NSW GOVERNMENT
Department of Planning

MAJOR PROJECT ASSESSMENT: Buronga Distillate-Fired Power Station

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

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EXECUTIVE SUMMARY

International Power (Australia) Pty Ltd (the Proponent) has sought project approval to construct and operate a distillate-fired power station approximately 10 kilometres north-east of Buronga in the Wentworth Shire local government area in far south western New South Wales. The proposal will involve up to three distillate-fired turbines operating in open-cycle mode, each with a capacity to generate up to 50 megawatts, resulting in a total maximum output of 150 megawatts from the plant. The project site comprises approximately four hectares of a large pastoral lease controlled by the Western Lands Commission. The project site is isolated from nearest sensitive receivers (located some three kilometres away) and situated immediately adjacent to the existing Buronga TransGrid 220 kilovolt switching station off Arumpo Road.

The Proponent has identified that the power plant would be fuelled by distillate as there is no alternative fuel source (such as natural gas) that is commercially available in the area. Notwithstanding, the Proponents has identified that the plant would be designed to have dual-fuel capacity for conversion to natural gas should this fuel source become commercially available in the future.

The Department received a total of seven submissions from public authorities: Commonwealth Department of Defence, NSW Department of Environment and Climate Change, NSW Department of Water and Energy, NSW Department of Lands, NSW Roads and Traffic Authority, TransGrid and Wentworth Shire Council. None of the agencies objected to the project, however raised issues for the Department's consideration. Nil public submissions were received on the project. The key issues raised by the public authority related to greenhouse gas, biodiversity, water supply, aviation safety, operational site water management, and traffic and access.

The Department has assessed the Proponent's Environmental Assessment, Submissions Report and Statement of Commitments as well as submissions received by public agencies and considers the key issues associated with the proposal to be project justification considering greenhouse gas implications of the use of distillate fuel, biodiversity impacts, water supply and aviation safety. All other issues are considered to have been satisfactorily addressed in the Proponent's Statement of Commitments.

With respect to the need and justification for the project, the Department commissioned an independent review into the justification of the project on electrical systems and greenhouse gas impact grounds. With consideration to the conclusions of the independent review, the Department has determined that the project is justified on the grounds that it would help meet forecast deficits in peak generation reserve in NSW and is satisfied that the project would not result in significant greenhouse gas emissions.

With respect to biodiversity, water supply and aviation hazard impacts, based on its assessment the Department is satisfied that:

- subject to appropriate offset the project would not result in significant and unacceptable biodiversity impacts;
- the operational water supply requirements of the project can be sustainable sourced so as to not comprise existing or future growth needs; and
- the project can be designed to avoid posing a significant risk with respect to aviation hazards.

On balance, the Department considers that the project to be in the public's interest and has recommended full project approval for the project subject to stringent environmental performance standards including air quality, noise and vibration limits; aviation hazard design requirements; and biodiversity offset measures.

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1. BACKGROUND

International Power (Australia) Pty Ltd (the Proponent) has sought project approval to construct and operate an up to 150 megawatt distillate-fired peaking power station approximately 10 kilometres north-east of Buronga in the Wentworth Shire local government area, in south western New South Wales (refer Figure 1).

Figure 1: Proposal Site

1.1 Existing Site

The project site comprises approximately four hectares of Crown land located immediately adjacent to the existing Buronga TransGrid 220 kilovolt switching station off Arumpo Road. The site comprises part of a larger pastoral lease controlled by the Western Lands Commissioner. The Proponent has advised that it has secured an option for a lease transfer with the present leaseholder of the land. The site is proposed to be accessed via Arumpo Road.

The site comprises sandy soils with generally flat terrain of <5% slope. The local catchment drains south west towards Lake Gol Gol and Gol Gol Swamp, and on to the Murray River further south.

Vegetation on site comprises open scrubland interspaced with Belah Woodland and Sandplain Mallee communities and is presently used for sheep and cattle grazing. The site is zoned 1(a) (General Rural Zones) under the *Wentworth Local Environmental Plan 1993* and the proposal is permissible with consent under this zoning.

1.2 Surrounding Land Use

Landuses directly surrounding the site comprises the TranGrid switchyard and scrub pasture and cropped agricultural land. The project site is isolated from residential receivers with the nearest sensitive receiver located approximately three kilometres to the south west. Nearby townships include Buronga in New South Wales (approximately 10 kilometres south west of the site) and Mildura in Victoria (approximately 13 kilometres south west of the site).

The site is situated approximately 2.5 kilometres northeast of Lake Gol Gol and approximately 9 kilometres of the Murray River. Other surrounding land uses include Mildura Airport (approximately 21 kilometres south west of the site), a gliding airfield (approximately 25 kilometres south west of the site), the Mallee Cliffs National Park (approximately 30 kilometres south east of the site) and the Buronga Sewerage Treatment Plant (approximately 8 kilometres to the southwest of the site).

2. PROPOSED DEVELOPMENT

2.1 Project Description

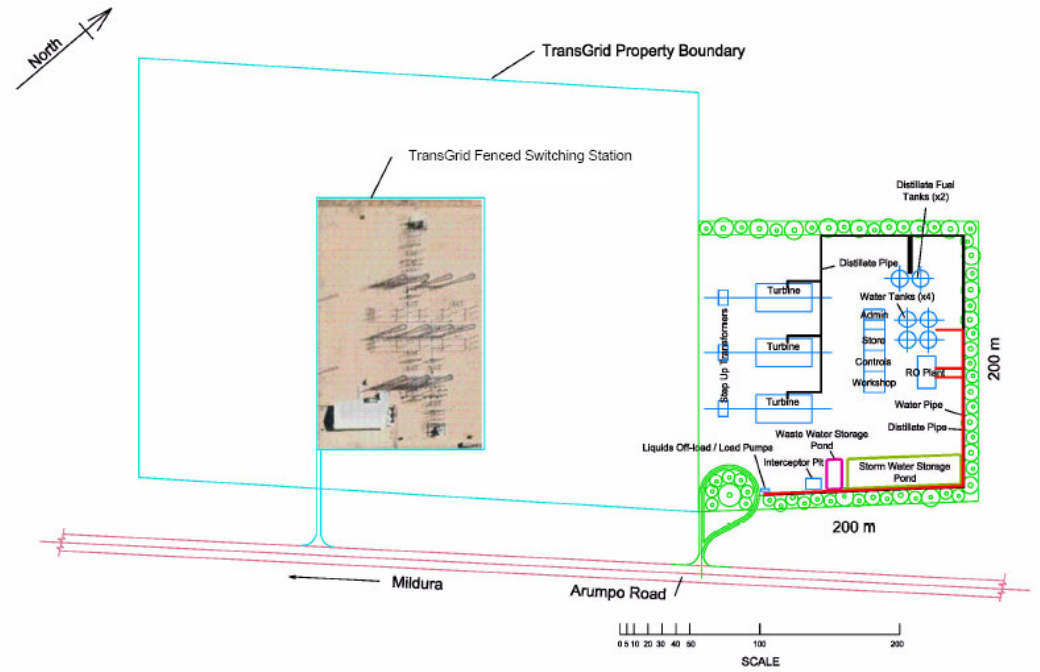
The Proponent proposes to construct and operate a distillate-fired peaking power plant approximately 10 kilometres north east of Buronga in the Wentworth Shire local government area. Subject to final plant design, the proposal will involve up to three distillate-fired turbines operating in open-cycle, each with a capacity to generate up to 50 megawatts, resulting in a total maximum output of 150 megawatts from the plant. The plant will be designed to have dual-fuel capacity for conversion to natural gas should this fuel source become commercially viable in the future. The site is proposed to be accessed via Arumpo Road.

The open-cycle plant would operate by drawing in cool air via an air inlet and compressing it under high pressure in a compressor. Fuel would then be injected into the compressed air and burnt in a combustion chamber to raise the temperatures to approximately 1100-1200^0 celsius. The heated air would then be used to power the turbines and generate electricity, following which the hot exhaust would be released to the atmosphere via stacks at temperatures around 550^0 celsius. The proposal would involve three exhaust stacks up to 20 metres in height (one for each turbine).

Fuel for the power plant would be locally sourced low-sulphur distillate. Distillate would be stored on site in up to 1,500 tonne tanks, with tanker deliveries to replenish stocks. The plant would require approximately 40 mega litres of water per annum for the purposes of inlet air cooling, the control of nitrogen oxide generation (i.e. through water injection at the combustion chamber to reduce temperatures at which nitrogen oxides are produced), domestic uses, site and equipment maintenance, and fire fighting. The majority of water is proposed to be sourced from the Buronga Sewerage Treatment Plant (STP) (and trucked onto site) and supplemented from onsite stormwater storage and rainwater tanks.

Raw water from the STP and stormwater storage would be treated via an onsite reverse osmosis and demineralisation water treatment plant prior to being used. Raw water from the rainwater tank may be used directly or treated prior to use, depending on its quality. The site would have the capacity to store approximately 300 kilo litres of treated water for use on site as well as an additional 150 kilo litres dedicated for protection of the plant in case of fire. All wastewater (from the water treatment plant and the power plant itself) and any overflow from the stormwater pond would be directed to an onsite wastewater storage pond which would be pumped out and disposed offsite as required. An indicative layout of the plant is provided in Figure 2.

Figure 2: Indicative Plant Layout



Being a peaking plant, the proposal would only operate for up to 10% of the year (approximately 876 hours per annum) and specifically during those hours of the day that generate peaks in electricity demand, typically very hot summer days (due to the increased use of air conditioners) and cold winter nights (due to the increased use of electrical heaters). The plant would be operated remotely by approximately five personnel and one person based locally. The plant is expected to take approximately 6-8 months to construct involving up to 120 construction personnel during peak construction.

2.2 Project Need

The Proponent has identified the key need for the project as being to help meet growing demand for peak electricity generation in NSW and in particular the forecast shortfall in peak electricity generation capacity in NSW by 2014/ 2015 (some 283 megawatts) as identified by the National Electricity Market Management Company (NEMCO) *Statement of Opportunities.* The Proponent has further argued that the project would have benefits for regional supply security by providing a source of local embedded generation which would reduce the need for electricity been sourced from elsewhere and associated costs of transmission losses.

The Department's consideration of the need and justification for the project is provided in Section 5.1.

3. STATUTORY CONTEXT

3.1 Major Project

The project is declared to be a Major Project under *State Environmental Planning Policy (Major Projects) 2005* because it is development for the purpose of an electricity generation facility for distillate fired generation that has a capital investment value of more than $30 million (clause 24(a)). The project is therefore subject to Part 3A of the *Environmental Planning and Assessment Act 1979* (the EP&A Act) and the Minister for Planning is the approval authority.

3.2 Permissibility

The project would be located on land zoned 1(a) (General Rural Zone) under the *Wentworth Local Environment Plan 1993*. The project is permissible under the subject zoning.

3.3 Environmental Planning Instruments

There are no environmental planning instruments that substantially govern the carrying out of the project.

3.4 Minister's Approval Power

The Proponent submitted an Environmental Assessment with the Director-General in July 2008. Pursuant to Section 75H and 75I(2)(g) of the Act, the Director-General was satisfied that the Environmental Assessment had addressed the environmental assessment requirements specified in the Director-General's environmental assessment requirements issued for the project on 10 August 2007. A copy of the Environmental Assessment is attached (see Appendix D).

The Environmental Assessment was placed on public exhibition from 11 August 2008 until 12 September 2008 and submissions invited in accordance with Section 75H of the Act. The Environmental Assessment was also made publicly available on the Department's website.

Following the exhibition period, the Director-General directed the Proponent to respond to the issues raised in submissions. As the project will require an Environment Protection Licence under the *Protection of the Environment Operations Act 1997*, a copy of the submissions were also provided to the Department of Environmental and Climate Change, pursuant to Section 75H(5) of the Act. The response to submissions (see Appendix C) prepared by the Proponent was subsequently made publicly available on the Department's website.

The Department has met all its legal obligations so that the Minister can make a determination regarding the project.

3.5 Objects of the *Environmental Planning and Assessment Act 1979*

Section 5 of the *Environmental Planning and Assessment Act 1979* details the objects of the legislation. The objects of the 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;*
- *(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;*
- *(vii) ecologically sustainable development;*
- *(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.

Of particular relevance to the environmental impact assessment and eventual determination of the subject project application by the Minister, are those objects stipulated under section 5(a). Relevantly, the objects stipulated under (i), (iii), (vi) and (vii) are significant factors informing determination of the application (noting that the proposal does not raise significant issues relating to the development of land, land for public purposes, community services and facilities or affordable housing). With respect to ecologically sustainable development, the EP&A Act adopts the definition in the *Protection of the Environment Administration Act 1991*, including the precautionary principle, the principle of inter-generational equity, the principle of conservation of biological diversity and ecological integrity, and the principle of improved valuation, pricing and incentive mechanisms.

It is important to recognise, that while the EP&A Act requires that the principles of ecologically sustainable development be encouraged, it provides other objects that must equally be included in the decision-making process for the subject proposal. The Department has considered the need to encourage the principles of ecologically sustainable development, in addition to the need for the proper management and conservation of natural resources such as water resources; and the protection of the environment including threatened species in Section 5 of this report. The agency and community consultation undertaken as part of the assessment process (see Sections 3 and 4 of this report), address objects 5(b) and (c) of the Act.

3.6 Nature of the Recommended Approval

The Department has the key issues associated with the project and is satisfied that the proposal in its entirety can be constructed and operated to meet acceptable environmental standards. Consequently, the Department has recommended full project approval for the project subject to stringent environmental performance standards including air quality, noise and vibration limits; aviation hazard design requirements; and biodiversity offset measures.

4. CONSULTATION AND ISSUES RAISED

4.1 Public Submissions

No public submissions were received on the project during the exhibition of the Environmental Assessment.

4.2 Submissions from Public Authorities

Eight submissions were received from public authorities: Commonwealth Department of Defence, AirServices Australia, NSW Department of Environment and Climate Change, NSW Department of Water and Energy, NSW Department of Lands, NSW Roads and Traffic Authority, TransGrid and Wentworth Shire Council. The Submission from AirServices Australia was received after the Proponent had prepared a Submissions Report. None of the agencies objected to the project, however raised issues for the Department's consideration as summarised below.

Commonwealth Department of Defence (DoD)

- the project is located outside any areas affected by the Defence (Areas Control) regulations;
- as the exhaust plume associated with the project is greater than 110 meters above ground level the project will need to be assessed by the Commonwealth Civil Aviation Safety Authority (CASA); and
- DoD has no objection to the project subject to a hazard assessment being undertaken of the project by CASA.

AirServices Australia

- Noted that the plume rise impact is likely to adversely impact on the flight path to Mildura Airport, which would require significant changes to instrument flight procedures to resolve.

NSW Department of Environment and Climate Change (DECC)

- Air quality impact assessment considered satisfactory and in accordance with the *Approved Methods and Guidelines for the Modelling and Assessment of Air Pollutants in New South Wales* (DECC, 2005);
- the greenhouse gas impacts of the project is considered acceptable on the basis that:
    - the fuel type is likely to represent best practice in the subject location given the unavailability of a commercially viable alternative fuel sources (such as natural gas) and compared to a hypothetical alternative of power station development at the next nearest source of commercially available natural gas and associated transmission line construction to connect to the grid (including associated environmental losses of energy); and
    - the unit size proposed is likely to represent best practice for the given constraints of the site and proposed operating role at a range of loads;
- recommends that the Proponent's commitments in the Environmental Assessment to participate in greenhouse gas mitigation programs be formalised as part of the Statement of Commitments;
- recommends an appropriately sized area of land which provides biodiversity offsets on a 'like for like' basis to the habitat values proposed to be disturbed on site, be finalised in consultation with the DECC; and
- is satisfied that an Environmental Protection Licence under the *Protection of the Environment Operations Act 1997* can be issued for the project and recommends conditions of approval in relation to discharges to water, noise, air quality and biodiversity for the Department's consideration.
- Noted that the greenhouse gas output of the power station would be regulated at the Commonwealth level as a part of a National emissions target and trading scheme when the Federal Government's Carbon Pollution Reductions Scheme (CPRS) comes into affect in 2010 as planned.

NSW Department of Water and Energy (DWE)

- raised concerns regarding the security of water supply for the operation of the project; and
- recommended a condition of approval requiring the Proponent to consult with DWE prior to the commencement of construction regarding potential licence exemptions applying to the proposal under the Water Management Act 2000 in relation to the construction of water storage dams on site for operational erosion and sediment control.

NSW Department of Lands (DoL)

- required further clarification in relation to:
  - the impacts of the project on nearby Box swamp habitat; and
  - on how large rainfall events (and associated runoff and inundation) would be managed during the operation of the project.

NSW Roads and Traffic Authority (RTA)

- noted that the RTA's concurrence would be required under Section 138 of *the Roads Act 1993* for any works within the Arumpo Road reserve, prior to the commencement of construction; and
- raised no objection to the project subject to:
  - operation site access from Arumpo Road being designed consistent with RTA requirements in consultation with the RTA (including appropriate road drainage); and
  - appropriate traffic control measures being implemented during the construction of the project.

TransGrid

- noted that in 2002/ 2003 TransGrid had published two documents seeking comments on options to mange potential limitations in the transmission network in south western NSW, which were anticipated at times of high demand in Victoria;
- noted that since the publishing of the report, the Victorian Energy Networks Corporation has advised TransGrid that a particular level of Victorian import capability was not required to be maintained. On this basis TransGrid now considered that the network limitations envisioned in 2002 and 2003 can be managed by limiting power flow s to Victoria;
- as a result of the above, noted that the proposed power plant would not defer any planned transmission developments in NSW and is not essential to the continued reliable operation of the transmission network in the area; and
- noted that the power station could be of assistance should there be extensive transmission network problems (beyond those considered by TransGrid when planning and developing its transmission systems) and to provide day to day support to the National Electricity Market (particularly supporting power flows to South Australia via the existing interstate inter-connector the 'Murraylink').

Wentworth Shire Council

- noted that it cannot guarantee water supply for the operation of the project through the Buronga Water Treatment Plan and recommended that the Proponent investigate alternate water supply sources to supply the power station.

4.3 Submissions Report

Upon review of the public authority submissions received on the project, the Department directed the Proponent to prepare a Submission Report to respond to the issues raised. The Proponent submitted a Submissions Report (including finalised Statement of Commitments) in November 2008. The Proponent's response to submission did not lead to any changes to the project, as such a Preferred Project Report was not prepared. The Submissions Report was made publicly available on the Department's website.

4.4 Department's Consideration

The Department's consideration of issues raised in agency submissions is summarised in Table 1.

Table 1: Department's consideration of issues raised in Submissions

Issue	Department's Consideration
Greenhouse Gas	Section 5.1
Flora and Fauna	Section 5.2
Water Supply	Section 5.3
Aviation Safety	Section 5.4
Operational Site Water Management	The Department is satisfied that these matters have been adequately addressed in the Proponent's Submissions Report and / or Statement of Commitments.
Traffic and Access	

5. ASSESSMENT OF ENVIRONMENTAL IMPACTS

After consideration of the Environmental Assessment, submissions, Submissions Report and addendum, and Statement of Commitment the Department has identified the following key environmental issues associated with the proposal:

- Project Justification;
- Flora and fauna;
- Water supply; and
- Aviation safety.

The Department is satisfied that the other issues associated with the project would meet acceptable environmental standards and can be adequately addressed by the Proponent's Statement of Commitments. In particular the Department notes that:

- the Proponent has undertaken a conservative operational **air quality impact assessment** in accordance with the *Approved Methods and Guidelines for the Modelling and Assessment of Air Pollutants in New South Wales* (DECC, 2005), which indicates that the emission contributions associated with the project would be generally small and within relevant air quality criteria at nearest sensitive receivers. In addition, due to the large distance to the nearest sensitive receptor (approximately three kilometres to the south west) the Department is satisfied that construction dust impacts are unlikely to be significant and can be managed through the implementation of standard measures such as wetting down of disturbed areas and covering truck loads etc.;
- the Proponent has undertaken a conservative operational **noise impact assessment** in accordance with the *NSW Industrial Noise Policy* (DECC, 2000), which indicates that an operational noise gaol of 35 dB(A) L_{Aeq} (i.e. 5 dB(A) above the assumed lowest background noise level in the INP) and the sleep criteria goal of 45 dB(A) $L_{A1\ (1\ minute)}$ can be comfortably achieved at nearest sensitive receivers without the need for mitigation due to their large distance from the proposal site. Furthermore, due to the minor operational traffic volumes associated with project, the Department is satisfied project would not noticeably increase traffic noise levels above background traffic noise. In addition, the Department is satisfied that due to the large distance to the nearest sensitive receptor, the construction noise and vibration impacts associated with the project are unlikely to be significant and can be managed through the implementation of standard measures such as the appropriate positioning of plant and equipment and selection of 'quiet' or 'low vibration' equipment etc.;
- based on the **visual impact assessment** undertaken by the Proponent, the Department is satisfied that the project would not have a significant visual impact on the receiving environment due to the isolated nature of its location (i.e. large distance from nearest fixed receptors such as dwellings and public view points such as Lake Gol Gol), the transient nature of views from vehicles travelling along Arumpo Road, and because the project would be consistent with the industrial character of the existing TransGrid substation location directly adjacent. Proposed mitigation measures including landscaping and appropriate urban design (to be consistent with surrounding landuse) will help further minimise visual impacts;
- there would be no **Aboriginal or European heritage** constraints to development as site surveys have identified no heritage items on site. With respect to Aboriginal heritage, the Department is satisfied that the Proponent has undertaken a robust assessment considering both archaeological and cultural values and in consultation with relevant stakeholders consistent with the *Interim Guidelines for Aboriginal Cultural Heritage Assessment and Community Consultation* (DECC, July 2005); and
- based on the **traffic impact assessment** undertaken by the Proponent, the Department is satisfied that the worst case operation traffic volumes associated with the project (associated with water and distillate delivery and minor operational personnel requirements) would be minor (i.e. approximately two trucks per hour) and well within the capacity of Arumpo Road, which based on road geometry and other factors is estimated to have a vehicle capacity of approximately 420 vehicles per hour (compared to existing traffic volumes of 329 vehicles a day). Given existing traffic volumes and road capacity, the Department is similarly satisfied that the potential construction traffic impacts associated with the project are unlikely to cause significant traffic disruption and can be managed through the implementation of standard construction traffic controls.

5.1 Project Justification

Issue

The Proponent has identified the key need for the project as being to help meet growing demand for peak electricity generation in NSW and in particular the forecast shortfall in peak electricity generation capacity in NSW by 2014/ 2015 (some 283 megawatts) as identified by the National Electricity Market Management Company (NEMCO) *Statement of Opportunities.* The Proponent has further argued that the project would have benefits for regional supply security by providing a source of local embedded generation which would reduce the need for electricity been sourced from elsewhere and associated costs of transmission losses.

The Proponent has suggested that forecast timing of shortfalls in peak electricity supply by 2014/ 2015 may be an underestimation noting that the impact of drought conditions and associated water restrictions on existing peak generation capacity in NSW (through the Snowy Mountains hydro-generation scheme) is likely to bring forward the date at which new peak power resources would required; making the need for investment in new peak power generators further imperative. The Proponent has further suggested that the project's location at a strategic point within the National Electricity Market transmission network servicing far western NSW and inter-state, as well as the quick start up (fast response) capabilities of the plant would provide key advantages in supporting the National Electricity Market and regional supply security particularly during scenarios of high transmission stress (e.g. when NSW reserves are under most pressure through high demand as well as emergency related outages to transmission networks or generators including those caused by bushfire and lighting). NSW is already a net importer of electricity and the Proponent suggests that without local imbedded generation options, NSW would be forced to continue importing electricity in just such situations when energy prices within the National Electricity Market are likely to be at their highest, which in the case of NSW government-owned electricity retailers would mean that the cost of high energy prices is borne by NSW taxpayers. The Proponent has further suggested that the regional network support role of local imbedded generation could also help reduce cost to the State by deferring the need for State investment in transmission and/ or generation asset augmentation that may otherwise have been required.

The NSW Government's *Energy Direction Green Paper* (December 2004) identifies that open cycle gas-fired power generation is a cost-effective method of peak electricity generation and has timing advantages in being able to be constructed and commissioned in a relatively short period. The Proponent has identified that natural gas is not a feasible supply source for the power station as there is no commercially available quantities available in the area and alternative fuels (such as bio-fuel) would be similarly unviable due to the technical and warranty constraints placed on the power station. Natural gas is piped some 325 kilometres from the Moomba to Adelaide pipeline at Angaston in South Australia to the township of Mildura in Victoria, which is located within a short distance (approximately 13 kilometres) of the site. However, the last 138 kilometres of this pipeline from Berri, South Australia to Mildura is constructed of a small diameter pipeline which is sufficient to cater for the modest natural gas requirements of Mildura but would not be able to provide the volumes of gas required for the project; and the construction of a new pipeline to Berri would not be within the commercial scope of the project. Proponent has identified that in the absence of commercial gas supply, distillate fired technology constitutes the next best alternative for cost-effective electricity generation in response to peak market demand including similar construction times as a gas-fired plant.

The *Technical Guidelines - Generator Efficiency Standards* (Australian Greenhouse Gas Office, 2006) identifies that open-cycle gas generators run on natural gas would produce (on average) up to 25% less greenhouse gas emissions (kilograms of CO_2 equivalent per megawatt hour) than the same plant run on distillate fuel. To obtain the best achievable greenhouse gas outcome for the plant, the Proponent has proposed to run the plant utilising three small 50 megawatt generators rather than one large up to 150 megawatt generator. The Proponent has suggested that the smaller 50 megawatt units would in fact be more efficient (i.e. generate less greenhouse gas per megawatt of energy produced) than one large generator when operating under a range of loads, particularly at the lower end of loads, which the Proponent anticipates the most likely operating scenario for the plant given its fast-response National Electricity Market support role, particularly in period of extensive transmission stress.

The Proponent suggests that the type of plant proposed constitutes the best achievable practice for the location (and associated fuel constraints) and the operational role of the plant (fast-response peak). In support of its position, the Proponent has undertaken a greenhouse gas assessment to demonstrate that under typical operating scenarios (i.e. operation under less than full load), the greenhouse gas emissions associated with the

project (0.951 kilograms of CO_2 equivalent per megawatt hour) would remain lower than the average emissions produced by electricity generators in NSW as identified by the NSW Greenhouse Gas Reduction Scheme Pool Coefficient for NSW (i.e. 0.967 kilograms of CO_2 equivalent per megawatt hour for 2009). It is noted that should the plant operate under full load, this would result in lower greenhouse gas emissions (0.885 kilograms of CO_2 equivalent per megawatt hour) than under the 'typical' scenario. This is due to the higher emissions produced during the start up and shut down of the plant which means that more greenhouse gas per megawatt of electricity supplied to the grid would be produced if the plant has to be started up to generate low outputs of electricity (i.e. operation under less than full load) versus if it had to be started up and shut down to produce a larger output of electricity (i.e. full load). Notwithstanding the above, the Proponents has identified that the plant would be designed to have dual-fuel capacity for conversion to natural gas should this fuel source become commercially available in the future.

Consideration

In considering the need and justification for the project, key matters considered by the Department were the necessity of the project in terms of electrical supply security balanced with the greenhouse gas impacts of the project (noting that distillate fuel is considered a less greenhouse efficient fuel than other alternatives such as natural gas). Specifically in relation to the electrical supply security, the Department notes that in its Environmental Assessment, the Proponent particularly highlighted the need for the project with respect to addressing regional supply constrains in south western NSW as identified in a 2003 publication by TransGrid (the transmission network operator in the region). However, in its submission on the project, TransGrid advised that the proposed power plant is not essential to the continued reliable operation of the transmission network in the area and would not defer any planned transmission developments in NSW, clarifying that the constraints identified in 2003 can now be managed through demand management of electricity to Victoria. Based on TransGrid's position, the Department was concerned that the Proponent had not sufficiently established the need for the project on electricity supply grounds to justify its operation (and associated greenhouse costs from the use of distillate fuel). However, in response to TransGrid's position, the Proponent reiterated its view that imbedded local generation would benefit regional supply security such as to defer (or obviate) the need for transmission network development in the area – specifically the planned upgrade by TransGrid of the Darlington Point to Buronga 220 kilovolt transmission line.

In regard to the above key considerations and taking into account apparent conflicting positions by the Proponent and TransGrid, the Department commissioned environmental consultants Arup Pty Ltd (Arup) to undertake an independent review of the justification for the project on electrical systems and grounds greenhouse gas.

Independent Review –Electricity Systems

The Arup review confirmed that the principal purpose of the project would be to provide market based peak load generation to the National Electricity Market. With respect to regional support role, the Arup review noted that a key aim of the Darlington Point to Buronga 220 kilovolt transmission line upgrade appears to be to reduce the likelihood of extensive transmission network problems that is those situations of transmission stress, which the Proponent has identified the Buronga proposal could respond to. On this basis, the Arup review considered that the upgrade of the Darlington Point to Buronga 220 kilovolt transmission line would provide an as feasible option for meeting regional support objectives as the Buronga plant and would constitute a less emissions intensive solution for providing regional support to the area rather than the power plant. This is because the transmission line would reduce total emissions by improving transmission losses and have a lower emissions intensity in comparison to distillate fuel generation.

Independent Review –Greenhouse Gas

The Arup review confirmed that the Proponent had undertaken a technically appropriate greenhouse gas assessment of the project. However, Arup considered that the greenhouse gas predictions presented by the Proponent were unlikely to represent the worst case emissions associated with the project noting that the plant could be operated at lower load profiles than presented under the "typical scenario". On this basis, Arup considered that the emissions intensity of the project could be higher than presented by the Proponent. Arup also considered that as the NSW pool coefficient is not representative of the emissions intensity of peak power plants in NSW it does not form a reasonable basis for the comparison of greenhouse gas emissions generated by the proposal and would not allow determination on whether the plant would increase or decrease the emissions intensity of the NSW. Arup considered that in reality, the plant would displace another marginal peak generator in

the National Electricity Market and therefore comparison with the emissions intensity of such a generator would provide the most accurate picture on whether the plant would add to or reduce the emissions intensity of peak electricity generation in NSW. In this regard, Arup considered that given that the majority of peak generators in NSW (with the exception of a single 50 megawatt gas generator run on distillate fuel in Broken Hill) comprise natural gas and hydro-generators, the plant was likely to displace a less greenhouse gas intensive generator in the National Electricity Market and therefore likely to on balance increase rather than reduce the emissions intensity of the NSW grid. Notwithstanding the above, Arup considered that due to the proposed low operating of the project (only up to 10% of the year) the greenhouse gas emissions of the plant are unlikely to be significant on an absolute basis.

The Proponent in its response to the Arup review disagreed with Arup's view the that plant would displace less greenhouse gas intensive peak generators in the National Electricity Market noting that due to the lower operating cost of hydro and gas generators per megawatt of electricity generated compared to the distillate fired plant, these generators would be able to dispatch electricity to the grid in response to lower energy prices ($100-$300 per megawatt) than the would be possible for the Buronga plant. To cover its operating costs, the Buronga plant would only be able to economically dispatch electricity to the grid when energy prices are around $300-$400 per megawatt, meaning that other less greenhouse gas intensive peak generators would not automatically be displaced as a result of the project.

Department's Consideration

The Department concurs with the conclusions of the independent review that the main purpose of the project would be to provide market based peak load generation to the National Electricity Market rather than provide significant benefits with respect to regional supply security. In this regard, the Department considers that the project is unlikely to defer or obviate the need for future transmission upgrade on the grounds of regional supply support. However as identified in the Arup review, the project is well placed to supply peak electricity generation to the National Electricity Market. In this regard, the Department considers that helping to meet shortfalls in peak electricity reserves is an important benefit in itself and that the project would be justified on this basis.

Whilst the project would not directly benefit major load centres (the main sources of peak demand) the Department accepts that embedded local generation in different parts of the State (rather than necessarily concentrated at the load centres) would help in the overall functioning of the National Electricity Market by enabling local demand to be met in the first instance by local sources and thereby reducing the need for electricity to be sourced and diverted from elsewhere and associated burden on transmission networks as well as costs of transmission losses. The Department also accepts the Proponent's deliberate intention of locating the proposal away from the main load centres of Newcastle-Sydney-Wollongong to avoid impacts to already overburdened air-sheds, as a benefit of the project.

With respect to greenhouse gas emissions, the Department recognises that the Arup review has raised some questions on whether or not the project would lead to an increase in emissions intensity in NSW. Notwithstanding, the Department recognises that (as acknowledged by Arup), in absolute terms the greenhouse gas output of the project is unlikely to be significant due to the low operating time of the project (i.e. only up to 10% of the year), and would not in itself constitute sufficient grounds for refusal of the project. The greenhouse gas emissions are small enough such as would not normally warrant specific mitigation. Notwithstanding, the Department notes that the project as with other generators in the NSW energy sector would be subject to regulation by the Federal Government's Carbon Pollution Reductions Scheme (CPRS), a National emissions target and trading scheme, when it comes into effect in the future. The CPRS would provide a market based mechanism for regulating greenhouse gas generators, setting a level playing field for all generators though standard carbon pricing which would in affect result in less carbon efficient generators being out-competed by those with greater carbon efficiencies. The Department notes that the DECC has not raised any objection to the project on greenhouse gas grounds.

In summary, he Department considers the project to be justified on the grounds of peak electricity supply and considers the greenhouse gas impacts of the project to be acceptable.

5.2 Ecological Impacts

Issue

The project would result in the removal of approximately four hectares of native vegetation (i.e. the entire site), consisting of Belah Woodland, Chenopod Mallee, Chenopod Shrubland and Black Box Woodland. In addition, the project would result in the removal of a man made dam which provides ephemeral wetland habitat. Whilst none of vegetation communities to be removed comprise endangered ecological communities, the Proponent's assessment identified that the vegetation and wetland habitat to be removed is likely to comprise potential habitat for at least two threatened flora species, the Yellow Swainson-pea and Bitter Quandong (although these were not detected on site) and up to 13 threatened fauna species, three of which (the Hooded Robin, the Little Pied Bat and the Large-Footed Myotis) were recorded on site.

Consideration

Given that the project would impact on a range of threatened species habitat, the Department and DECC required that the Proponent provide an on appropriate biodiversity offset which would compensate for the biodiversity values lost on site on a 'no net loss' basis. As part of its submission report the Proponent indicated that it has commenced consultation with the DECC to develop an appropriate offset for the project in line with DECC recommendations; however did not provide any details on the options under consideration.

Following concerns raised by the Department regarding the lack of detail regarding offset options the Proponent provided the Department with the following details of the options under consideration:

- the purchase of land containing similar vegetation communities to the site (four hectares or greater in size depending on habitat quality), as close as possible to the proposal site, with ongoing conservation of the site to be secured through a mechanism such as a Voluntary Conservation Agreement;
- the purchase of land on a "like for like" basis (four hectares or greater in size depending on habitat quality) adjacent to Mallee Cliffs National Park located approximately 30 kilometres to the east of the site and transferring landownership to the DECC; or
- progressing an appropriate offset via the DECC biobanking scheme.

The Proponent has advised the Department that the DECC has indicated in-principal support to the above approach subject to the details of the options being further confirmed in consultation with the DECC.

The Department is satisfied that subject to appropriate offset, the proposal would not result in significant biodiversity impacts. In relation to the offset mechanisms proposed by the Proponent the Department accepts that these constitute available and feasible options for offsetting the biodiversity impacts of the project. Specifically, the Department notes that the vegetation communities recorded on site are those widely available in the surrounding area and therefore considers that the purchase of land with "like for like" biodiversity value would be a feasible option. The Department also recognises that the DECC has not raised any objections to this approach. On the above basis, the Department is satisfied that the biodiversity impacts of the project can be appropriately offset and as such would not result in unacceptable biodiversity impacts. To ensure that the offset measures are finalised prior to any disturbance at the site, the Department has recommended a condition of approval requiring the Proponent to finalise its offset measures in consultation with the DECC and to the satisfaction of the Director-General prior to the commencement of construction.

5.3 Water Supply

Issue

Water would be required during the operation of the plant for the purposes of inlet air cooling, the control of nitrogen oxide generation (i.e. through water injection at the combustion chamber), domestic uses, site and equipment maintenance and fire fighting. The Proponent has estimated that plant is likely to require an average of 20 mega litres of water per annum, up to a maximum of 40 mega litres per annum (ML/a) under worst case scenarios of (i.e. maximum production and very hot summers which would require additional water for air inlet cooling).

Consideration

The Proponent indicated in its Environmental Assessment that the majority of water required during the operation of the project would be sourced from Buronga Sewerage Treatment Plant (STP) which is operated by Wentworth Shire Council (and trucked onto site) as well as supplemented from onsite stormwater and rainwater capture. However, in its submission on the project Council raised significant concerns regarding the proposed source of water, noting that Council was unlikely to be able to guarantee water supplies for the project from the STP and recommending that the Proponent investigate alternate sources of water to supply the plant.
In response to concerns raised by Council, the Proponent indicated in its submissions report that it had commenced discussions with alternative water supply sources to secure the operational water supply requirements of the project, however (as with biodiversity offset measures) provided limited details of these water sourcing options to demonstrate that the operational water requirements of the project can be sustainably sourced for the life of the project.

The Department considers that the availability of water to supply the operation of the power plant to be a critical issue in the assessment of the viability of the project. Particularly when considering existing and continuing drought conditions in western NSW, the Department considers it imperative that the Proponent be able to demonstrate that there are available water sources to sustainable supply the power station during its life, without impacting on existing or forecast growth in the area. Following concerns raised by the Department regarding the lack of detail regarding water supply sources the Proponent has advised that the water requirements of the project can be sourced from the Lower Murray Water Authority (a water statutory authority of the Victorian government) or by private sector water brokerage operators such as Western Murray Irrigation Limited (which has been operating for the past 14 years) or the Sunraysia Water Exchange (operating since 1991).

The Proponent has provided the Department with the following details of the water volumes available from these authorities for use by the project:

- the Lower Murray Authority's Koorlong Waste Water Treatment Plant approximately 30 kilometres from the site, which has an existing capacity of 1205 ML/a and following upgrade (begun in 2007 expected to be competed in 2009) is anticipated to have a capacity of 4325 ML/a;
- the Lower Murray Authority's Mildura Waste Water Treatment Plant, approximately 13 kilometres from the site, which is expected to have a reduced capacity following the upgrade of the Koorlong plant of between 912 to 1095 ML/a;
- Western Murray Irrigation Limited which has averaged water deliveries of approximately 27,400 ML/a over the last four years; and
- the Sunraysia Water Exchange which currently has permanent high security NSW water entitlement for sale of approximately 265 ML and Victorian entitlements of approximately 164 ML.

The Proponent has advised that preliminary negotiations with Lower Murray Water Authority and Western Murray Irrigation Limited has indicated that both these authorities would be willing to enter into agreement with the Proponent to supply the water requirements for the project in the long term. In this regard, the Proponent has expressed preference for sourcing water from waste or recycled water supplies (such as the Lower Murray Water Authority Koorlong or Mildura waste water treatment plants) rather than potable water supplies which would be in direct competition with available water resources to meet existing and future demand from population growth.

Based on the options identified by the Proponent, the Department is satisfied that there are feasible water supply options available to sustainable supply the operational requirements of the plant for the project life. In this regard, the Department supports the Proponents expressed preference for sourcing water from recycled water supplies noting that this would avoid placing additional pressure on available resources to meet potable demand in the surrounding region. On the above basis, the Department is satisfied that the water requirements of the project would not place an unacceptable constraint on availably water supplies in the region.

5.4 Aviation Safety

Issue

The project site is located approximately 21 kilometres from Mildura Airport and approximately 25 kilometres from a gliding field. Exhaust plumes from combustion sources (such as stack emissions from power stations) have the potential to impact on aviation safety by causing turbulence and affecting aircraft handling. The Commonwealth

Civil Aviation Safety Authority's (CASA) Advisory Circular *Guidelines for Conducting Plume Rise Assessments* (June 2004), requires that the plume rise associated with a combustion source should not exceed a critical vertical velocity of 4.3 metres per second (i.e. the velocity that is likely to affect aircraft) at the heights which are frequented by aircraft (i.e. the airspace of aerodromes and at approximately 110 metres above ground level in areas which are at least 15 kilometres distance from an aerodrome).

The Proponent has undertaken a plume rise assessment consistent with CASA guidelines considering conservative assumptions including plant operations at full load and temperature at every hour of the year and the enhanced affects of plume rise from all three stacks operating simultaneously. The assessment indicates that the plume rise associated with the project would exceed the vertical velocity criteria of 4.3 m/s at a height at or above 110 metres approximately 2.5% of the year. The maximum vertical plume height and horizontal extent at which the velocity criteria of 4.3m/s would be exceeded is predicted to be at 382 metres and 84 metres, respectively. CASA did not make a submission on the project. However, a submission received from AirServices Australia raised concerns regarding the predicted intrusion of the plume impacts on local airspace (specifically the flight path into Mildura Airport).

Consideration

Since the Environmental Assessment for the project was exhibited, the Department understands that CASA has commenced a process of reviewing and updating its assessment methodology for undertaking plume rise assessments. However, in the absence of this revised methodology being publicly available, the Department considers that the assessment undertaken by the Proponent in accordance with CASA's current published material to be acceptable for the purposes of assessment.

The Department considers the Proponent's assessment (which considers continuous operations at full load throughout the year) to be highly conservative and likely to overestimate the impacts of the project. Noting that the proposed operating frequency of the power plant would be up to a maximum of 10% of the year and then at a range of loads less than the full load and temperatures modelled, the Department considers that the real plume rise impacts associated with the project are likely to be significantly less than the worst case impacts predicted. Notwithstanding even accepting the worst case impacts, the percentage of time that the criteria is likely to be exceeded at a height at or above 110 meters (i.e. 2.5% of the year), is considered to be low and unlikely to result in a significant risk to aviation safety. In realty the Proponent's assessment indicates that for 97.5% of the time the plume rise associated with the project would remain within the critical criteria at the relevant height. The Department considers that the real risk of a plane flying above the power station at the critical height and at the same time as the plume rise exceeds the relevant criteria to be low.

Notwithstanding, the Department acknowledges that the plant is likely to pose some risk to aircraft safety and considers that the best solution would be if the source of hazard could be avoided altogether by pilots. In this regard, the Department considers that the Proponent can work with CASA and AirServices Australia to ensure that a danger area is proclaimed across the extent of the worst case dimensions of the project's plume rise in aviation charts. AirServices has indicated that the process of changing instrument flight procedures would be complex and likely require significant lead time however would not be insurmountable. Whilst CASA has not provided a formal submission on the project, the Department notes that this regulatory approach has been implemented with the agreement of this agency on other recently approved power station projects (such as the Bamarang power station - Stages 1 and 2) which involved a considerably larger plume extent than the current project. On this basis the Department is satisfied that the aviation hazards associated with the project can be mitigated to achieve an acceptable outcome. The Department has recommended a condition of approval requiring the Proponent to consult with CASA and AirServices Australia to ensure that all necessary changes to flight instrument procedures and hazard identification are made prior to the commencement of construction, including consideration of CASA's revised plume rise assessment procedures where relevant.

6. CONCLUSIONS AND RECOMMENDATIONS

The Department has assessed the Proponent's Environmental Assessment, Submissions Report and Statement of Commitments as well as submissions received by public agencies and considers the key issues associated with the proposal to be project justification considering greenhouse gas implications of the use of distillate fuel, biodiversity impacts, water supply and aviation safety. All other issues are considered to have been satisfactorily addressed in the Proponent's Statement of Commitments.

With respect to the need and justification for the project, the Department commissioned an independent review into the justification of the project on electrical systems and greenhouse gas impact grounds. With consideration to the conclusions of the independent review, the Department has determined that the project is justified on the grounds that it would help meet forecast deficits in peak generation reserve in NSW and is satisfied that the project would not result in significant greenhouse gas emissions.

With respect to biodiversity, water supply and aviation hazard impacts, based on its assessment the Department is satisfied that:

- subject to appropriate offset the project would not result in significant and unacceptable biodiversity impacts;
- the operational water supply requirements of the project can be sustainable sourced so as to not comprise existing or future growth needs; and
- the project can be designed to avoid posing a significant risk with respect to aviation hazards.

On balance, the Department considers that the project is in the public's interest and has recommended full project approval for the project subject to stringent environmental performance standards including air quality, noise and vibration limits; aviation hazard design requirements; and biodiversity offset measures.

APPENDIX A – RECOMMENDED CONDITIONS OF APPROVAL

APPENDIX B – STATEMENT OF COMMITMENTS

APPENDIX C – INDEPENDENT REVIEW

APPENDIX D – RESPONSE TO SUBMISSIONS

APPENDIX E – ENVIRONMENTAL ASSESSMENT