MAJOR PROJECT ASSESSMENT: Somersby Fields Project (MP 05_0137)

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

May 2009

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1. EXECUTIVE SUMMARY

Somersby Fields Partnership (SFP) (the Proponent) is proposing to develop a new sand quarry on Peats Ridge Road, Somersby, on the Central Coast. The site is about 700 metres west of the Somersby Interchange on the F3 Freeway, and about 180 metres east of Somersby Public School.

The proposal, known as the Somersby Fields Project, involves:

- extracting up to 7.4 million tonnes of sand over 18 years, at a maximum rate of 450,000 tonnes of (product) sand a year;
- constructing and using a range of associated infrastructure, including a sand processing plant and new access road off Peats Ridge Road; and
- progressive rehabilitation of the site.

The project has a capital investment value of $6 million, and would employ up to 33 people during 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 with an extraction rate of more than 200,000 tonnes a year, and consequently requires the Minister's approval.

The Department exhibited the Environmental Assessment of the project for 6 weeks from 1 August 2007, and received 2,980 submissions on the project: 11 from public authorities and 2,969 from special interest groups and the general public. Some 99% of the public submissions objected to the project, raising concerns about a broad array of potential impacts including groundwater and surface water, air quality (including dust and silica), noise, flora and fauna, traffic and socio-economic impacts. Much of this concern is related to the potential impact on Somersby Public School, and on surrounding private properties.

On 17 December 2007, the Minister for Planning appointed a Panel of Experts to assess key aspects of the project. This Panel comprised three independent experts including Mr Garry West (chair), Dr Nigel Holmes (air quality and noise) and Assoc. Professor Noel Merrick (surface and groundwater), and reported to the Director-General in July 2008.

The Department has assessed the project application, EA, submissions on the project, SFP's response to submissions, and the Panel's report, in accordance with the objects of the EP&A Act and principles of ecologically sustainable development.

Whilst it acknowledges and understands the concerns of the Somersby Public School community and the wider Somersby community, the Department's assessment indicates that the project would comply with all the relevant health and amenity criteria at the school during all stages of the project, and would not adversely impact the learning experience of students.

The assessment also indicates that the environmental impacts of the project can be adequately mitigated, managed, offset and/or compensated, to ensure an acceptable level of environmental performance. The Department acknowledges that one residence (Daniels) is expected to be adversely affected by noise at some stages of the project, and has recommended conditions requiring SFP to acquire this property upon request.

The Department has recommended a comprehensive and precautionary range of conditions to ensure that the project complies with the relevant criteria and standards. This includes requiring SFP to demonstrate compliance with relevant criteria before being allowed to proceed to stages of the quarry in proximity to Somersby Public School.

The Department also recognises that the site is identified as containing a regionally significant sand resource, and that there is a demonstrable need to develop new sand resources to meet the needs of the Central Coast and Sydney construction industry.

After careful consideration, the Department believes, on balance, that the project's benefits sufficiently outweigh its residual costs, and that it is therefore in the public interest.

Consequently, the Department recommends that the Somersby Fields Project be approved, subject to strict conditions of approval.

2. BACKGROUND

Somersby Fields Partnership (SFP) (the Proponent) is proposing to establish a new sand quarry on Peats Ridge Road, Somersby, approximately 8 kilometres northwest of Gosford and approximately 700 metres west of the Somersby Interchange on the F3 Freeway (see Figure 1).

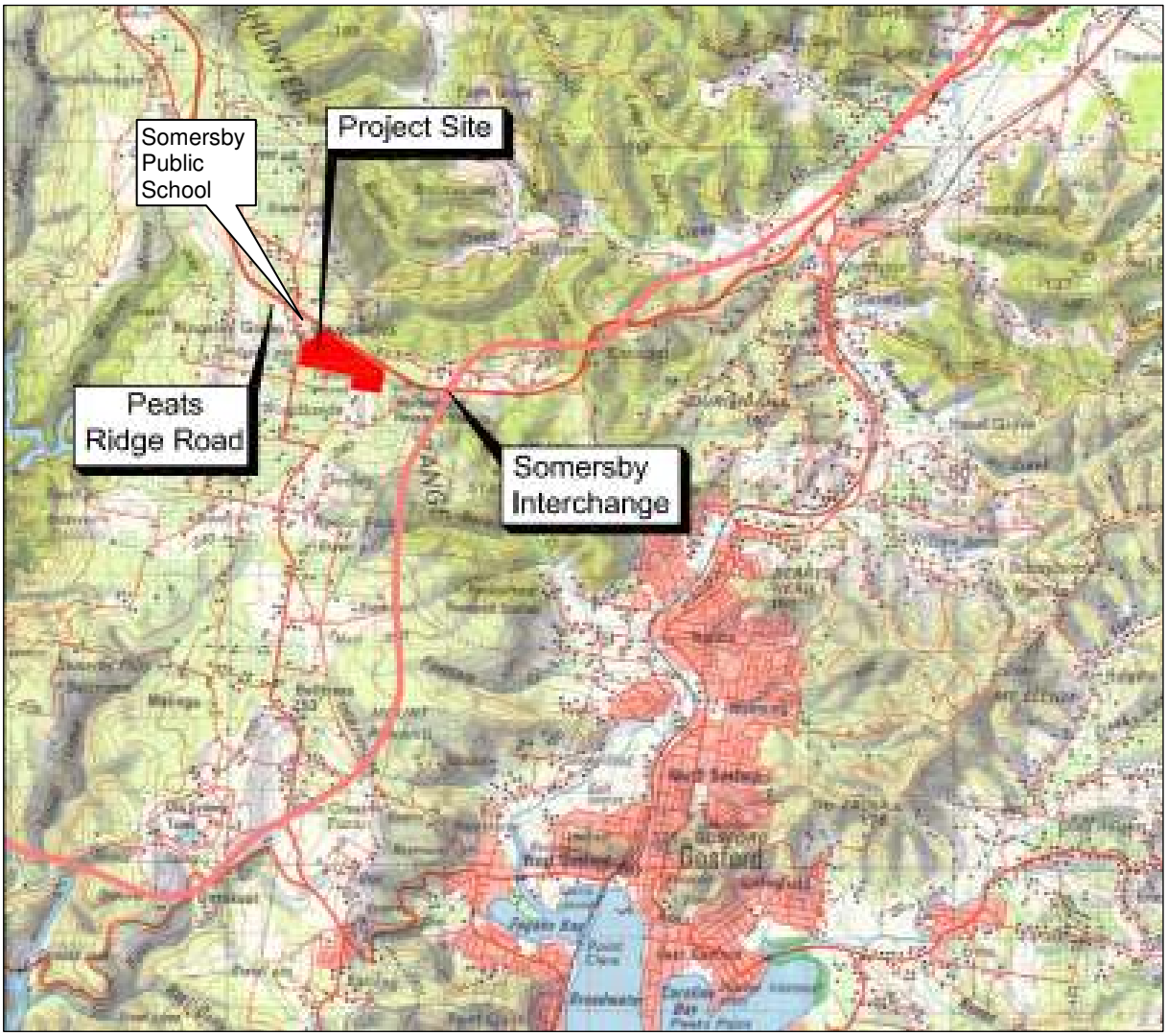

Figure 1: Project Location

The project site has been a known source of sand and gravel for some time. Some extraction was undertaken at the site in the 1970's to provide material for the construction of the F3 motorway.

Detailed resource investigations were undertaken at the site during the early 1990's, but the then proponent decided not to proceed with an application.

Since 2000, after purchasing the site, SFP has undertaken further detailed resource analysis, project design and stakeholder consultation.

The proposed project is the result of these detailed and extended investigations.

3. PROPOSED PROJECT

3.1 Project Description

SFP is proposing to establish a new sand quarry at Somersby in the Gosford local government area.

The proposal is known as the Somersby Fields Project (the project). The major components of the project are summarised in Table 1, and depicted in Figures 2 and 3.

The project is described in full in SFP's Environmental Assessment (EA), which is attached as Appendix G. It is noted that, in response to concerns raised in submissions, SFP has amended the extraction area by deleting Stage 1/3 and amending the eastern boundary of Stage 1/4 slightly (see Section 6.4 for further detail).

Table 1: Major components of the project

Aspect	***Description***
Project Summary	**Construction and operation of a new sand quarry at Somersby, including:** • **extracting up to 7.4* million tonnes of sand over 18 years, at a maximum rate of 450,000 tonnes of (product) sand a year;** • **constructing and using a range of associated infrastructure, including a sand processing plant and new access road off Peats Ridge Road; and** • **progressive rehabilitation of the site.**
Total Site Area	42.3 hectares
Extraction Area	22 hectares*
Total Sand Resource	Stage 1 – 4.6 million tonnes*; Stage 2 – 2.8 million tonnes; Total – 7.4 million tonnes.
Extraction Method	Excavator and bulldozer
Extraction staging	2 main extraction stages (and a number of sub-stages), starting from the eastern side of the site (see Figure 3)
Extraction Area Setbacks	• Minimum 25 metres to Peats Ridge Road corridor; • Minimum 20 metres to Somersby Mintbush community in north-eastern area of site; • Minimum 90 metres to western boundary; and • Minimum 15 metres to southern boundary.
Depth of Extraction	Variable, to a maximum of 23 metres below existing ground level.
Processing and Facilities	Construction and operation of processing facilities, including an enclosed wash plant, a mortar sand plant, stockpiles, fines processing circuit, water storage plant, workshop, office and amenities, and ancillary facilities.
Fines Management	Clay fines would be dewatered using a belt filter press, and deposited in quarry voids.
Main Products	Fine grained concrete sand; fine-medium grained concrete sand; white and yellow mortar sand; fine-very fine grained sand product.
Production	Up to 450,000 tonnes of product per year (based on sand extraction of up to 540,000 tonnes per year)
Product Transport	All products would be transported by road, via Peats Ridge Road and the F3 Freeway. No project trucks would travel past Somersby Public School.
Project Life	Up to 18 years (extraction)
Rehabilitation and Offsets	The extraction area would be progressively rehabilitated using waste clay fines (see Figure 11). The final landform would present as a free draining amphitheatre with slopes of 1:4 (V:H), rehabilitated to support a range of landuses. The project includes a strategy to offset the clearing of 10.8 hectares of vegetation required. The offset strategy comprises on and off site measures (see Section 6.4).
Employment	Construction workforce of up to 20 people (full-time equivalents) and an operational workforce of 33 people at peak production.
Capital Value	$6 million.

Aspect	Description
Construction	Construction of the site entrance and intersection, site access road, wheel wash facility, western earth noise/visual bund, and processing plant would be undertaken over a period of approximately 6 months.
Hours of Operation	• Extraction and processing operations – 7am-6pm Monday to Saturday; • Product loading and transportation – 5am-10pm Monday to Friday and 5am-4pm Saturday; and • Construction activities – 7am-6pm Monday to Saturday.

* The removal of Stage 1/3 reduces these numbers slightly.

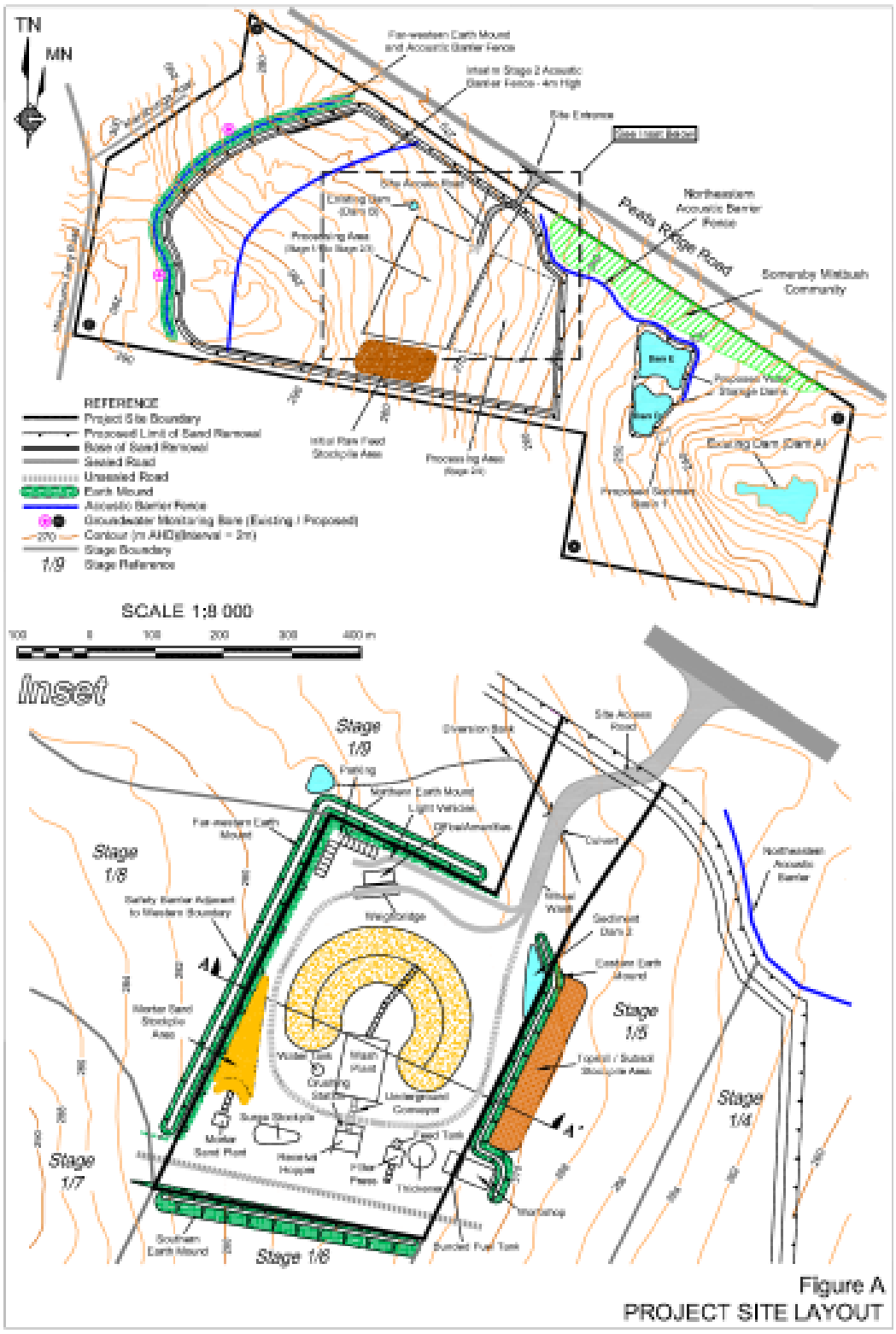

Figure 2: Project Layout

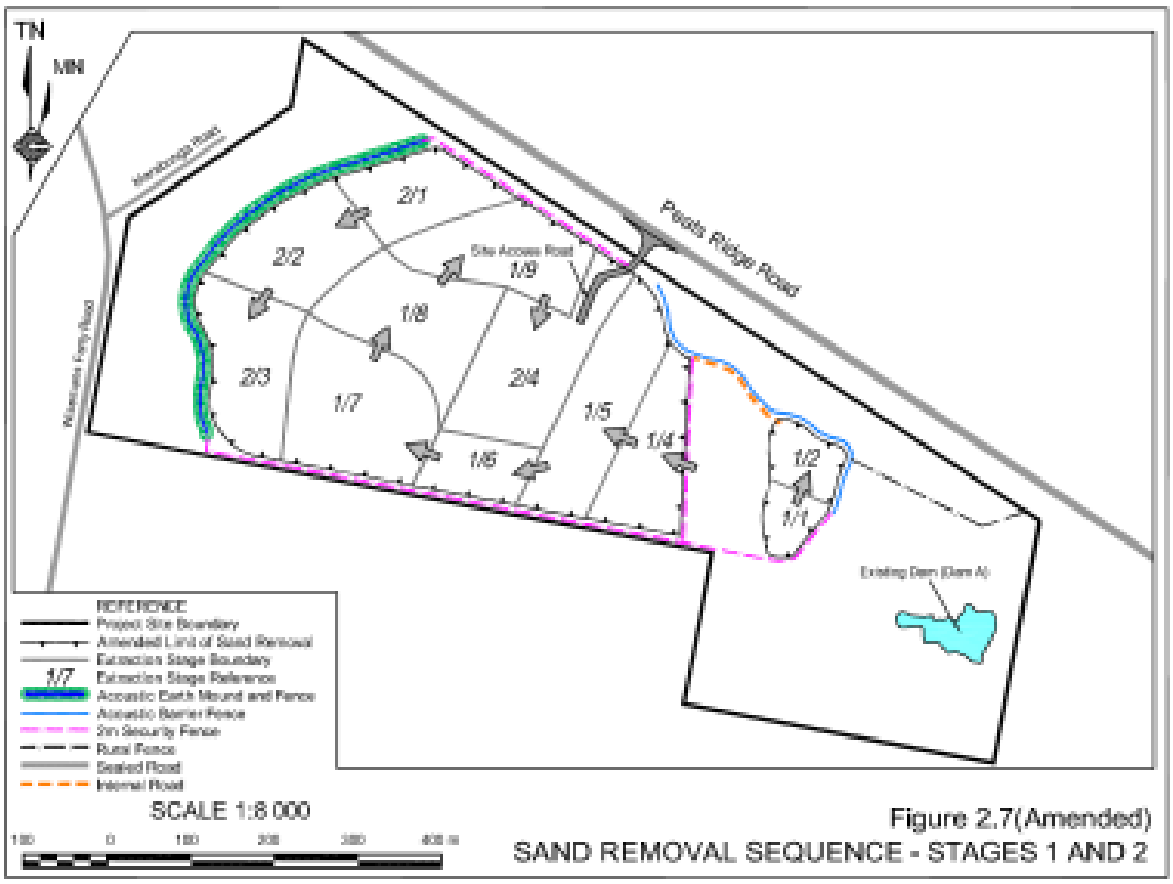

Figure 3: Project Staging

3.2 Project Setting

The project is located at Somersby on the Central Coast Plateau, approximately 8 kilometres northwest of Gosford (see Figure 4).

The Somersby locality is characterised by rolling agricultural land that has historically supported, and continues to support, a range of agricultural landuses, including horticulture and grazing.

The plateau is underlain by large resources of friable fine-medium grained sandstone, which breaks down readily to provide a valuable sand resource for the regional construction industry. A number of existing and planned quarries are located in the locality, as indicated on Figure 4.

The sandstone geology of the plateau also supports a large and high quality groundwater resource, which is highly valued both as domestic and agricultural water source, as well as a commercial water source for bottled water suppliers. It also forms an integral component of the environment, with groundwater dependent ecosystems reliant on the maintenance of a natural groundwater regime for survival.

On a local scale, the site and surrounding area is dominated by rural and rural-residential landuses (see Figure 5).

However, a key surrounding landuser is the Somersby Public School, which is located approximately 180 metres to the west of the proposed extraction area. The proximity of the school to the project site has been fundamental to many of the concerns raised by the Somersby community about the project.

There are also a number of residences in proximity to the project site, with the closest approximately 150 metres from the proposed extraction area.

The site does enjoy very good access to the arterial road network, with the F3 Freeway located approximately 700 metres to the east of the site, with access directly from Peats Ridge Road. The project is based on all truck transport via the Peats Ridge Road and the F3, with no transport on Peats Ridge Road west of the project site (ie. past Somersby Public School).

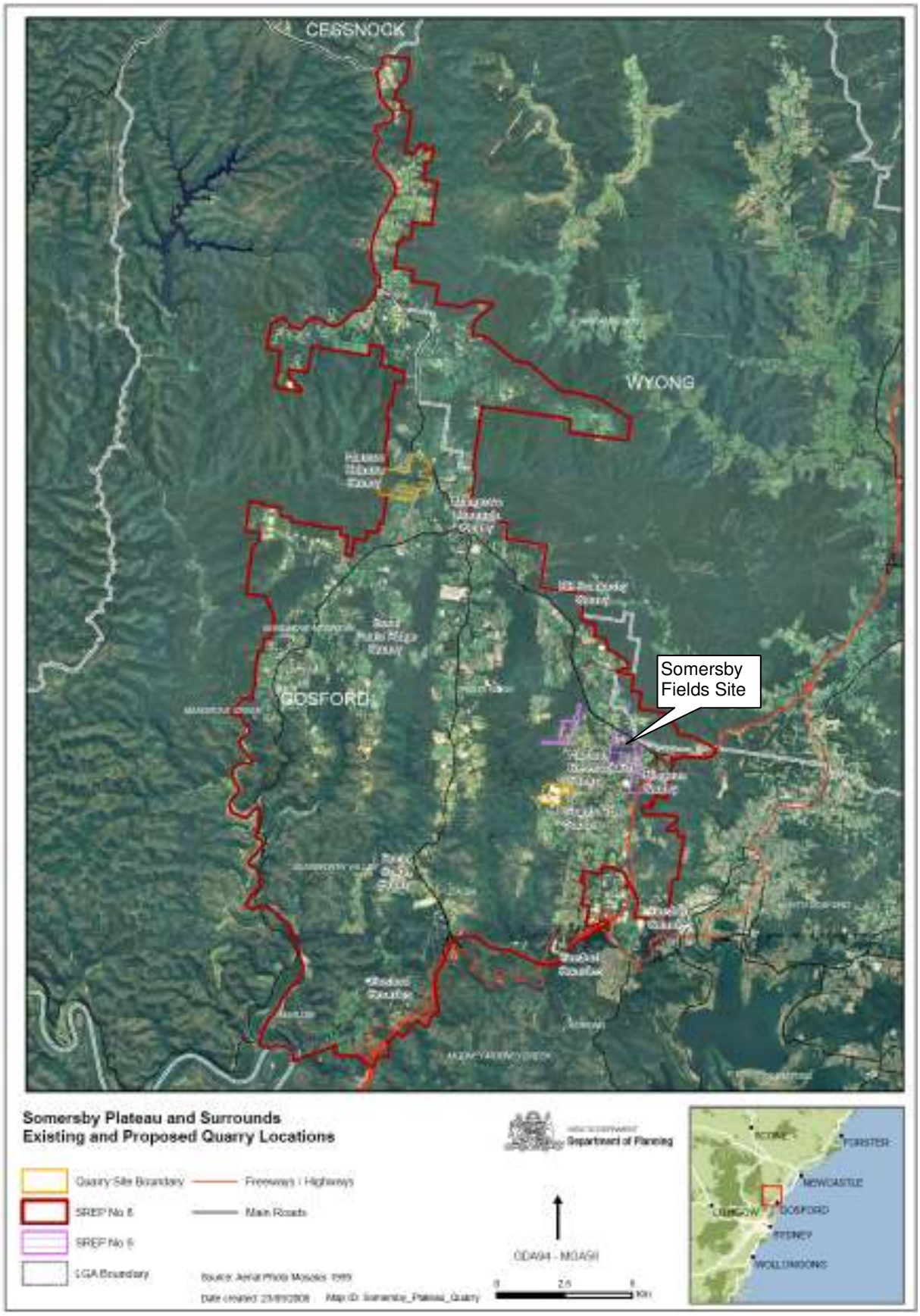

Figure 4: Project Setting

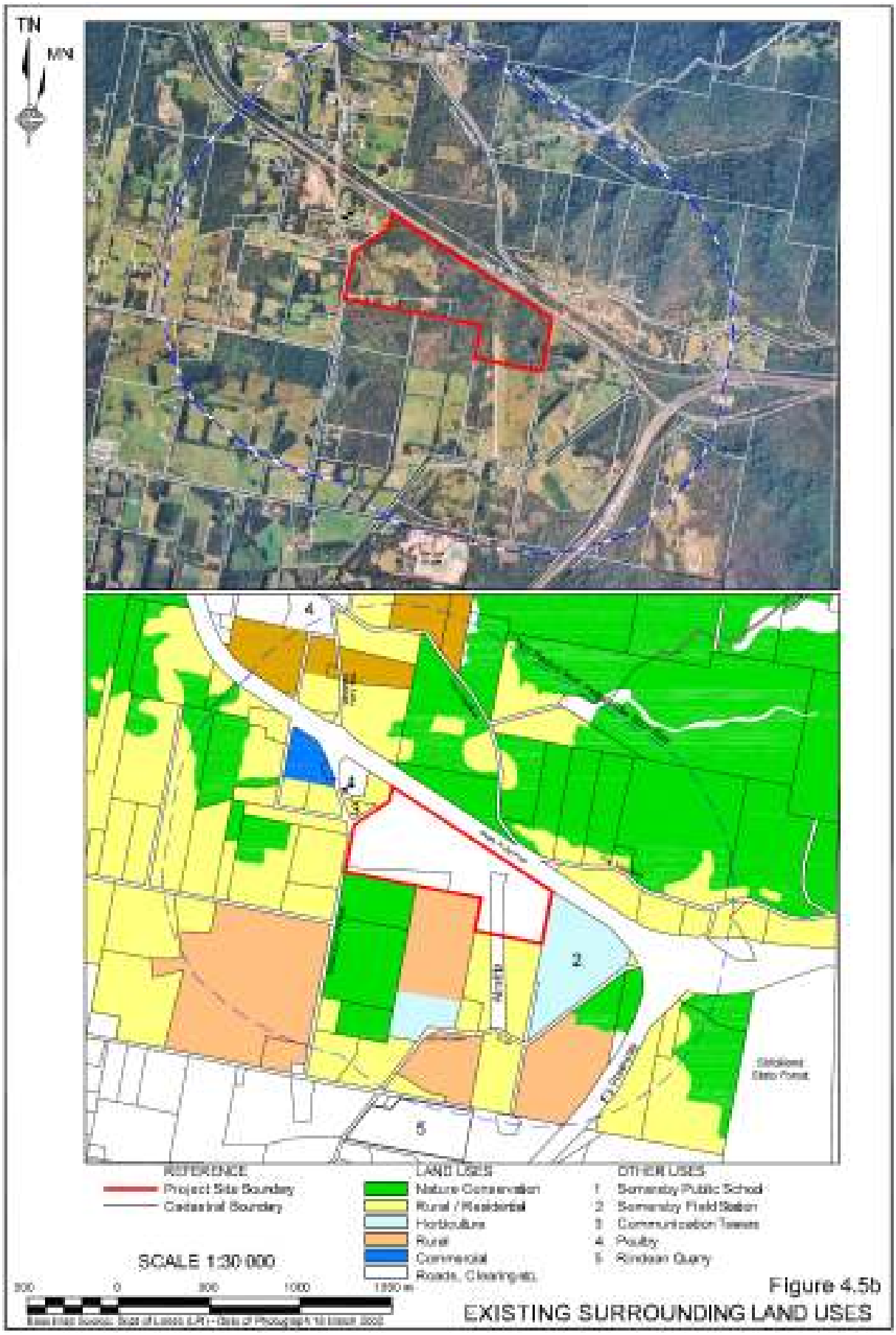

Figure 5: Surrounding Landuse

3.3 Project Need

The Department recognises that there is an ongoing need to develop new sand deposits to meet the demand of the construction industry both on the Central Coast and the wider Sydney region.

This need has increased in recent years, and is likely to increase further in the coming years, as traditional sources of sand are depleted. In particular, the Penrith Lakes Scheme, which supplies around 25% of the region's fine-medium grained sand is currently winding down with economic sand resources expected to be depleted by around 2011. Sydney's other major traditional fine-medium grained sand resource, the Kurnell Peninsula, is also winding down with only one operator still extracting sand from the resource.

The Somersby Plateau has long been identified[1] as an important current and future source of fine-medium grained sand for the region's construction industry. Other important existing or potential sources include Maroota, Stockton Bight, the Southern Highlands, the Newnes Plateau and other smaller resources, as well as off-shore marine aggregates and recycled materials.

The large resource on the Somersby Plateau comprises friable (ie. crumbly) fine-medium grained sandstone, and the significance of these resources is recognised in environmental planning instruments including *Sydney Regional Environmental Plan (SREP) No.9 – Extractive Industry* and *SREP No.8 – Central Coast Plateau Areas*.

Consequently, the Department is satisfied that there is a demonstrable need for the project in terms of meeting the region's current and future demand for fine-medium grained sand resources.

At the local level, the Department recognises that the site itself is recognised (in SREP 9) as a regionally significant sand resource, that the site has supported quarrying activities in the past, and that the site enjoys very good access to the arterial road network.

However, the Department also recognises that the site is located in a sensitive area, primarily due to its proximity to Somersby Public School and surrounding residences. The Department has comprehensively assessed the potential impact on the school and sensitive receivers, with the assistance of a Panel of Experts constituted by the Minister (see Section 4.4 below).

Finally, the Department recognises that a balance must be met in the promotion and co-ordination of the orderly and economic use of land; the proper management and development of the State's resources; and the protection of the environment and ecologically sustainable development. The Department has considered these matters in detail in its assessment of the project.

4. STATUTORY CONTEXT

4.1 Major Project

The proposal is classified as a major project under Part 3A of the *Environmental Planning and Assessment Act 1979*, because it is development for the purpose of extractive industry with an extraction rate of more than 200,000 tonnes per year, and therefore meets the criteria in Clause 7 of Schedule 1 of *State Environmental Planning Policy (Major Projects) 2005*.

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

4.2 Permissibility

The land subject to the application is predominately zoned 1(a) Rural (Agriculture) under the *Gosford Interim Development Order 122 1979*, although a strip adjacent Peats Ridge Road is zoned 1(b) Rural (Highway Protection) under the IDO.

Clause 101C of the IDO provides that extractive industries are permissible with consent in the 1(a) zone, but only in the locations specified for extractive industry on the map to *Gosford/Wyong Local Environmental Plan 2001*. The site is wholly within such an allowable extraction area, and therefore the project is permissible with consent in zone 1(a).

[1] As identified in Sydney Regional Environmental Plan No. 9 – Extractive Industry (No.2 - 1995) and the Department's *Supply and Demand of Construction and Industrial Sand for the Sydney Market*, Dec 2004

Extractive industries are currently prohibited in zone 1(b). However, although currently zoned for highway protection (future highway expansion), the RTA has confirmed that the highway corridor is no longer required and that it plans to revoke the Freeway declaration on Peats Ridge Road.

As the project is permissible with consent on the majority of the site, the Minister may approve the project in accordance with transitional provisions in the EP&A Regulation (see cl.8OA).

4.3 Exhibition and Notification

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 August until 12 September 2007:
  - on the Department's website;
  - at the Department's Information Centre, Gosford City Council, Somersby Public School, Somersby General Store, and the Nature Conservation Council;
- notified landowners in the vicinity of the site about the exhibition period by letter;
- notified relevant State government authorities and Gosford City Council by letter; and
- advertised the exhibition in the Central Coast Express Advocate and the Sydney Morning Herald.

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

4.4 Independent Hearing and Assessment Panel

On 17 December 2007, the Minister for Planning directed that an Independent Hearing and Assessment Panel (Panel of Experts) be constituted in accordance with Section 75G of the EP&A Act to assess key aspects of the project in more detail.

The Panel was required to:

1. *Consider and advise on the:*
   (a) following impacts of the project on:
      - *air quality, in particular dust impacts;*
      - *ground and surface water resources; and*
      - *general amenity of surrounding land uses and activities, in particular impacts on the Somersby Public School,*

   (b) relevant issues raised in submissions in regard to these impacts; and
   (c) adequacy of the proponent's response to the issues raised in submissions, and
2. *Identify and comment on any other significant issues raised in submissions or during the panel hearings.*

The Panel comprised:

- Mr Garry West (chair);
- Dr Nigel Holmes (air quality and noise); and
- Assoc. Professor Noel Merrick (surface and groundwater).

The Panel held hearings with community stakeholders, Government agencies and SFP in Kariong from 4 to 7 March 2008. A total of 27 parties made presentations to the Panel.

The Panel reported to the Director-General in July 2008. A copy of the Panel's report is attached as Appendix C. Under Section 75J of the EP&A Act, the Minister is required to consider the Panel's report in deciding whether or not to approve the project.

The Panel's report contains the following overall conclusions:

> *"The Panel is of the opinion that:*
> - *Noise impacts can be effectively managed via appropriate controls of approval supported by monitoring and testing of performance;*
> - *Air quality impacts can be effectively managed via appropriate controls of approval supported by monitoring and testing of performance*;
> - *Ground and surface water impacts can be effectively managed via appropriate controls of approval supported by monitoring and testing of performance;*

- *The general amenity of the surrounding land uses and activities would not be adversely affected by the proposal following the implementation of appropriate controls; and*
- *The impacts on the Somersby Public School have been assessed as not being adverse to its continuing operation. However appropriate noise and dust monitoring programmes will need to be implemented;*
- *Independent audits be commissioned of the environmental performance of Stage 1 operations to demonstrate compliance before Stage 2 of the project is permitted to proceed."*

The Panel's report contains some 49 recommendations relating to noise, air quality, surface and groundwater, flora and fauna, traffic, community consultation, Aboriginal heritage and rehabilitation.

The Department has considered the Panel's findings and recommendations in the relevant sections of this report, and adopted most of the Panel's recommendations in its recommended conditions of approval.

The only significant departure is the Panel's recommendation that SFP be required to lodge an application for future rural-residential development of part of the site within 5 years of completion of rehabilitation activities. This issue is addressed in Section 6.7 below. In summary, the Department does not believe that such a condition is warranted.

The Department has also not adopted the Panel's recommendation that SFP prepare a Transport Code of Conduct for the project. The Department is satisfied that the elements of any such code are covered by the recommended conditions and SFP's Statement of Commitments (see Section 6.6).

4.5 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) and other environmental planning instruments, and is satisfied that none of these instruments substantially govern the carrying out of this project.

Nevertheless, the Department has included a consideration of applicable SEPPs (including SEPPs 33, 44, 55, and the Infrastructure SEPP) in Appendix D. It is noted that *SEPP (Mining, Petroleum Production and Extractive Industries) 2007* does not apply to the project since the project application was lodged prior to the SEPP's commencement on 16 February 2007.

4.5 Objects of the Environmental Planning and Assessment Act 1979

The Minister is required to consider the objects of the EP&A Act when he makes decisions under the Act. These objects are detailed in Section 5 of the Act, and include:

'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,

(iii) the protection, provision and co-ordination of communication and utility services,

(iv) the provision of land for public purposes,

(v) the provision and co-ordination of community services and facilities, and

(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 (ESD), and

(viii) the provision and maintenance of affordable housing, and

(b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and

(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.'

The objects of most relevance to the Minister's decision on whether or not to approve this project are those under Section 5(a)(i), (ii), (vi) and (vii).

The Department is satisfied that the project encourages the proper use of resources (Object 5(a)(i)) and the promotion of orderly and economic use of the land (Object 5(a)(ii)), particularly as the subject sand resource is located in a preferred location for extractive industries as identified in relevant environmental planning instruments (including SREP 9).

The Department recognises the potential conflict with other landuses in the area (particularly community uses associated with Somersby Public School), and has comprehensively assessed the potential impacts on these landuses in Section 5 of this report.

Consideration of environmental protection (Object 5(a)(vi)) is also provided in Section 6 of this report. Following its consideration, the Department is satisfied that the project is able to be undertaken in a manner that would not result in a net loss of biodiversity values over the medium to long term, and would not impact threatened species of the locality.

The Department has considered the encouragement of ESD (Object 5(a)(vii)) in its assessment of the project. This 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. SFP has also considered the project in the light of the ESD principles. Following its consideration, the Department is satisfied that the project is able to be conducted in a manner that is consistent with the principles of ESD.

4.6 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 with respect to the project.

The Department is satisfied that the environmental assessment requirements have been complied with.

5. ISSUES RAISED IN SUBMISSIONS

During the exhibition period, the Department received a total of 2,980 submissions on the project:

- 11 from public authorities;
- 11 from special interest groups; and
- 2,958 from the general public, including 2,757 form letters.

A summary of the issues raised in submissions is provided below. A full copy of the submissions is attached in Appendix F.

5.1 Public Authorities

The ***Department of Environment and Climate Change*** (DECC) initially stated that it could not support the project, because of the potential for impact on flora and fauna – in particular, that the proposed threatened species offset/mitigation measures were inadequate, that the level of survey was inadequate, and because of potential for impact to groundwater dependent ecosystems.

Following the provision of additional information from SFP, and extensive consultation regarding a suitable offset strategy, DECC notified the Department in April 2009 that it no longer objected to the project. The final offset strategy is discussed in Section 6.4.

The DECC also raised issues in relation to:

- *Noise* – in particular the derived project specific noise level criteria, and road traffic noise; and
- *Aboriginal cultural heritage* – in particular the limited consultation undertaken with aboriginal groups.

The ***Department of Water and Energy*** (DWE) does not object to the project. DWE noted that approvals would be required for water storage dams under the *Water Act 1912*, and that groundwater use would need to comply with the requirements of the *Water Management Act 2000* and the *Kulnura Mangrove Mountain Groundwater Sources Water Sharing Plan*. DWE also noted that SFP's current water access licence volume may not be adequate to supply the project's water needs during drought (restricted allocation) situations. These matters are discussed in Section 6.1 of this report.

The ***Hunter-Central Rivers Catchment Management Authority*** (CMA) does not object to the project, but believes that the biodiversity offset strategy presented in the EA is inadequate in offsetting the flora and fauna impacts of the project. This issue is discussed in Section 6.4 of this report.

The ***Hawkesbury-Nepean CMA*** does not object to the project, but raised similar concerns as the Hunter-Central Rivers CMA with regard to the need to adequately offset the flora and fauna impacts of the project.

The ***Department of Primary Industries*** (DPI) in general does not object to the project, however the ***Somersby Horticultural Field Station*** (a division of DPI) does object to the project, due to potential impacts on groundwater and surface water supply to the field station. The DPI also raised issues in relation to:

- *Surface and groundwater* – particularly the potential to impact water supplies to other surrounding horticultural landusers, including 2 nurseries and a market garden;
- *Waste management*;
- *Noise* – particularly early morning traffic noise;
- *Air quality*; and
- *Post extraction landuse* – in particular, the potential for future quarry expansion.

The DPI recommends that any project approval be subject to conditions requiring SFP to adequately compensate any loss of water supply to downstream users.

The ***Department of Education and Training*** (DET) does not object to the project, but raised a number of concerns in relation to potential impacts on Somersby School, including:

- *Air quality* – including dust, silicosis and traffic exhaust impacts on school children, and the need for comprehensive monitoring;
- *Noise* – including that the proponent should be required to stop work if operations exceed applicable noise criteria during school hours, and implement a comprehensive monitoring program;
- *Water* – in particular, measures to compensate the loss of groundwater supply at the school; and
- *Socio-economics* – including the potential for a loss of student enrolments at the school and consequential impacts on school resources; the need to provide secure perimeter fencing to ensure that no child is able to access the quarry; and the need to provide counselling and to accept responsibility for any impacts to students. The DET supports the education and training initiatives presented in the EA.

NSW Health does not object to the project, but raised a number of concerns, including:

- *Groundwater* – in particular, the impact on groundwater supply to Somersby School and surrounding residences;
- *Noise* – in particular, the derived project specific noise level criteria (especially those for the Daniels property and Somersby School), noise impacts on the Daniels property and Somersby School, hours of operation, and the need for comprehensive monitoring;
- *Air quality* – in particular, the incremental increase in fine particulate matter (PM10) and its potential for increased respiratory symptoms (particularly in children); that the silicosis assessment in the EA be verified by monitoring prior to works commencing; that nuisance dust be effectively and promptly monitored and managed; and the need for robust continuous monitoring and response mechanisms;
- *Socio-economics* – NSW Health supports the education and training initiatives presented in the EA; and
- the need for comprehensive community consultation and public access to monitoring and management information.

The ***Roads and Traffic Authority*** initially objected to the project, due to concerns about the safety of the proposed access arrangements to and from Peats Ridge Road. The RTA stated that it would not

agree to a proposed speed limit reduction on Peats Ridge Road in the vicinity of the site, and that the access intersection should be designed for an operating speed of 100 km/h. The RTA also stated that the Proponent would need to demonstrate how heavy vehicles would be prevented from turning left on to Peats Ridge Road.

SFP subsequently agreed to designing the access intersection for an operating speed of 100 km/h, and provided greater detail on its plans to prevent left turns from the site (see Section 6.6).

The RTA also made comments in relation to internal site access, circulation and parking, groundwater and surface water flow to the road reserve, erosion and sediment control and road traffic noise.

Gosford City Council objects to the project, on the following grounds:
- *Air quality* – in particular, the impacts on Somersby School;
- *Noise* – in particular, the impacts on Somersby School;
- *Surface water and groundwater* – in particular, that the site is within the Central Coast Water Supply Catchment, and the project would impact surface and groundwater flows in the catchment;
- *Flora and fauna* – in particular, that the threatened species assessment in the EA is inadequate and that the project would have a significant impact on threatened species;
- *Socio-economics* – including the potential for a loss of student enrolments and consequential impacts on the school and the community; and
- that the project is not justified or in the public interest, as other sand resources are available in less sensitive locations.

Council recommended a broad suite of conditions of approval, should the application be approved.

Wyong Shire Council does not object to the project, but raised concerns in relation to:
- *Surface water* – in particular, that the proposal is within the Ourimbah Creek catchment which forms part of Wyong's water supply;
- *Flora and fauna* – in particular, the potential for impact on threatened species and wildlife corridors;
- *Noise* – including traffic noise;
- *Air quality*; and
- *Visual Impacts.*

5.2 Community and Interest Groups

Of the 2,969 submissions from the community and special interest groups, some 99% objected to the project.

Special interest groups and organisations that made submissions include:
- Australian Conservation Foundation Central Coast Branch;
- Bourke School Education Office;
- Central Coast Farmers (a branch of NSW Farmers Association);
- Coast & Wetland Society;
- Community Environment Network Inc.;
- Federation of Parents & Citizens' Association of NSW;
- Kariong Neighbourhood Centre & Kariong Outside School Hours Centre;
- Ourimbah District Precinct Group;
- Somersby Action Group;
- Somersby Country Women's Association; and
- Somersby Public School Parents & Citizens Association.

The main grounds for objection from both individuals and interest groups were related to the project's direct and cumulative impacts on (in decreasing order of general mention):
- *Groundwater and surface water* – particularly water supply and water quality impacts on bores, springs, dams, hanging swamps and creeks, as well as downstream flooding impacts;
- *Air quality* – particularly operational dust (and crystalline silica) impacts on Somersby Public School and nearby residences, and traffic related dust;
- *Noise* – particularly in relation to construction and operational noise impacts on Somersby Public School and nearby residences, traffic noise and hours of operation;
- *Flora and fauna* – particularly impacts on threatened species such as the Somersby Mintbush, and the adequacy of the proposed vegetation offsets;

- *Traffic* – particularly impacts related to transport past Somersby Public School, and increased traffic levels in the area;
- *Socio-economic* – including the conflict with surrounding landuses (particularly Somersby Public School, agriculture, residents and tourism), impacts on school teaching and financial resources if student numbers decline, and the lack of justification for the project based on the need for the sand resource on the site;
- *Greenhouse gases/climate change*;
- *Visual amenity*; and
- *Aboriginal heritage*.

5.3 Response to Submissions

SFP has provided detailed responses to the issues raised in submissions (see Appendix E), as well as a revised Statement of Commitments for the project.

The Department has considered the issues raised in submissions, and SFP's responses to these issues, in its assessment of the project.

6. ASSESSMENT

6.1 Surface and Ground Water

Issues

The project has the potential to affect surface water and groundwater resources in a number of ways, including:

- affecting surface water flows in local and regional catchments, and water availability to downstream water users;
- affecting groundwater flows in subsurface aquifers, and water availability to local groundwater users, springs and groundwater dependent ecosystems;
- affecting water quality in downstream surface water and groundwater resources; and
- affecting flood behaviour.

Consideration

The project is located in the headwaters of four surface water catchments: Ourimbah Creek (via Platypus Creek), Narara Creek, Robinson Creek and Little Mooney Mooney Creek (see Figure 6).

The proportion of the relevant catchments that would be directly affected by the project are shown in the table below.

Table 2: Project Area Catchments

Catchment	***Total Catchment Area (hectares)***	***Area of Catchment Affected by Project***
Narara Creek	4,860	0.47%
Ourimbah Creek	16,580	0.09%
Robinson Creek	3,900*	0.04%
Little Mooney Mooney Creek		0.09%

* Upstream of Mooney Mooney Creek Dam

The EA includes detailed surface water and groundwater impact assessments, undertaken by Cardno Willing and RCA Australia, respectively. The assessments include consideration of baseline water flow and quality conditions, water balancing and modelling to assess the impacts of the project on water quality and flows.

Water Balance

Water balance modelling indicates that the project would require up to 71.35 megalitres of water a year (ML/yr) to meet on site water needs, with demand mainly from sand washing, dust suppression and evaporative losses from dams.

Water balance assessment indicates that this water demand would be able to be supplied from the on-site water storage dams throughout the project life. The EA notes that SFP has already secured a water access licence for 37 ML/yr, which would cover 'consumptive' water use associated with the project.

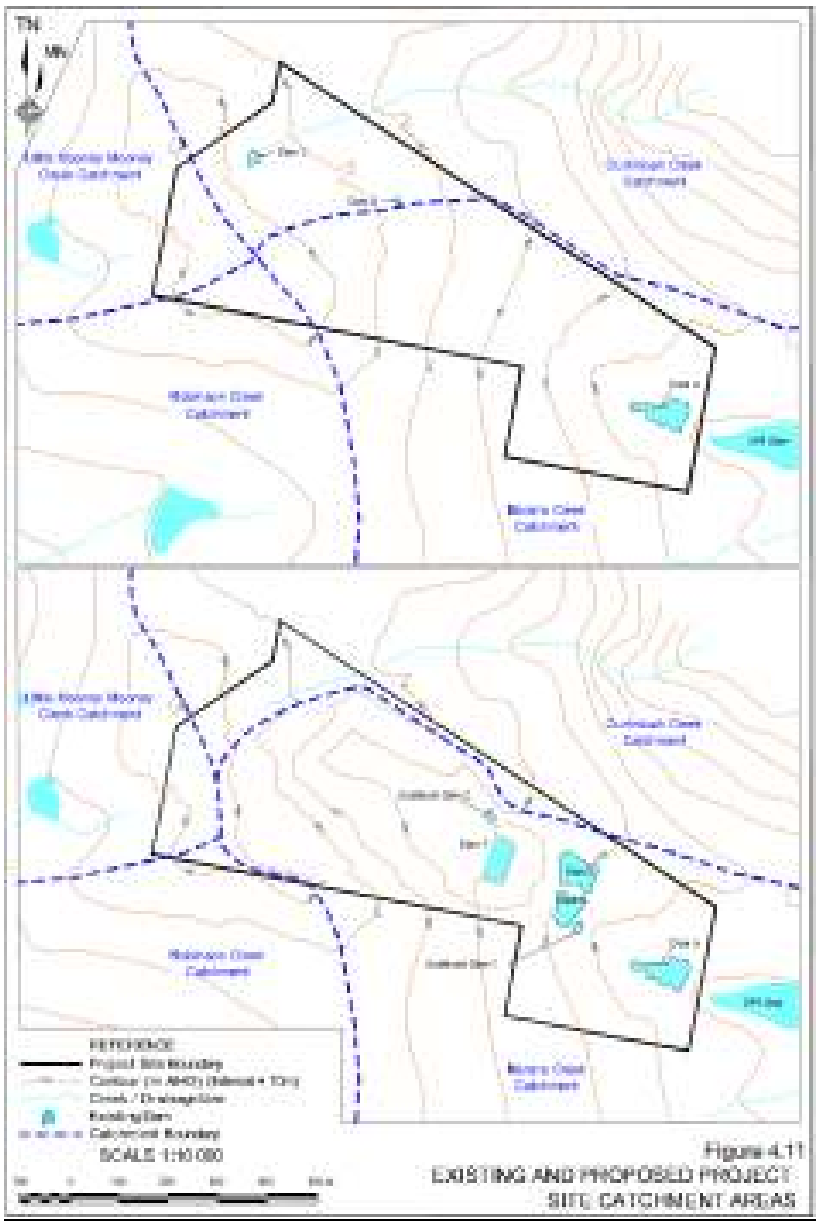

Figure 6: Existing and Amended Catchment Areas

The DWE does not object to the project's water use, but noted that approvals and licences would be required for the project under the *Water Act 1912* and the *Water Management Act 2000*. The DWE also warned that water allocations may be reduced during drought years, which may affect the operations of the quarry.

The Panel did not raise any specific issues in relation to on-site water use, but recommended that SFP be required to monitor water use.

The Department is satisfied that the water use associated with the project is unlikely to have a significant impact on water availability and water sharing on the Central Coast, and that the proposed project water supply is consistent with the open trading of water as established under the *Water Management Act 2000* (nb. water availability in relation to changes in off-site surface and groundwater flows are discussed separately below).

The Department notes that, like any other significant water user in the State, access to adequate water supplies is a commercial risk for SFP. And like any other significant water user, if SFP is not able to secure enough water to meet its demands, its operations may need to be curtailed, or it may need to investigate additional water efficiency measures. This is consistent with the water sharing principles introduced under the Water Management Act.

To demonstrate it has access to adequate water supply, and to ensure that it uses water efficiently, the Department believes that SFP should be required to maintain a detailed water balance throughout the life of the project, and to investigate and describe measures to minimise water use by the project.

Surface Water Flows and Flooding

At the regional level, the project would result in minor changes to the catchment boundaries as shown on Figure 6. Modelling indicates that the changes would have a negligible affect on downstream water flows in these catchments. The Panel noted that the largest change would occur in the Ourimbah Creek catchment, which supplies about 11% of Gosford-Wyong's potable water supply. The Panel estimates that the project would result in a 0.1% reduction in the water supply, which it considers is negligible. The Department is satisfied that this change is insignificant.

The Narara Creek catchment would increase marginally (by about 0.2%) as a result of the realigned catchment boundaries associated with the project. Some submissions raised concerns that this increase may result in an increase in flooding in the Narara Creek valley. The Panel commented that the increase in peak flow at Narara would be insignificant at approximately 1.5% for the 1 in 100 year event. The Panel concluded that *'there is no cause for concern with respect to the potential for increased flooding risk in the Narara Creek valley'*. The Department accepts the Panel's findings.

At the local level, the DPI and other submissions raised concerns about the potential for loss of flows to the water storage dam on the DPI's Somersby Field Station, located immediately to the east of the project site (see Figure 6). The dam is the only source of water for the DPI site and security of supply is an important issue, especially with the planned expansion of the field station.

The EA acknowledges the potential impact on the DPI dam, and the project includes provision for a diversion channel (or pipe) around the on-site dam (Dam A) to divert very low flows (<0.2 ML/day) directly to the Narara Creek catchment via the DPI dam.

The Panel considered the potential impacts on water supply to the DPI dam carefully, noting that surface water and groundwater conditions close to the DPI dam are not well known at this time due to a lack of historical data. The Panel found that although there may be some reduction in security of water supply to the DPI dam while quarrying is in progress, the likelihood is that the security of supply would be strengthened in the long term given the diversion of drainage to the Narara Creek catchment post extraction.

The Panel recommended that benchmark data be collected between the project site and the DPI dam prior to extraction, with ongoing monitoring as part of a Water Management Plan.

The Department is satisfied that the project is unlikely to result in any significant impacts to surface water flows, but acknowledges that the project does have the potential to reduce security of water supply to the DPI Somersby Field Station whilst quarrying is in progress.

However, with the implementation of comprehensive monitoring and water supply compensation strategies, the Department believes that the potential impacts on the water supply to the DPI field station are able to be effectively managed and/or compensated for. In this regard, the Department believes that SFP should be required to:

- establish and implement a comprehensive surface water monitoring program; and
- establish and if necessary implement a surface water contingency strategy, which provides for the compensation of water supply reductions caused as a result of the project.

Groundwater Flows

The groundwater resource on the Somersby Plateau is highly significant. It forms the principal domestic and agricultural water supply for the area, accessed either directly through groundwater bores or indirectly through its contribution to baseflow in streams, dams and springs. It also forms an integral component of the environment, with groundwater dependent ecosystems reliant on the maintenance of a natural groundwater regime for survival.

The potential for impact on the groundwater resource was the most cited issue of concern raised in submissions. The key concerns raised can be summarised as:

- impacts on groundwater users – caused by a reduction in yields in groundwater bores and springs surrounding the project site; and

- impacts on the environment – including the threatened Somersby Mintbush population on the site, wetlands, hanging swamps and other groundwater dependent ecosystems.

The Panel assessed the potential groundwater impacts associated with the project in detail, which included additional groundwater modelling undertaken in response to concerns and scientific input provided by the community.

With regard to regional groundwater levels, the modelling indicates that the project, like most similar sand quarrying operations, would result in a localised 'drawdown' of groundwater levels immediately surrounding the quarry void. This drawdown would reduce groundwater levels in areas surrounding the quarry, and reduce flows in features where this groundwater expresses itself at the surface (ie. springs, wetlands).

The groundwater drawdown as predicted in the EA is shown on Figure 7 below.

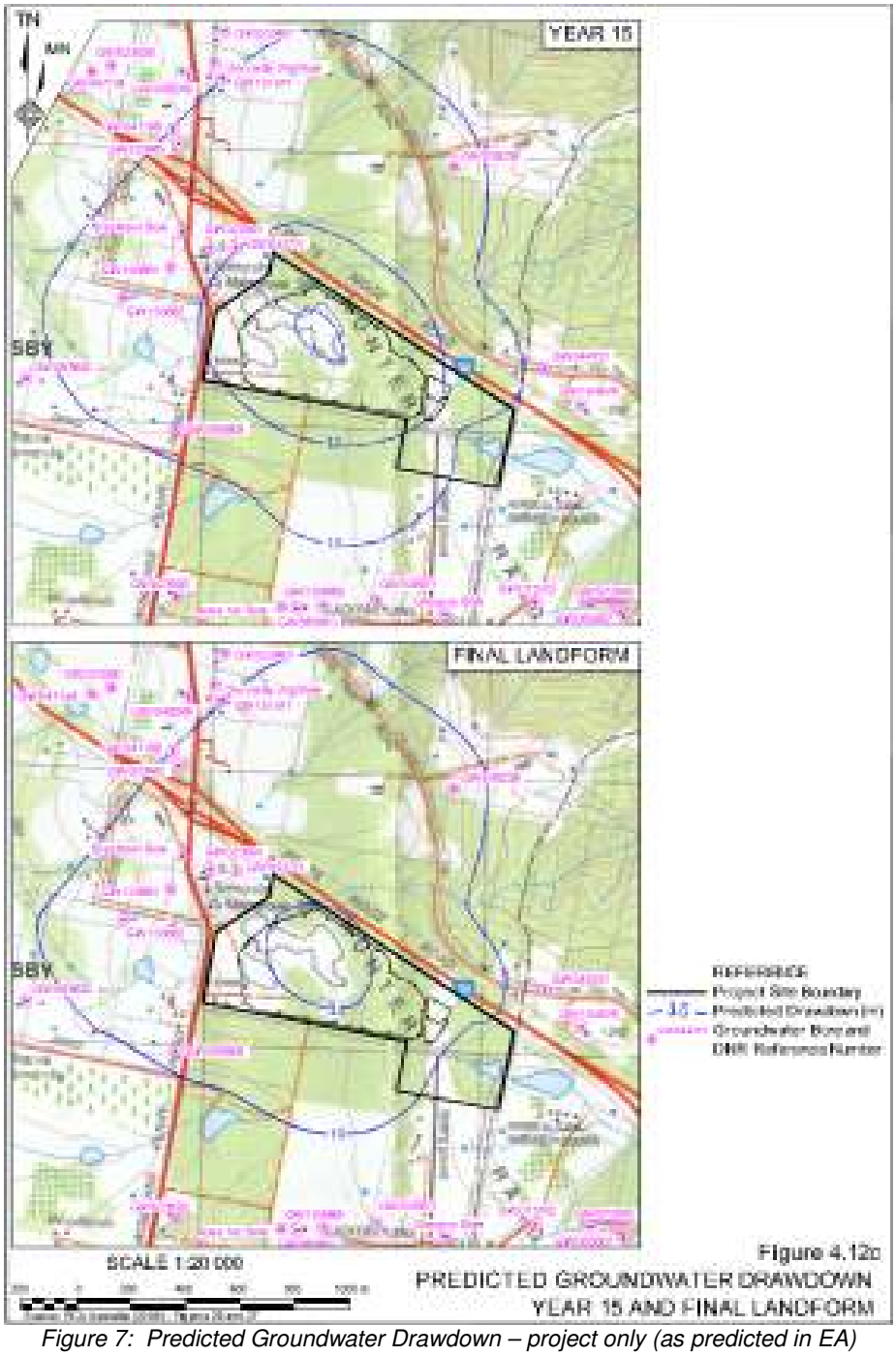

Figure 7: Predicted Groundwater Drawdown – project only (as predicted in EA)

The modelling in the EA predicted that the project would impact (ie. a drawdown of more than 1 metre) regional groundwater levels within about 800 metres of the quarry. The revised modelling undertaken at the request of the Panel found that the original modelling was generally conservative, concluding that the predicted off-site 1 metre drawdown contour would not extend as far as the EA predicted. However, the revised modeling indicated that the drawdown within the site itself would be greater than originally predicted.

The project's impact on groundwater bores within the 1 metre drawdown contour is presented in the following table. A reduction in saturated thickness (and therefore pumping yield) of more than 10% is considered significant.

Table 3: Predicted Drawdown and Reduction in Saturated Thickness

Bore / Owner	***EA Predictions***		***Revised Predictions***	
	Drawdown (m)	***Reduction in Saturated Thickness (%)***	***Drawdown (m)***	***Reduction in Saturated Thickness (%)***
Somersby Public School	2.7	13.2	1.6	7.8
Daniel	3.0	9.6	2.0	6.4
Cahill	2.2	5.1	1.5	3.5
Hawker and Woods	2.0	4.0	1.1	2.2
Weller	1.6	2.7	1.5	2.6
Martin	1.0	2.2	1.6	3.6
Moore	1.3	3.4	0.4	1.0
Morris	1.5	2.8	0.8	1.5
Stapleton	2.1	3.9	1.4	2.6

The revised modelling indicates that the project would result in a reduction in saturated thickness of less than 10% at all surrounding groundwater bores, and is therefore unlikely to significantly affect groundwater yield from the bores.

The EA also includes modelling of the cumulative drawdown impact of the project combined with the approved Rindean Quarry to the south of the project site. The cumulative analysis indicates that the project would not contribute significantly to the groundwater drawdown associated with the Rindean Quarry.

To mitigate groundwater drawdown impacts, SFP has proposed a monitoring strategy that includes:
- establishing a borehole monitoring network;
- regular (monthly) monitoring of groundwater level and yields; and
- implementation of compensatory measures if bores are found to experience a reduction in saturated thickness of more than 10%.

The proposed compensatory strategy would include:
- deepening of existing bores to increase saturated thickness;
- installation of replacement bores; or
- other measures such as installation of rainwater tanks or cash compensation.

In the case of Somersby Public School, SFP has committed to providing compensatory water supply measures up front (ie. prior to the commencement of construction for the project), to ensure maintenance of a reliable water supply for the school, notwithstanding the fact that the revised modelling indicates that the school would not be significantly impacted.

Concerns were raised in submissions and to the Panel regarding the viability of such compensatory measures, particularly that deepening bores would not achieve an increased water supply as an adequate water supply may not be available at depth. The Panel considered this issue and concluded that the modelling confirms that a substantial groundwater resource exists to great depths beneath the Somersby Plateau, and that the risk of a lower yielding bore is slight. The Department is satisfied with this conclusion.

With regard to impact on spring flows, the EA qualitatively predicted that the project would have a moderate to significant impact on 4 springs on properties surrounding the site – including a moderate loss on the 2 springs on the Ozbaglar property, and a significant loss on the springs on the Cahill property and Hawker property.

The conceptual model relied upon in the EA to predict spring flow impact was challenged by the community during the Panel hearings. At the request of the Panel, SFP subsequently undertook more detailed quantitative modelling of impacts to spring flows. The modelling found that the qualitative predictions in the EA were overly conservative. The results of the quantitative modelling are shown in the following table.

Table 4: Predicted Reduction in Spring Flows (worst case)

Spring / Owner	***Maximum Reduction in Flow (%)***
Ozbaglar	21
Cahill	4
Weller	4
Hawker	3
Woodlands	8

The Panel considers that this level of impact would be minor and well within the natural fluctuations to which the systems are accustomed.

Notwithstanding, SFP has committed to providing compensatory water supplies to those landowners with spring water flows that are adversely affected by the project.

With regard to impact on groundwater dependent ecosystems, the Panel considers that the likely impact on spring-fed vegetation outside the extraction area is likely to be minor. The Panel acknowledges that an issue of particular concern to the community is the ongoing health of the threatened Somersby Mintbush (*Prostanthera junonis*) population on the site, which SFP proposes to conserve (see Section 6.4 for more detail).

The Panel concludes that the Somersby Mintbush is not a groundwater dependent species/community, and that there is a very low risk of the community drying out as a result of the project. The Panel notes that the removal of Stage 1/3 from the project reduces the potential impact further.

The Department is satisfied that SFP has reasonably predicted the impact to groundwater resources in the area. From these predictions the Department believes that the project is unlikely to have a significant impact on groundwater resources in the area, or on the environment. However, the project would or could have some impact on the groundwater supply of a small number of landusers surrounding the quarry – most notably the groundwater bore supply to Somersby Public School, and the spring flows on the Ozbaglar property.

However, with the implementation of comprehensive monitoring and water supply compensation strategies, the Department believes that the impacts to the groundwater resource can be adequately managed such that water supply to surrounding landusers is not adversely affected.

In this regard, the Department believes that SFP should be required to:

- provide compensatory water supplies to Somersby Public School and the Ozbaglars, upon request;
- establish and implement a comprehensive groundwater monitoring program, providing for:
    - establishment of a groundwater monitoring network to provide advance warning of impact;
    - continuous groundwater monitoring;
    - installing monitoring equipment in bores within the groundwater affectation area (subject to landowner consent);
    - impact assessment criteria for triggering the groundwater response plan; and
- establish and if necessary implement a groundwater response plan, providing for;
    - prompt investigation of any exceedances of established groundwater impact assessment criteria; and
    - procedures for water supply compensatory measures (which could include deepening of existing bores, installation of new bores, and/or other compensatory water supply measures), to provide an alternative long-term water supply that is equivalent to the loss as a result of the project.

Water Quality
SFP proposes to implement a range of standard mitigation measures to manage water on the site, including diversion of clean run-on water around the disturbed areas of the site, and the collection and treatment of dirty (sediment laden) water before discharge off-site.

The Department is satisfied that the project is able to be managed such that it would not significantly impact downstream water quality, subject to best practice water management. To ensure that this occurs, the Department believes that SFP should be required to:
- establish and implement a detailed erosion and sediment control plan; and
- establish and implement comprehensive surface water and groundwater monitoring programs.

Conclusion
The Department and the Panel are satisfied that SFP has reasonably predicted the impact to surface water and groundwater resources in the area.

From these predictions the Department believes that the project is unlikely to have a significant impact on these important resources. However, the project would or could affect the water supply of a small number of landusers surrounding the quarry – most notably:
- surface water flows to the DPI Somersby Field Station;
- groundwater supplies to Somersby Public School; and
- spring flows on the Ozbaglar property.

The Department believes that these and other water resource impacts can be minimised, managed and/or compensated effectively through SFP's commitments and the Department's recommended conditions, which include requirements to:
- provide up-front compensatory water supplies to Somersby Public School and to the Ozbaglar property, upon request;
- develop a comprehensive Water Management Plan, including:
  - a water balance;
  - an erosion and sediment control plan;
  - a surface water monitoring plan;
  - a groundwater monitoring plan; and
  - a surface and ground water response plan, to identify, investigate, mitigate and/or compensate any water related impacts;
- publicly report water monitoring and management data; and
- undertake regular independent environmental audits, with the audit team including a suitably qualified water expert.

6.2 Noise

Issue
The project has the potential to generate construction, operational and traffic noise impacts.

Consideration
The EA includes a noise impact assessment undertaken by specialist acoustics consultants Heggies Pty Ltd in accordance with applicable contemporary guidelines including the *NSW Industrial Noise Policy (INP)*.

The assessment was undertaken with reference to sensitive receivers in the vicinity of the project site, including:
- Somersby Public School, located to the northwest of the site. The school grounds are approximately 180 metres, and the classrooms are approximately 260 metres, from the proposed extraction area at the closest point; and
- surrounding rural residences, the closest of which is approximately 150 metres from the proposed extraction area at the closest point.

The assessment is based on a number of 'reasonable and feasible' noise mitigation measures that SFP would implement, including:
- undertaking the project on a 2 stage basis, commencing at the furthest point from Somersby Public School and the closest residences, to allow for performance of Stage 1 to be evaluated prior to commencement of Stage 2;

- enclosure/cladding of the washplant;
- installing a number of earthen noise bunds and noise barrier fences;
- restricting truck movements in the early morning period (ie. 5:00am to 7:00am) to volumes that would comply with applicable traffic noise criteria;
- using smaller, quieter D8 bulldozers (as opposed to D10's) when operating less than 5 metres below the ground surface; and
- complying with proposed hours of operation, which include:
    - Construction (audible activities):
        - 7:00am to 6:00pm, Monday to Saturday;
    - Quarrying and Processing:
        - 7:00am to 6:00pm, Monday to Saturday;
    - Product Loading and Transportation:
        - 5:00am to 10:00pm, Monday to Friday;
        - 5:00am to 4:00pm, Saturday;
    - Non-audible Maintenance:
        - 5:00am to 10:00pm, Monday to Saturday; and
    - no work on Sundays or Public Holidays.

Construction Noise

Site establishment and construction activities are expected to take up to 6 months to complete and would include construction of the site access road and infrastructure, processing plant, far-western noise bund and dams, as well as vegetation removal.

Given that some of these activities could be considered to overlap with operational activities (particularly dam construction and vegetation removal), the Department has considered the construction noise predictions against the applicable construction criteria, as well as the more conservative operational criteria. The construction noise impacts at those receivers where an exceedance of the criteria is predicted are summarised in the following table.

Table 5: Predicted Construction Noise Levels (exceedances in bold)

Receiver	***Worst Case Predicted Noise Levels***		***Criteria****	
	Far-western bund	***All other construction activities***	***Construction <6 months***	***Operational Criteria (or construction >6 months)***
O. Somersby Public School	**51**	44	51	46
N. Daniel residence	**59**	**47**	50	45
S. Studds residence	36	**46**	48	43
V. Douglass residence	30	**45**	48	43
Y. Sultana residence	27	**48**	48	43

* As discussed in the following section, the operational criteria in the EA have been questioned by the DECC. The issue does not affect the main outcomes of the construction noise assessment.

As indicated in the table, construction of the far western noise bund would significantly exceed applicable construction noise criteria at the Daniel residence (ie. by 9dB), and equal the construction criteria at Somersby Public School. Other construction activities would comply with the construction noise criteria, but would moderately exceed the equivalent operational criteria (ie. by up to 5dB).

SFP has committed to constructing the noise bund during school holidays, to reduce the disruption to students at the school. Given this commitment, the Department is satisfied that the construction activities would not significantly impact the school. The Department is further satisfied that the construction of the noise bund would not have a significant impact on the Daniel or other properties, given:

- the short term nature of the bund construction works;
- that construction works would be limited to daytime hours only; and
- that construction of the bund would ultimately reduce noise impacts associated with operation of the project.

Nevertheless, the Department notes that a significant noise exceedance at the Daniel property is predicted during the operational phase of the project (see below), and the Department has recommended conditions that would require SFP to acquire the Daniel property at the Daniel's request, and to undertake additional noise mitigation measures on the Daniel's residence (such as double glazing, insulation and/or air conditioning) whilst the property remains privately owned.

With regard to other construction activities, the Department is satisfied that the works would not result in a significant impact to surrounding landowners, given the temporary nature of the works. However, to mitigate construction noise impacts on properties to the north (including the Studds, Douglas and Sultana properties), the Department believes that SFP should be required to construct the 'northeastern' noise barrier prior to undertaking other construction activities in this area.

Operational Noise

A summary of the predicted worst case operational noise levels at sensitive receivers, based on the noise mitigation measures identified above, is presented in the following table. It is noted that the derived project specific noise level criteria in the EA have been questioned by the DECC and in some submissions. The DECC has provided criteria which it considers are more appropriate, and these criteria – which are generally more conservative than those in the EA – are included in the table. These criteria have been refuted by SFP.

Table 6: Predicted Worst Case Operational Noise Levels (exceedances in bold)

Receiver Area	***Worst Case Predicted Noise Levels (all years)***			***Criteria in EA***			***DECC Criteria***		
	Day	***Evening***	***Night***	***Day***	***Evening***	***Night***	***Day***	***Evening***	***Night***
O. Somersby Public School	43	n/a	n/a	45	n/a	n/a	45	n/a	n/a
B. DPI (planned) residence	38	29	34	46	45	40	43	42	37
E. Scott residence	34	26	30	46	45	40	43	42	37
H. Weller residence	29	15	19	39	39	35	39	39	35
I. Thompson & Jarvis resid.	36	15	18	41	45	40	39	39	35
N. Daniel residence	**50**	31	34	45	38	35	39*	39*	35*
R. Coachwood Nurseries	29	21	26	43	42	37	39	39	35
S. Studds residence	40	33	36	43	42	37	43	42	37
V. Douglass residence	42	30	34	43	42	37	43	42	37
Y. Sultana residence	37	29	33	43	42	37	43	42	37

* The DECC also argued that criteria for the Daniel property could be derived from an alternative background monitoring location, which would result in criteria of 45 (day), 38 (evening) and 35 (night).

The assessment indicates that the project would comply with the EA and DECC noise criteria at all sensitive receivers, with the exception of the Daniel residence, where an exceedance of 5 dB(A) of the day-time criterion is predicted using the criterion in the EA, or up to 11 dB(A) using the DECC criterion.

The Department's typical policy with regard to noise exceedances is as follows:

Noise Impact	***Criteria Exceedance***	***Management Required***
Marginal	1-2 dBA	Noise mitigation, if possible
Moderate	3-5 dBA	Noise mitigation, inc. noise mitigation at residence
Significant	>5 dBA	Acquisition

The Department and the Panel believe that the project is likely to have a significant noise impact on the Daniel residence during operations (in particular, during Stage 2 when operating at or close to the surface). Accordingly, the Department believes that SFP should be required to acquire the Daniel's property, at the request of the landowner. The Department also believes that SFP should be required to undertake additional noise mitigation measures on the Daniel's residence (such as double glazing, insulation and/or air conditioning) at the request of the Daniel's, whilst the property remains privately owned.

With regard to Somersby Public School, the Panel and some submissions noted that the assessment in the EA only considered ground-based receivers and did not take into consideration the elevated position of the upper-floor location of some classrooms. The Panel considered that the upper floor classrooms would experience noise levels approximately 2 dB(A) above the predicted levels, which would take the predicted noise levels equal to the assessment criterion during the worst case operational period (ie. during Stage 2 when operating close to the surface). During other stages of the project, the operations would comply with the applicable criterion at the school.

The potential for noise impact on the school was one of the most cited and emotive issues raised by the community in submissions. Understandably, many of the parents in the community and educators are concerned about the affect that the noise emissions could have on the learning experience of students at the school.

The Panel considered this issue carefully, concluding that due to topographic and vegetative screening, the project is unlikely to exceed the applicable noise criteria at the school. Although it

pointed out that the quarry operations may be audible at times, particularly in the playground which is closer to the quarry, the Panel is confident that the project is unlikely to result in any disruption to student learning.

The Department accepts the Panel's findings, and acknowledges SFP's commitment to undertaking the project on a 2 stage basis, commencing at the furthest point from the school, to allow for performance of Stage 1 to be evaluated prior to commencement of Stage 2.

However, the Department believes that a precautionary approach needs to be taken to ensure the project complies with the applicable criteria during all stages. Accordingly, the Department has recommended a condition requiring the company to comprehensively demonstrate compliance with the applicable noise criteria before commencing Stage 2, as well as before commencing Stage 1/7 (see Figure 3). If the company cannot demonstrate this compliance, then the Department could withhold approval to continue mining in the subsequent stages.

The Department has also recommended conditions requiring SFP to:

- comply with the noise predictions in the EA, and strive to continually improve the noise performance of the project;
- establish a detailed noise monitoring program, including real-time noise monitoring at Somersby Public School (including monitoring at the first floor classrooms); and
- communicate quarry operations with surrounding landusers, including publicly reporting all monitoring results, and effectively responding to enquiries and complaints.

Cumulative Noise

The EA includes an assessment of the cumulative noise impacts of the project together with the nearby Rindean Quarry. The assessment, based on worst case operations associated with both quarries, indicates that the cumulative noise emissions would comply with applicable amenity criteria during all stages of the project.

Notwithstanding, the Department has recommended conditions requiring SFP comply with the relevant cumulative noise criteria.

Sleep Disturbance

The EA includes an assessment of the potential for sleep disturbance, associated with the proposed product loading and transportation within the night-time period.

The assessment[2] indicates that the project would comply with the applicable sleep disturbance criteria at all surrounding receivers. Notwithstanding, the Department has recommended conditions requiring SFP to comply with the relevant sleep disturbance criteria.

The Department acknowledges SFP's commitment to not using tonal reversing alarms on the site, which can be a source of sleep disturbance.

Traffic Noise

The EA includes a traffic noise assessment undertaken in accordance with DECC's *Environmental Criteria for Road Traffic Noise* (ECRTN).

The assessment indicates that the project would generally comply with the relevant traffic noise criteria for Peats Ridge Road – namely 60 dB(A) $L_{Aeq(1\ hour)}$ during the day-time period and 55 dB(A) $L_{Aeq(1\ hour)}$ during the night-time period, for classification of Peats Ridge Road as a 'collector road'.

However, the assessment notes that existing traffic noise levels during the early morning (ie. 5am to 7am) exceed the applicable night-time 55 dB criterion at one residence (Douglass) by up to about 1.6 dB. In circumstances where existing noise exceeds the guidelines, the ECRTN provides that developments should (1) adopt reasonable and feasible measures to reduce traffic noise levels to meet the criteria, and (2) not increase the existing noise levels by more than 2 dB.

The project is predicted to increase traffic noise levels by up to 2 dB at the Douglass residence during the early morning period, complying with the 2dB allowance criterion but resulting in an exceedance of up to 3.6 dB of the recommended 55 dB criterion. The DECC commented that SFP had not

[2] As revised in the Response to Submissions to correct an error

adequately explored reasonable and feasible traffic noise mitigation measures as required by the ECRTN, and recommended that the need for early morning truck movements and/or alternatives be considered.

In addition, some submissions raised concerns that the increase in traffic noise during the evening period (particularly between 9pm and 10pm), whilst complying with the applicable criterion (ie. 60dB), would still result in a significant increase in truck noise which may be significant and noticeable to residents. The EA indicates that the project would increase existing traffic noise levels by up to 5.8 dB during this evening period.

SFP argues that the implementation of additional traffic noise mitigation measures is unreasonable, given:

- that the project either complies with the base criteria or the 'less than 2dB increase where the base criteria are already exceeded' principle;
- the marginal exceedance of the base criteria;
- the limited potential to reduce traffic noise levels further; and
- that Peats Ridge Road provides a sub-arterial road function, and the project would comply with the applicable traffic noise criteria for a sub-arterial road.

The Department believes that SFP's argument has some merit, particularly as Peats Ridge Road provides direct access to the F3 Freeway and therefore provides a sub-arterial function. However, the Department is cognisant that the project would increase traffic noise levels in the early morning which already exceed applicable traffic noise goals, as well as result in an appreciable increase in traffic noise levels during the evening.

There is an obvious measure available to mitigate this impact – that is, reducing or restricting truck movements during these periods.

The EA is based on up to 22 truck movements per hour during the early morning period (ie. 5am to 7am), and up to 24 truck movements per hour during the evening. The Department believes that these volumes are excessive and are able to be reduced within these sensitive periods without significantly affecting the project operations. Accordingly, the Department has recommended conditions restricting truck movements to 12 per hour during the early morning and evening.

The Department has also recommended conditions requiring SFP to:

- take all reasonable and feasible measures to comply with the applicable traffic noise criteria; and
- establish a comprehensive noise monitoring program that includes traffic noise monitoring and a protocol for mitigating any traffic noise impacts.

With the implementation of these measures, the Department is satisfied that the project is able to be managed such that it would not result in any significant traffic noise impact.

Conclusion

The Department, the DECC and the Panel are generally satisfied that SFP has assessed the potential noise impacts of the project in accordance with relevant DECC guidelines, and considered reasonable and feasible noise mitigation measures.

Based on this assessment, the Department and the Panel are satisfied that the project can be managed such that it would not have a significant noise impact on Somersby Public School or on surrounding residences, with the exception of the Daniel residence.

However, the Department recommends adopting a precautionary approach, including requiring the company to independently demonstrate compliance with noise criteria prior to proceeding to Stages 1/7 and 2 of the project. The Department has also recommended a range of other conditions to minimise, monitor, manage and/or compensate the noise impacts of the project, including requirements to:

- acquire the Daniel's residence at the request of the landowner, and undertake architectural noise treatments on the residence (with the landowner's consent) whilst it remains privately owned;
- comply with stringent noise criteria, and strive to continually improve the noise performance of the project;

- comply with strict hours of operation and truck movements;
- establish and implement a comprehensive noise monitoring program, which includes real-time monitoring of noise impacts; and
- communicate quarry operations with the surrounding community, and effectively respond to enquiries and complaints.

6.3 Air Quality

Issue
The project has the potential to result in dust-related amenity and health impacts associated with quarrying, processing and transportation operations. A particular issue raised was the potential for silicosis-related health impacts, and particularly in relation to students at Somersby Public School.

Consideration
The EA includes a specialist air quality impact assessment and a separate health impact assessment, both undertaken by Heggies Pty Ltd. The assessments include consideration of total suspended particulates (TSP), dust deposition, fine particulate matter (PM_{10} and $PM_{2.50}$), respirable crystalline silica, sulphur dioxide and nitrogen dioxide, with reference to relevant 24-hour, monthly and annual air quality goals.

The assessments are based on a number of mitigation measures being implemented, including:
- enclosure/cladding of the washplant;
- minimising the area of disturbance to that necessary for quarrying operations;
- installing a number of earthen bunds and barrier fences;
- watering internal roads regularly;
- minimising drop heights; and
- prompt stabilisation and seeding of exposed soil stockpiles and bunds.

As discussed previously, the project is also proposed to be undertaken on a 2 stage basis, commencing at the furthest point from Somersby Public School and the closest residences, to allow for performance of Stage 1 to be evaluated prior to commencement of Stage 2. (As discussed in the previous section, the Department has recommended a condition increasing this to 3 separate stages).

The assessment includes consideration of the incremental increase in emissions caused by the quarry, and the total cumulative emissions generated by the quarry together with background dust emissions in the area. The modelling includes two operating scenarios in order to represent the worst case emissions from the project at Somersby Public School and surrounding residences.

<u>*Dust*</u>
The assessment indicates that the quarry would comply with applicable dust criteria during all stages of the project. The worst case predicted dust levels at the nearest sensitive receivers are shown in the following table.

Table 7: Predicted Worst Case Dust Impacts

Pollutant	***Averaging Period / Units***	***Criterion / Goal***	***Max. Predicted Incremental Dust Level***	***Max. Predicted Total Dust Level (Increment + Background)***
Somersby Public School				
Total suspended particulate (TSP) matter	Annual / $\mu g/m^3$	90	1.8	37.8
Particulate matter < 10 µm (PM_{10})	Annual / $\mu g/m^3$	30	0.9	18.9
	24 hour / $\mu g/m^3$	50	0.2	46.4
Particulate matter < 2.5 µm ($PM_{2.5}$)	Annual / $\mu g/m^3$	8	0.3	5.4
	24 hour / $\mu g/m^3$	25	0.1	13.3
Deposited Dust	Annual / g/m^2/month	2 (max. increase)	0.4	-
		4 (total)	-	1.6
Surrounding Residences				
Total suspended particulate (TSP) matter	Annual / $\mu g/m^3$	90	5.0	41.0

Pollutant	***Averaging Period / Units***	***Criterion / Goal***	***Max. Predicted Incremental Dust Level***	***Max. Predicted Total Dust Level (Increment + Background)***
Particulate matter < 10 µm (PM_{10})	Annual / $\mu g/m^3$	30	2.5	20.5
	24 hour / $\mu g/m^3$	50	2.9	48.8
Particulate matter < 2.5 µm ($PM_{2.5}$)	Annual / $\mu g/m^3$	8	0.7	5.9
	24 hour / $\mu g/m^3$	25	0.8	14.0
Deposited Dust	Annual / g/m^2/month	2 (max. increase)	1.2	-
		4 (total)	-	2.4

The Panel, the DECC and the Department are generally satisfied that SFP has assessed the potential dust impacts of the quarry in accordance with relevant DECC guidelines, and that the project is unlikely to result in any significant dust amenity related impacts.

The Panel noted that, *'from time-to-time the DECC's 24-hour PM10 criterion could be exceeded, but this can occur in all areas in NSW when bushfires or remote dust storms affect air quality. The modelling indicates that emissions from the quarry would not unreasonably exacerbate these situations.'*

The Panel also provided consideration of the potential for dust emissions to impact horticultural industries in the area, as this issue was raised in a number of submissions. Given that the project is predicted to comply with applicable amenity criteria, and the distance to the nearest sensitive horticultural activities (ie. approximately 1 kilometre from dust sources on the project site), the Panel concludes that it is 'highly unlikely' that there would be any noticeable accumulation of dust on cut flowers or other sensitive horticultural land uses. The Department agrees, noting the relatively small incremental dust increases predicted as a result of the project.

The Department is satisfied that the project is able to be managed such that it would not result in any significant dust impacts. However, as a precautionary measure, the Department believes that SFP should be required to demonstrate compliance with the applicable air quality criteria to the satisfaction of the Director-General, before commencing Stage 1/7 and Stage 2 of the project.

The Department has also recommended conditions requiring SFP to:

- comply with applicable incremental and cumulative dust criteria, and strive to continually improve the air quality performance of the project;
- establish a detailed air quality monitoring program, including real-time air quality monitoring at Somersby Public School, and an early warning alert system for the school; and
- communicate quarry operations with surrounding landusers, including publicly reporting all monitoring results, and effectively responding to enquiries and complaints.

The Department notes that the provision of real-time dust monitoring was recommended by the Panel and key agencies including the DECC and the Department of Health.

Respirable Crystalline Silica

The potential for silicosis-related health impacts to school students and the community was one of the most cited and emotive issues raised by the community in submissions and to the Panel. Understandably, parents are concerned about the potential for their childrens' health to be acutely or chronically affected as a result of respiration of crystalline silica associated with dust emissions from the project.

This issue was carefully and comprehensively considered by the Panel in its assessment of the project.

The EA also included a specific health risk assessment for crystalline silica, which concluded that the project would comfortably comply with applicable criteria at sensitive receivers surrounding the quarry, including Somersby Public School. The key findings of the EA modelling are shown in the following table.

Table 8: EA Predicted Worst Case Crystalline Silica Impacts (all receivers)

Pollutant	***Unit***	***Criterion***	***Predicted Project Level (Increment + Background)***
Chronic Reference Exposure Level (REL)	$\mu g/m^3$	3	0.82
Silicosis Potency	$\mu g/m^3$.years	1,000	51.9

The Panel, whilst not dismissing the findings of the EA, questioned the basis for some of the assumptions made in the EA assessment, in particular:

- the background respirable crystalline silica concentrations; and
- the expected crystalline silica emissions resulting from the project.

The Panel subsequently commissioned additional studies to assess these questions. Specifically, the studies included (1) monitoring and analysis of background respirable crystalline silica concentrations in the area, and (2) monitoring and analysis of respirable crystalline silica concentrations from a similar sand quarry operation in the area.

Despite a number of attempts, the first study proved unsuccessful due to the low background silica levels and constraints in the available monitoring methodologies (including that most monitoring mediums contain silicon themselves).

Nonetheless, the Panel was able to rely on data collected by the Australian Nuclear Science and Technology Organisation (ANSTO) to overcome this problem. This information found that a conservative estimate of background respirable crystalline silica in the area is 0.34 $\mu g/m^3$ (PM10). This compares with the background level of 0.72 $\mu g/m^3$ used in the EA, indicating that the EA-assumed background level is conservative by a factor of almost 100%.

The second study did provide the required results, and was able to determine the percentage of crystalline silica in emissions from similar sand quarrying operations. The assessment found that the average percentage of crystalline silica is likely to be in the order of 16%. This percentage is significantly above the 4% average estimated in the EA.

The Panel re-evaluated SFP's health risk assessment based on the results of these studies. The reassessment indicates that the worst case Reference Exposure Level at any receiver would be 0.57 $\mu g/m^3$, which is below the level predicted in the EA and well below the applicable criterion (ie. 3 $\mu g/m^3$).

The Panel concludes that it is confident that the concentrations of air-borne crystalline silica would remain well below internationally accepted criteria in the areas surrounding the project, including Somersby Public School. Consequently, the Panel does not believe that the project presents any appreciable health risk to students or teachers at the Somersby Public School or to surrounding residents.

The Department accepts the findings of the Panel. Notwithstanding the small potential for impact, and consistent with the Panel's recommendations, the Department has recommended conditions that would require SFP to:

- comply with applicable crystalline silica criteria;
- establish a detailed air quality monitoring program, including crystalline silica monitoring; and
- demonstrate compliance with the applicable crystalline silica criteria before commencing Stage 1/7 and Stage 2 of the project.

Sulphur Dioxide and Nitrogen Dioxide

The EA includes modelling of SO_2 and NO_2 emissions associated with the project (ie. from diesel fuel combustion by earthmoving equipment), which indicates that the project would comfortably comply with applicable short and long term air quality goals.

Conclusion

The Department, the DECC and the Panel are satisfied that SFP has assessed the potential air quality impacts of the quarry in accordance with relevant DECC guidelines, and appropriately considered reasonable and feasible noise mitigation measures.

The assessment indicates that the cumulative dust emissions of the quarry together with background dust emissions would comply with established air quality criteria during all stages of the quarry operation (apart from short term exceedances due to external events such as bushfires or regional dust storms).

Further, the Department and the Panel are satisfied that the concentrations of air-borne crystalline silica would remain well below internationally accepted criteria, and that the project does not present any appreciable health risk to students or teachers at the Somersby Public School or to surrounding residents.

Notwithstanding, the Department understands and acknowledges the concerns raised by the community, particularly those of the parents and teachers of students at Somersby public School.

In this regard, the Department has adopted a precautionary approach and has recommended a condition that would require SFP to independently demonstrate compliance with air quality criteria prior to proceeding to Stages 1/7 and 2 of the project.

The Department has also recommended a range of other conditions to minimise, monitor and manage the air quality impacts of the project, including requirements to:

- comply with incremental and cumulative air quality criteria;
- implement a comprehensive air quality monitoring program, including long term monitoring of crystalline silica and real-time monitoring of PM10, at Somersby Public School, as well as an early warning alert system for the school;
- comply with strict hours of operation and truck movements; and
- communicate quarry operations with the surrounding community, and effectively respond to enquiries and complaints.

6.4 Flora and Fauna

Issues

The project would disturb approximately 20 hectares of the 42.3 hectare site, requiring the removal of approximately 10.8 hectares of native treed vegetation. The project has the potential to impact 3 threatened plant species and a number of threatened fauna species.

Consideration

The EA includes specialist flora and fauna assessments undertaken by Robert Payne Ecological Surveys & Management and Countrywide Ecological Services, respectively. A supplementary fauna assessment was undertaken by Kendall & Kendall Ecological Services, in response to issues raised about the adequacy of the original assessment.

Following the supplementary assessment, the DECC, the Panel and the Department are generally satisfied with the survey effort.

Vegetation Communities

The surveys identified 5 vegetation communities on the site, including:

- Somersby Plateau Forest;
- Hawkesbury Banksia Scrub-Woodland;
- exotic grassland;
- exotic grassland with pines; and
- farm dams / aquatic habitat.

No endangered ecological communities were identified on the site.

The project as originally proposed would have required the removal of 12.8 hectares of the native Somersby Plateau Forest and Hawkesbury Banksia Scrub-Woodland communities. With the removal of Stage 1/3 from the project, the required area of tree clearing is reduced to 10.8 hectares.

The EA indicates that the clearing would represent a loss of approximately 2% of the known Somersby Plateau Forest community, and 0.1% of the known Hawkesbury Banksia Scrub-Woodland community.

The Department and the DECC are satisfied that the project is unlikely to have a significant impact on these communities, subject to adequate biodiversity offsetting. This issue is discussed under a separate sub-heading below.

The potential for impact on groundwater dependent ecosystems is also discussed under a separate sub-heading below.

Flora Species

The site contains a high biodiversity, with flora surveys identifying a total of 155 native plant species. The flora assessment identified 3 threatened flora species, including:

- Somersby Mintbush (*Prostanthera junonis*);
- Black-eyed Susan (*Tetratheca glandulosa*); and
- *Hibbertia procumbens*.

Somersby Mintbush and *H. procumbens* are listed as endangered under the NSW *Threatened Species Conservation Act 1995* (TSC Act), and Somersby Mintbush is further listed as endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Black-eyed Susan is listed as vulnerable under both the TSC Act and EPBC Act.

The locations of the identified species on the site are shown on Figure 8.

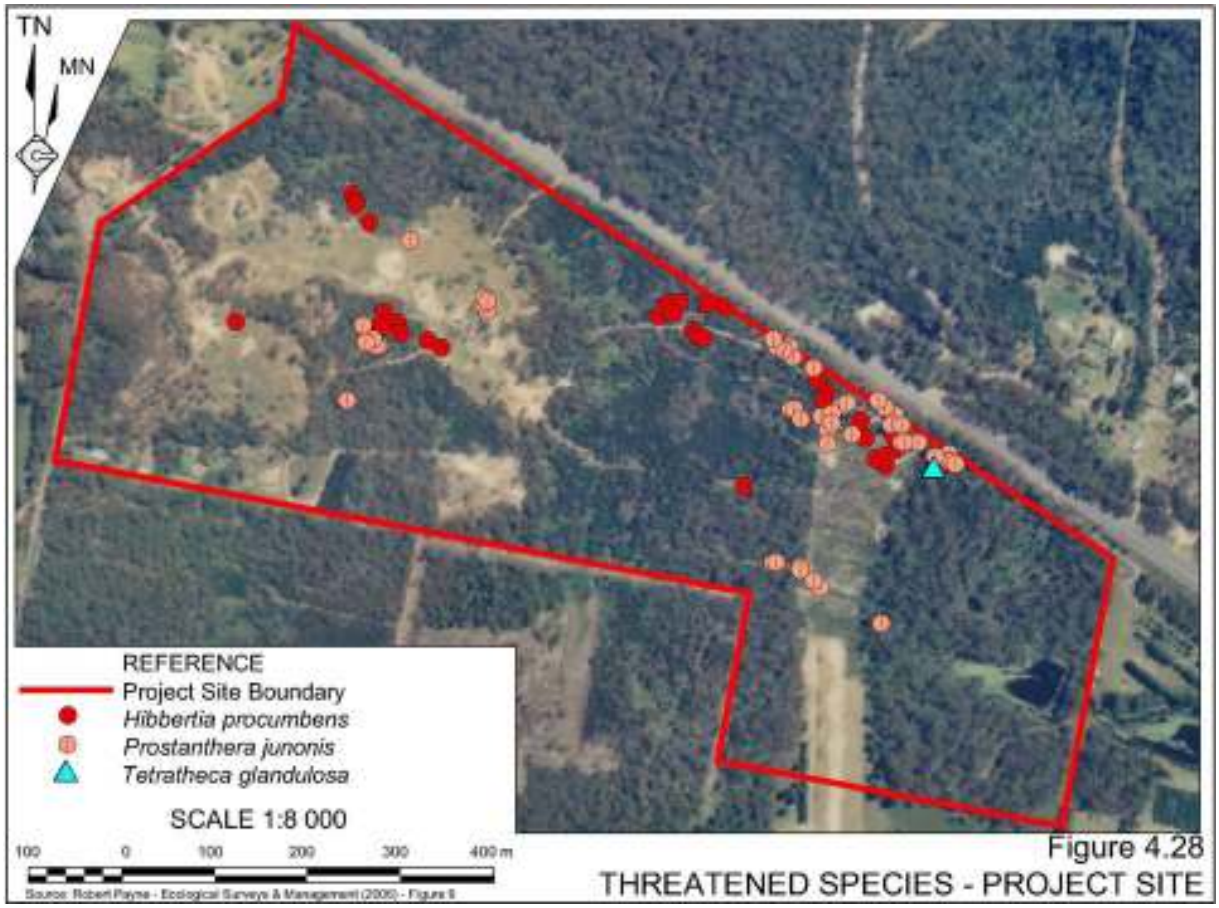

Figure 8: Threatened Flora Species Distribution

With regard to Somersby Mintbush, the population on and surrounding the site totals approximately 280 plants. The project would require the removal (and translocation) of up to about 40 plants (or 15% of the population) which occur as scattered individuals removed from the main population in the north-western area of the site. The north-eastern area is proposed to be conserved, as discussed below.

With regard to *H. procumbens*, approximately 41 individuals have been identified on the site, with the distribution similar to that of the Somersby Mintbush. The EA states that the project would require the clearing of approximately 25% of the identified plants on the site.

With regard to Black-eyed Susan, 2 individuals have been identified on the site, both in the north-eastern area. The project would not impact these plants, which would be retained and protected, as described below.

SFP proposes a range of measures to offset the impact of the project on these species (as discussed under separate heading below). With the adoption of these measures, the EA concludes that the project would not result in any significant impact on the threatened flora species.

The impact of the project on threatened flora species, particularly on the Somersby Mintbush, was a key issue raised in submissions, including those submissions from DECC, Gosford City Council, Wyong City Council, the Environmental Defenders Office as well as the community. Many of the submissions believed that the proposed mitigation and offsetting measures were inadequate to protect the Somersby Mintbush and other threatened species.

From the above, the Department believes that, for the project to meet the 'improve or maintain' standards in the DECC's biodiversity offsetting guidelines, it would require vegetation offsets of suitable composition and quality to offset the impacts on threatened flora species, particularly the Somersby Mintbush. This issue is discussed under a separate sub-heading below.

It is noted that the DECC and some submissions raised the potential for another threatened plant species, Camfield's Stringybark (*Eucalyptus camfieldii*), to be located on the site, as it had been recorded (1 specimen) on the site in the late 1990's and is taxonomically similar to two common species which were identified in the flora assessment (and hence the assessment may have misidentified the species). SFP provided further evidence that the subject Eucalyptus on site is the more common species, and the Department is satisfied with this response.

Fauna

The fauna surveys have identified a total of 130 fauna species on the site, including some 122 native species and 8 exotic species.

Eight threatened fauna species were identified, namely:

- Eastern Pygmy-possum;
- Red-crowned Toadlet;
- Eastern Freetail Bat;
- Little Bent-wing Bat;
- Grey-headed Flying Fox;
- Common Bent-wing Bat;
- Gang-gang Cockatoo; and
- Grey-crowned Babbler.

All of these species are listed as vulnerable under the TSC Act.

Tests of ecological significance were undertaken for these threatened fauna species, as well as a number of additional threatened fauna species that have the potential to occur within the study area.

The tests of significance are based on a range of measures that SFP proposes to adopt to avoid, mitigate and offset the impact of the project on these species (as discussed under separate heading below). These measures include the removal of Stage 1/3 from the proposed quarry to reduce the impact on Eastern Pygmy-possum and the Red-crowned Toadlet.

With the adoption of these offsetting measures, the fauna assessments conclude that the project would not result in a significant impact on the threatened fauna species.

Again, from the above the Department believes that, for the project to meet the 'improve or maintain' standards in the DECC's biodiversity offsetting guidelines, it would require substantial and targeted offsets to compensate the impacts on threatened fauna species. This issue is discussed under a separate sub-heading below.

Groundwater Dependent Ecosystems

Many submissions on the project raised concerns about the potential for groundwater impacts associated with the project to impact wetlands, hanging swamps and other groundwater dependent

ecosystems in the area. In particular, submissions were concerned that the changes to groundwater may adversely impact the Somersby Mintbush population on and adjacent to the site.

The Panel investigated this issue in some detail. The Panel considered that impact on spring-fed vegetation outside the disturbance area of the quarry itself would likely be minor.

With regard to Somersby Mintbush, the Panel acknowledges that the species is not groundwater dependent, and that the predicted reductions in perched and regional water tables would not affect its health. Further, the Panel is satisfied that there is a very low risk of the proposed on-site conservation areas (see below) drying out.

The Department accepts the findings of the Panel. Notwithstanding, the Department has recommended conditions that would require SFP to monitor the impact of the project on groundwater dependent ecosystems and other vegetation and to investigate, notify and mitigate any identified impacts.

Biodiversity Offset Strategy

SFP has developed a biodiversity offset strategy to offset the 10.8 hectares of native vegetation to be cleared for the project, and the impact on threatened species.

The offset strategy has been through a number of iterations since the EA, Panel hearings and Panel report, involving detailed consultation with DECC and the Department. Essentially, the iterations have been required in order to develop an offset strategy that satisfies DECC and the Department that the project would effectively compensate for the project's biodiversity impacts, and meet its 'improve or maintain' biodiversity guidelines.

The final offset strategy is based on these detailed consultations, and was agreed to in-principle by the DECC in April 2009.

The strategy is shown on Figure 9, and comprises:

- revegetation, enhancement and long term conservation of 22.9 hectares of the site outside the proposed disturbance area[3];
- development and implementation of a management plan for the population of Somersby Mintbush in the Peats Ridge Road reservation adjacent the site;
- rehabilitation (to native woodland) and long term conservation of a 9.3 hectare portion of the quarry;
- support for a range of Somersby Mintbush research and implementation activities, including financial support up to a value of $410,000, and human resources support (see below);
- support for preparation of a recovery plan for the Red-crowned Toadlet, up to a value of $25,000; and
- employment of an environmental officer with botanical expertise, with 30% of the officer's time dedicated to Somersby Mintbush research and implementation activities.

DECC and the Department are satisfied that, subject to the implementation of this biodiversity offset strategy, the project can be undertaken in a manner that would improve or maintain the biodiversity values of the locality over the medium to long term. The Department has recommended conditions requiring SFP to implement, and report on progress against, this offset strategy.

[3] Including the Stage 1/3 area, which is no longer proposed to be quarried.

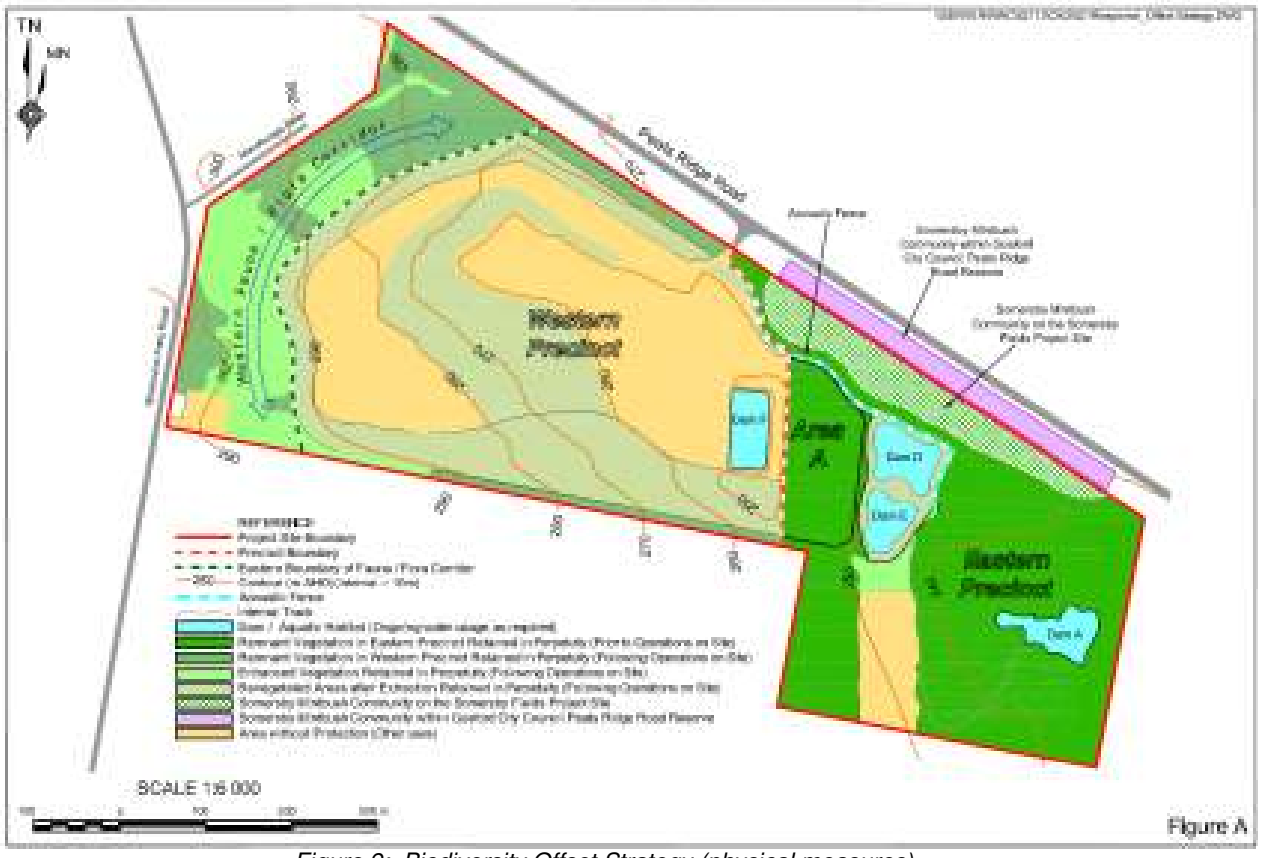

Figure 9: Biodiversity Offset Strategy (physical measures)

Conclusion

The Department, the DECC and the Panel are satisfied that SFP has assessed the potential flora and fauna impacts of the project.

The assessment indicates that the project, without any offsetting measures, would result in significant flora and fauna impacts, most notably:

- the removal of 10.8 hectares of native treed vegetation;
- the removal of about 40 Somersby Mintbush and 10 *H. procumbens* individuals, both of which are endangered plant species; and
- disturbance of habitat for threatened fauna species, particularly the Eastern Pygmy-possum and the Red-crowned Toadlet.

The Department and DECC are satisfied that these impacts are able to be mitigated and/or offset to an extent such that the project could be considered to 'improve or maintain' biodiversity values of the area over the medium to long term. To achieve this goal, the Department has recommended conditions requiring SFP to:

- implement the final offset strategy as agreed in-principle by the DECC and the Department;
- provide for the long term conservation security of the offset areas;
- develop a comprehensive Landscape Management Plan, including a Rehabilitation and Offset Management Plan and Quarry Closure Plan; and
- lodge a substantial rehabilitation and offset bond to ensure that the rehabilitation and offset areas are established to the satisfaction of the Director-General.

6.5 Heritage

Issues

The project has the potential to impact on Aboriginal cultural heritage sites/objects, as well as items of non-indigenous heritage.

Consideration and Conclusions

Aboriginal Heritage

The EA includes a specialist Aboriginal cultural heritage assessment, undertaken by Archaeological Surveys and Reports Pty Ltd in consultation with the Darkinjung Local Aboriginal Land Council (LALC). The assessment draws on previous archaeological assessments for the area including an assessment and sub-surface investigation on the site in 1995/96 by archaeologist Rex Silcox.

The 1995/96 investigations found that the majority of the site contains little archaeological potential, with the exception of an area close to the eastern boundary. Sub-surface investigations in this area found 10 artefacts, although only 4 of the items could be positively identified as being artefacts.

The additional assessment undertaken for the project did not identity any Aboriginal sites/items.

The Darkinjung LALC is satisfied that the majority of the site does not contain significant archaeological constraints, but has recommended that a 30 metre buffer zone should be retained along the eastern boundary to protect the archaeologically sensitive area identified in the 1995/96 investigations. SFP has committed retaining this buffer zone.

The DECC, the Panel and the Department are satisfied that the project is unlikely to have any significant impact on Aboriginal heritage values. The Department has recommended a condition that would require SFP to prepare an Aboriginal Cultural Heritage Management Plan for the project, which includes provisions for:

- protection of the eastern buffer zone;
- management of any Aboriginal sites/objects identified during the project; and
- ongoing consultation with applicable Aboriginal groups.

Non-Aboriginal Heritage

The site does not contain any improvements of heritage significance, and the Department is satisfied that the project would not have any direct or indirect impact on heritage values in the locality.

6.6 Traffic

Issues

The project has the potential to increase traffic levels and affect traffic safety on local roads, particularly in relation to Somersby Public School.

Consideration

The EA includes a specialist traffic assessment undertaken by Cardno Pty Ltd.

The road network in the vicinity of the site is shown on Figure 10. As shown, the site has extended frontage to Peats Ridge Road, which provides direct access to the F3 Freeway. Peats Ridge Road is an undivided two-lane rural arterial road, and the site is approximately 700m west of the F3's Somersby Interchange.

The project is based on all trucks entering and exiting the site via Peats Ridge Road to the east (ie. to/from the F3), to avoid truck movements to the west past Somersby Public School and local roads. To ensure this occurs, SFP proposes to:

- design the site entrance so as to discourage left turns out of the site (via a 'truck unfriendly' tight radius on the kerb and/or bollards and barriers);
- install restrictive signposting on the site; and
- require drivers to sign code of conduct contracts.

The traffic assessment indicates that the project would generate an average of 144 vehicle movements per day at peak production (comprising 108 truck movements and 36 light vehicle movements). On an hourly basis, the project would generate up to 30 truck movements, although truck movements during the early morning and evening would be capped as follows:

- 5am to 6am – 12 movements (ie. 6 in, 6 out);
- 6am to 7am – 22 movements; and
- 6pm to 10pm – 24 movements per hour.

Figure 10: Local Road Network

These early morning and evening caps have been placed in order to meet the applicable road traffic noise criteria (see Section 6.2).

The traffic assessment concludes that the project would not result in any significant traffic capacity or traffic safety impacts on the road network, subject to suitable design of the site access intersection with Peats Ridge Road.

The RTA initially objected to the project due to concerns about the proposed site access intersection, in particular that the intersection should be designed for a 100km/h operating speed on Peats Ridge Road, rather than the 80km/h design as proposed in the EA. SFP subsequently advised that the intersection could be designed to 100km/h, as required by the RTA.

Gosford Council also raised concerns regarding the design of the site access intersection.

The Department is satisfied that the RTA's and Council's concerns regarding site access intersection are technical in nature and are able to be resolved as part of the detailed road design. In this regard, the Department has recommended a condition requiring the site access intersection to be designed and constructed to the satisfaction of the RTA and Council.

Some submissions raised concerns about the timing of the site access intersection works, which are proposed to be undertaken in parallel with certain limited works on site. To ensure traffic safety the Panel recommended requiring the intersection works to be completed prior to works occurring on site. The Department agrees and has recommended a condition to reflect this.

The Department has also recommended conditions requiring SFP to:

- restrict left turns from the site using physical measures and signposting;
- restrict any project-related truck movements occurring on Peats Ridge Road west of the site entrance;
- ensure that all loaded vehicles entering or leaving the site have their loads covered and are cleaned of materials that may fall on the road; and
- provide sufficient parking on-site.

As noted in Section 6.2, the Department has also recommended conditions restricting early morning and evening truck movements, to reduce traffic noise amenity impacts to nearby residents.

As noted in Section 4.4, the Department has not adopted the Panel's recommendation that SFP prepare a Transport Code of Conduct for the project. The Department is satisfied that the elements of any such code are covered by the recommended conditions and SFP's Statement of Commitments, which include a commitment to requiring all truck drivers to sign contracts that they will be dismissed if they travel on local roads west of the site entrance.

With the adoption of these measures, the Department is satisfied that the project can be managed such that it would not result in any significant traffic impacts.

6.7 Rehabilitation and Final Landform

Issue

The project could result in ongoing environmental impacts, or constrain future landuse opportunities, if not rehabilitated appropriately.

Consideration

SFP is proposing to progressively rehabilitate the site, including partially backfilling the perimeter slopes using dewatered clay fines. The final landform concept is shown on Figure 11, and comprises a free-draining void with a number of water storages.

The quarry would be rehabilitated to provide a stable landform that would support areas of native vegetation and an open area that would be used for future rural or residential use (subject to future approvals).

The DPI and other government agencies were generally supportive of, or did not object to, the proposed final landform. The DPI questioned whether there was any potential for future expansion of the quarry, however the Department notes that the application does not seek or identify any further quarry expansion. Any such proposal would be subject to a separate application.

The Department notes that SFP originally proposed granting some of the rehabilitated site to the community for use as a regional sporting facility or a small Somersby 'village green', but that the community did not support such schemes. The Panel commented that submissions to it at the Panel hearings confirmed that the majority of the community at this stage supports a rural-residential concept rather than a sporting field, if approval is granted.

The Panel subsequently recommended that SFP be required to lodge an application with Council for the proposed rural-residential development of the site within 5 years of completion of the quarry rehabilitation works.

The Department acknowledges the Panel's recommendation, but does not believe that such a condition is warranted, given the long time frames associated with the rehabilitation works and the potential for changing landuse in the area during that time. Instead, the Department has recommended a condition requiring SFP to prepare a Quarry Closure Plan in consultation with Council that, amongst other things, investigates options for future use of the site. This would leave open the potential for part of the site to be used for public purposes – such as sporting fields – in the future if supported at that time.

Figure 11: Rehabilitation / Final Landform

Conclusion

The Department is satisfied that the project provides for the progressive and ultimate rehabilitation of the site, and that the proposed final landform would be compatible with the landscape and environmental values of the surrounding locality, and the surrounding landuse.

To ensure that rehabilitation and post-extraction planning is effectively managed, the Department has recommended conditions requiring SFP to:

- survey and mark out the approved limits of extraction;
- progressively rehabilitate the site to the satisfaction of the Director-General;
- establish, implement and periodically update a comprehensive Landscape Management Plan, including a Rehabilitation and Offset Management Plan and Quarry Closure Plan; and
- lodge a substantial rehabilitation and offset bond with the Department.

6.8 Social Impacts

Issues

The project has the potential to affect attendance levels at Somersby Public School, and affect the wider Somersby community.

Consideration and Conclusion

The EA includes a specialist social impact assessment undertaken by Key Insights Pty Ltd. The assessment considers the project's potential impacts on the:

- Somersby Public School community (including students, teachers and the parents and citizens association); and
- wider Somersby community.

A large number of submissions from the community expressed concerns about the potential social impacts of the project. The Somersby Public School P&C engaged a specialist consultant, Frazer Howard & Partners, to critique SFP's assessment and provide additional information on social impacts.

The key social impacts raised are related to:

- noise and hours of operation;
- air quality;
- road safety and traffic;
- water;
- visual amenity; and
- reduced school enrolments, with resultant impacts on staffing levels and viability of the school.

Most of these issues are addressed in separate sections of this report.

With regard to the potential for reduced school enrolments, the Department and the Panel acknowledge that there is some potential for parents to pull their children out of the school. This is a personal decision for each parent based on his or her judgment, and not one that is easily predictable.

However, the Department is satisfied that SFP has demonstrated – with independent verification by the Panel – that the project is highly unlikely to result in any health or amenity impacts (particularly by way of noise and dust) to the students or teachers at the school, or impact on student's learning experience.

Accordingly, the Department does not believe that there are valid reasons for refusing the project on these grounds.

The Department has recommended a comprehensive range of conditions to ensure that these impacts are avoided and/or otherwise managed, including requirements on SFP to:

- avoid all truck movements past the school;
- construct the earthen bund and acoustic barrier between the school and the quarry during school holidays, and prior to other development on the site;
- demonstrate compliance with the relevant environmental criteria before being allowed to continue quarrying in Stage 1/7 and Stage 2 (ie. the areas closer to the school);
- undertake comprehensive and continuous monitoring programs at the school, including an early warning alert system for Somersby Public School; and
- implement additional mitigation measures at the school (such as double glazing or air-conditioning) if monitoring indicates any unforeseen adverse impact.

Notwithstanding these measures, the Department acknowledges that there is likely to remain some perceived fear about the impacts of the project on Somersby Public School and the wider community.

To address these concerns, the Department believes it is important that the community be kept well informed about the project and its performance, and be able to have input into the project. To facilitate this, the Department has recommended conditions requiring SFP to:

- establish and maintain a Community Consultative Committee for the project, which would include representatives from the community and the school, with an independent chair;
- ensure that all monitoring results are made publicly available at the site and on the company's web site;
- report all incidents immediately; and
- prepare and implement a comprehensive Environmental Management Strategy, which includes procedures to:
    - keep the community informed about the project;
    - manage complaints;

- resolve disputes; and
- respond to any non-compliances.

The Department also acknowledges SFP's commitments with regard to engaging with the Somersby Public School and the community, which include:

- undertaking annual school surveys;
- developing and publicising a community plan; and
- supporting local community events.

With the implementation of these measures, the Department is satisfied that the project can be managed such that it would not have any significant social impact on the Somersby community.

6.9 Visual Amenity

The project would not be readily visible from any public areas or sensitive receivers, given:

- the maintenance of a vegetation buffer of 25 metres along the northern boundary adjacent Peats Ridge Road;
- the maintenance and expansion of a considerable vegetation buffer along the western boundary adjacent Somersby Public School;
- the maintenance and expansion of vegetation buffers along the southern and eastern boundaries; and
- the incorporation of a curved design to the site access road to prevent visual access from Peats Ridge Road.

The Department is satisfied that, with the implementation of these measures, the project is unlikely to result in any significant visual impact to surrounding receivers.

6.10 Other Issues

Other issues raised in during the assessment of the project are considered to be minor issues, components of key issues or of minor environmental impact.

7. RECOMMENDED CONDITIONS

The Department has prepared recommended conditions of approval for the project (see Appendix B), and summarised these conditions in Appendix A. 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.

SFP has reviewed and accepts the recommended conditions. The Department believes the conditions reflect current best practice for the regulation of quarries in NSW.

8. CONCLUSION

The Department has assessed the project application, EA, submissions on the project, SFP's response to these submissions and the Panel's report, in accordance with the relevant statutory requirements.

Based on this assessment, it is clear that this project has generated a very large amount of concern in the local community. The Department acknowledges that the project is in a sensitive location, being close to Somersby Public School, and containing good quality native vegetation. The project site, like any other sand extraction site on the Somersby Plateau, also has the potential to affect the region's sensitive and valuable groundwater resources.

However, these sensitivities are not sufficient reasons to refuse the project without due merit assessment. Rather, consideration of the project must be made objectively based on full and proper scientific, conservative and precautionary assessment of the proposal.

In this regard, the Department has comprehensively assessed the environmental impacts of the project, and the Minister has constituted a Panel of Experts to assess the impacts of the project both on Somersby Public School and the surrounding community, and on the environment.

This assessment has concluded that the project is able to be conducted in a manner that would comply with all of the relevant health, amenity and other environmental criteria at Somersby Public School, and that the project would not adversely affect the learning experience of children at the school.

The Department is also satisfied that the other impacts of the project are able to be minimised, managed, offset and/or compensated to ensure an acceptable level of environmental performance. The Department acknowledges that one residence (Daniels) is expected to be adversely affected by noise at some stages of the project, and has recommended conditions requiring SFP to acquire this property upon request, and to undertake additional noise mitigation measures on the property whilst it remains privately owned.

The Department has recommended a comprehensive and precautionary range of conditions to ensure that the project complies with the relevant criteria and standards. This includes requiring SFP to demonstrate compliance with relevant criteria before being allowed to proceed to stages of the quarry in proximity to Somersby Public School.

The Department also recognises that the site has for some time been identified as containing a regionally significant sand resource, and the Department acknowledges that there is a strong need to develop new sand resources to meet the needs of the Central Coast and Sydney construction industries.

After careful consideration, the Department believes, on balance, that the project's benefits sufficiently outweigh its residual costs, and that it is therefore in the public interest.

Consequently, the Department recommends that the Somersby Fields Project be approved, subject to strict conditions of approval.

9. RECOMMENDATION

It is RECOMMENDED that the Minister:

- consider the findings and recommendations of 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 (see Appendix B).

David Kitto
Director
Major Development Assessment

Chris Wilson
Executive Director
Major Projects Assessment

Sam Haddad
Director-General

APPENDIX A – SUMMARY OF CONDITIONS OF APPROVAL

Aspect	Condition	Requirement
Schedule 2: Administrative Conditions		
Terms of Approval	5	Proponent required to demonstrate continued compliance with environmental criteria prior to being allowed to quarry beyond Stage 1/6 and Stage 1/9
	7	Restriction on production to 450,000 tonnes of product a year
	13	Requirement to pay road maintenance contribution to Council of 1.5 cents per tonne
Schedule 3: Specific Environmental Conditions		
Land Acquisition	1	Acquisition rights for significantly affected privately owned land (ie. Daniel residence)
Noise	3-6	Noise impact assessment and acquisition criteria and hours of operation
	7-8	Additional noise mitigation measures for noise affected properties
	9	Requirement to seek continual improvement of noise performance
	10	Noise Monitoring Program
Air Quality	11	Air quality impact assessment criteria
	13-14	Air Quality Monitoring Program, and meteorological monitoring
Surface and Ground Water	15	Restriction on discharging dirty water from the site
	16	Requirement to provide compensatory water supplies to Somersby Public School and Ozbaglar properties, and to other landowners who experience water loss as a result of the project
	17-22	Site Water Management Plan
Rehabilitation and Landscape Management	23	Requirement to progressively rehabilitate the site, and to implement biodiversity offsets
	24	Requirement to provide long term conservation security for the offset areas
	25-27	Landscape Management Plan
	28	Requirement for Rehabilitation and Offset Bond
Aboriginal Heritage	29	Requirement to protect and conserve eastern area of site
	30	Aboriginal Cultural Heritage Management Plan
Traffic and Transport	31	Requirements to construct site access intersection to satisfaction of the RTA and Council
	32	Restriction on transport routes past Somersby Public School, and restriction on truck numbers in early morning and evening periods.
Visual	35-37	Requirement to minimise project's visual and lighting impacts
Waste Minimisation	38	Requirement to minimise waste
Emergency and Hazards	39-41	Requirements to manage dangerous goods, secure the project site, and prepare for/respond to bushfires
Production Data	42	Requirement to report on production
Schedule 4: Additional Procedures		
Notification of Landowners	1-2	Requirement to notify landowners of acquisition rights and exceedances of relevant criteria during monitoring
Independent Review	3-6	Procedures for independent review if landowners believe the project to be exceeding relevant impact assessment criteria
Land Acquisition	7-9	Procedures for land acquisition
Schedule 5: Environmental Management and Monitoring		
Environmental Management Strategy/ Program	1-2	Environmental Management Strategy/ Environmental Management Program
Incident Reporting	3-4	Requirement to report incidents
Annual Reporting	5	Annual Environmental Management Report
Auditing	6-8	Requirement to undertake regular independent environmental audits
CCC	9	Requirement for Community Consultative Committee
Access to Information	10-11	Requirement to publicly report environmental management plans/programs/strategies, and monitoring results

APPENDIX B – CONDITIONS OF APPROVAL

APPENDIX C – INDEPENDENT HEARING & ASSESSMENT PANEL REPORT

APPENDIX D – CONSIDERATION OF ENVIRONMENTAL PLANNING INSTRUMENTS

1 SEPP No.33 – Hazardous and Offensive Development

The Department is satisfied that the project is not potentially hazardous or offensive, and that the project is generally consistent with the aims, objectives, and requirements of SEPP 33.

2 SEPP No.44 – Koala Habitat Protection

A koala habitat assessment was completed as part of the ecological assessment of the project, and no core or potential koala habitat was identified. The Department is satisfied that the project is unlikely to significantly affect koala habitat, and that the project is generally consistent with the aims, objectives, and requirements of SEPP 44.

3 SEPP No.55 – Remediation of Land

The Department is satisfied that the project area does not have a significant risk of contamination given its historical landuse, and that the project is generally consistent with the aims, objectives, and provisions of SEPP 55.

4 SEPP (Infrastructure) 2007 *(former SEPP 11 – Traffic Generating Development)*

In accordance with clause 104 of the Infrastructure SEPP (and the now repealed SEPP 11), the application was referred to the RTA. The Department is satisfied that the project can be undertaken in a manner that is generally consistent with the aims, objectives, and provisions of the SEPP.

APPENDIX E – PROPONENT'S RESPONSES TO SUBMISSIONS

See attached CD-Rom

APPENDIX F – SUBMISSIONS

See attached CD-Rom

APPENDIX G – ENVIRONMENTAL ASSESSMENT

See attached CD-Rom