersection as part of the future 4-lane Tweed Coast Road, to be used to part fund the intersection works for the project. The existing intersection is adequate for right turning vehicles from Tweed Coast Road, however it would be desirable for an acceleration lane to be provided for northbound vehicles on Tweed Coast Road.

The Department considers that improvements should be made to the intersection of Tweed Coast Road and Crescent Street prior to heavy haulage commencing. Although the intersection works would be redundant when the road was upgraded to 4 lanes, they are required to ensure the safe movement of vehicles generated by the project. Council has not programmed the upgrading of Tweed Coast Road in the foreseeable future and for safety reasons it would be inappropriate to wait until Council upgraded the intersection. A condition has been recommended to require the Proponent to upgrade the Crescent Street and Tweed Coast Road intersection, prior to the transport of sand by road.

While the environmental assessment has assessed the likely traffic impacts from the proposal, the Department notes community concern regarding potential safety issues and the absence of safety measures proposed for slow-moving heavy vehicles crossing Altona Drive between the southern and northern parts of the site. Consequently a condition has been recommended to require the Proponent to submit a road safety plan, prepared in consultation with Council, for approval prior to work commencing.

5.5 Air Quality

The EA includes an air quality assessment, including modelling of fine particulate matter (PM₁₀) and dust deposition associated with the construction and operation of the project.

The modelling assumed a range of dust control measures would be employed during extraction, processing and blending. These include dust suppression of unsealed access roads and stockpiles, use of shelters, enclosures or barriers for screening and conveying of material, misting of dry screens and progressive rehabilitation of disturbed and backfilled areas. The modelling indicated the project's off-site air emissions would comply with DECC's air quality goals.

An assessment of the cumulative air emissions from the operation of the project with the operation of the adjoining Hanson Tweed quarry was also undertaken. The modelling predicted an increase in deposited dust at a receiver on the southwestern hillside near the project (M1) of 2.3 g/m²/month, which is above DECC's goal of an increase of no more than 2 g/m²/month. However, the total annual average monthly deposited dust levels at this and other locations are below the air quality goal of 4 g/m²/month. Concurrent operation of the project with the Hanson Tweed quarry would increase maximum PM₁₀ concentrations (24-hour average) at the Chinderah Golf Course building to the north to be equal with the air quality goal of 50 µg/m³.

The Proponent would implement a number of management and mitigation measures to reduce dust emissions and undertake air quality monitoring to confirm the effectiveness of control measures and compliance with air quality goals.

The Department is satisfied with the air quality assessment of the project and that it could be constructed and operated in a manner that would not result in any significant air quality impacts on the surrounding area. The Department has recommended conditions requiring the Proponent to:

- comply with applicable air quality criteria;
- ensure all trucks entering and leaving the site are covered; and
- prepare and implement a Dust Monitoring Program for the project.

5.6 Heritage - Aboriginal

A cultural heritage survey was carried out over the project site and pipeline corridors in 2005 with representation from the Tweed Byron LALC. No Aboriginal sites or relics were found and none had previously been recorded on lands affected by the project. Visibility within the project site was approximately 90% allowing a conclusion to be drawn that Aboriginal sites do not occur in the area.

Visibility was more variable in the pipeline corridors but the assessment noted that there was a very low potential for Aboriginal sites to occur in those locations, likely confined to scarred trees of which none were found.

The Proponent would invite Tweed Byron LALC to be represented during excavation and burial of the northern pipeline. Protocols would be followed in the event that material considered to be Aboriginal in origin is discovered.

DECC in its submission requested that the Proponent continue to consult with Aboriginal representatives in the ongoing management of Aboriginal cultural heritage and undertake broad-based Aboriginal community consultation, communicating the results of the field assessment and inviting further input. DECC also requested that the Proponent develop an employee induction protocol for Aboriginal cultural heritage in collaboration with the Aboriginal community and identify a long term storage location for any Aboriginal relics discovered during the project, again in consultation with the Aboriginal community.

In its Submissions Report (see Appendix D) the Proponent agreed to develop an induction protocol in consultation with the Tweed Byron LALC and to identify a long term storage location should any relics be discovered. The Proponent also agreed to invite other identified Aboriginal Stakeholders to join the Tweed Byron LALC to inspect the excavation for the northern pipeline.

In the absence of any ongoing management issues however, the Proponent questioned the need for further broad based consultation and involvement with the Aboriginal community, given that the survey had been undertaken with land Council representation and no Aboriginal heritage sites were identified.

The Department is satisfied that the EA has adequately assessed the potential impact of the proposal on Aboriginal cultural heritage and considers the Proponent's response to DECC to be adequate. A condition has been recommended requiring preparation of an Aboriginal Heritage Management Plan detailing the management of Aboriginal cultural heritage.

5.7 Visual Amenity

The project site has flat topography and is almost entirely cleared of tall vegetation. There are partially obstructed low elevation views into the site from nearby roads, residences to the east and Chinderah Golf Course to the north. Elevated views over the site and surroundings are obtainable from the Cudgen Plateau and parts of the Cudgen residential area to the south. More distant, partially obstructed views are possible from parts of Kingscliff, Terranora and Banora Point.

In the EA the Proponent considers there would be a high risk for potential impacts on visual amenity in the short to medium term and a low risk in the long term. To reduce views into the site the Proponent intends to erect a vegetated bund around the processing plant and establish a vegetation screen along the eastern extent of the extraction areas where they would be exposed to view from Crescent Street and Tweed Coast Road. The appearance of the site would be further improved by progressive rehabilitation to minimise the extent of non-vegetated land and by maintaining the operation in a clean and tidy state.

The Department is satisfied that the measures proposed by the Proponent are appropriate for reducing visual impact, provided adequate effort is applied to establishing and maintaining the screening vegetation. It is acknowledged that screening would mainly be of benefit in low level views, with lesser effect on views from elevated land to the south where the extraction areas and taller items in the processing plant would be visible. It is noted that views from the elevated southern land already have an industrial character resulting from the Hanson Tweed sand quarry and the Kingscliff wastewater treatment plant, which adjoin the subject site.

5.8 Climate Change

Climate change can potentially affect the proposal in two ways:

- greenhouse gases released by the operation would contribute marginally to global warming; and
- the low lying land may potentially be subject to inundation from the effects of rising sea level.

Sand mining machinery and associated trucks release greenhouse gases from combustion of fossil fuels. Clearing vegetation, even grass, from land to be mined would remove that land from playing a role in absorbing CO₂ from the atmosphere. In addition, cleared vegetation releases greenhouse gases as it decays. Greenhouse gases emitted from all of these processes associated with the proposal would contribute to some extent to climate change.

Greenhouse gas emissions from the proposal may be partly offset in the longer term by revegetation plantings associated with the rehabilitation program, aimed at restoring vegetation cover, whether it be bushland, agricultural land or parkland.

Within the twenty year timeframe for the project it is unlikely that sea levels would rise sufficiently to threaten completion of the project. If such a threat were to eventuate, abandonment of the sand mine ahead of permanent inundation would be a minor casualty in the widespread loss of usable land in the Tweed River floodplain.

The Department is satisfied that the benefits of the sand extraction project have been established. Refusal of the application would not necessarily save greenhouse gas emissions. The purpose of the sand mine is to supply filling material to the local area and construction sand to the region. If the proposal does not proceed, construction sand would be obtained from another source and it is possible another source would also be pursued for fill material. Should such alternative sources be less favourably located there would be greater greenhouse gas emissions owing to greater transport distance. Hence the Department concludes there is no significant reason relating to climate change to withhold approval for the project.

5.9 Other Issues

The Department has considered other issues relevant to the project and come to the view that there are no further matters of significance to be assessed. Appropriate conditions of approval have been incorporated.

6 RECOMMENDED CONDITIONS

The Department has prepared recommended conditions of approval for the project. These conditions are required to:

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

The recommended conditions address sand mining operations, on-going environmental monitoring and management, progressive rehabilitation, compliance mechanisms, independent reviews, community consultation, complaints management and performance audits. A summary of the conditions of approval is provided in Appendix A and a full set of the recommended conditions appears in Appendix B.

The Department has incorporated public authority comments into the conditions of approval where appropriate. The Proponent has reviewed the recommended conditions and has accepted them.

7 CONCLUSION

The Department has assessed the project application with accompanying environmental assessment, submissions received and the Proponent's response to submissions and is satisfied that there is sufficient information available to determine the application.

The key issues identified in the Department's assessment concern the control of impacts on groundwater, amenity impacts on residents, potential pollution from acid sulfate material, rehabilitating the site and traffic on Council roads. Based on this assessment the Department is satisfied that the potential impacts of the project can be managed to ensure an acceptable level of environmental performance. A range of conditions have been recommended to address these issues.

The project is intended to provide sand for filling low-lying land, making it suitable for future development, and providing a source of construction material for civil engineering works in the Tweed region. There are economic benefits for New South Wales and the Tweed Shire should the project proceed, including a guaranteed local supply of over 5 million cubic metres of sand for the construction industry over the next 20 years, creation of 19 jobs and injection of \$3 million into the local economy.

On balance, the Department believes that the project's benefits sufficiently outweigh its residual costs and that it is in the public interest. Therefore, the Department recommends approval of the project, subject to conditions.

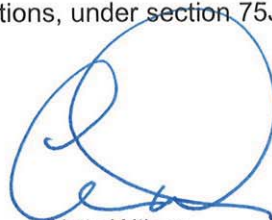
8 RECOMMENDATION

It is RECOMMENDED that the Minister:

- consider this report;
- approve the project application, subject to conditions, under section 75J of the *Environmental Planning and Assessment Act 1979*; and
- sign the attached project approval.

 29/5/09

David Kitto
Director, MDA

 31.5.09

Chris Wilson
Executive Director, MPA

 2/6/09

Richard Pearson
Deputy Director-General, DASP

6/6/09



Sam Haddad
Director General

APPENDIX A. SUMMARY OF THE CONDITIONS OF APPROVAL

The Department has recommended a number of conditions of approval, including requirements to:

- restrict the period of extraction to 20 years;
- limit sand extraction to 650,000 cubic metres per year;
- limit road transport of extracted material from the site to 300,000 tonnes per year;
- limit the importation of VENM to the site to 45,000 tonnes per year;
- require the Proponent to pay section 94 contributions to Council;
- prepare and implement Monitoring Programs for Noise and Air Quality to evaluate critical parameters and demonstrate compliance;
- prepare and implement an acid sulfate soils management plan for the operation;
- prepare and implement a comprehensive Water Management Plan for the project to monitor and manage surface and groundwater impacts. The components of the Plan include:
 - a site water balance;
 - erosion and sediment control measures;
 - blue/green algae management;
 - surface water monitoring; and
 - groundwater monitoring;
- survey and provide measures to protect vegetation and the Wallum Froglet on the eastern pipeline corridor;
- prepare and implement a Landscape Management Plan to specify details of site closure and rehabilitation works;
- involve Aboriginal representatives in inspecting pipeline excavation and developing an employee induction protocol;
- upgrade the Crescent Street and Tweed Coast Road intersection; and
- prepare an environmental management strategy, submit annual reports and conduct environmental audits in accordance with standard practices.

APPENDIX B. RECOMMENDED CONDITIONS OF APPROVAL
