



International Power



EXECUTIVE SUMMARY

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Introduction

International Power (Australia) Pty Ltd (IPRA) is seeking Project Approval to construct and operate a gas turbine peaking power plant near Parkes, NSW referred to as 'Parkes Peaking Power Plant'.

Subject to final plant selection, three gas turbines, each of between 40MW and 50MW capacity, would be installed on land adjacent to the existing TransGrid Substation on the Condobolin Road approximately 10 kilometres west of Parkes.

With a nominal output of between 120MW to 150MW, the Parkes Peaking Power Plant would normally operate on an as-required, intermittent basis for a total maximum period of up to 10% of any year. The facility would be fuelled by natural gas, sourced via a new underground pipeline lateral from the Central West Pipeline at Parkes. However, the gas turbines would have "dual fuel" capability allowing the use of distillate as a back up fuel in the event of interrupted or constrained gas supply.

The Parkes Peaking Power Plant as proposed by IPRA is a cost efficient and effective regional generation solution for the National Electricity Market (NEM) constraint scenarios arising from growth in peak electricity demand in NSW, which will soon exceed existing generating capacity.

The Minister for Planning is the consent authority for the Parkes Peaking Power Plant as determined by the relevant legislation. This Environmental Assessment has been prepared in accordance with the requirements of Part 3A of the Environmental Planning and Assessment Act 1979 to provide the Minister for Planning with the required information to determine the environmental impacts and benefits of the Parkes Peaking Power Plant. This Executive Summary provides a brief description of the key outcomes of the environmental assessment as detailed in each of the chapters.

Project Need

Peak power demand is growing faster than base load demand, which necessitates investment in peaking power generation plant as discussed in **Chapter 2**. The Parkes Peaking Power Plant Project is consistent with NSW Government policy, which is to promote private sector investment in new electricity generation assets.

Over the past several years, the NEM operator NEMMCO has highlighted the growth of electricity demand across NSW and, in particular, the growth of summer and winter peak demands. In its most recent "*Statement of Opportunities 2006*" NEMMCO predicted an annual NSW peak demand growth of up to 3.2% in summer load and up to 2.7% in winter load. This is reasonably consistent with its most recent "*Statement of Opportunities 2007*" (SOO 2007) released on 31 October 2007 which predicts¹ an annual NSW peak demand growth of 2.3 – 2.8% (summer) and 1.5 - 2.8% (winter).

Hitherto, NSW has generally operated coal-fired base load plant with peak demand met by hydro-generation from the Snowy Mountains plant or by electricity imported from interstate. Drought conditions exacerbate the supply situation when hydro-generation is limited or curtailed by water shortages. The NEM-wide growth of peak demand has meant that the opportunity to import is now rapidly decreasing.

¹ NEMMCO *Statement Of Opportunities 2007* - Tables 3.10 & 3.11

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Electricity demand growth of this order also places existing high voltage transmission assets at risk in reliably delivering power to the relevant load centres. Consequently, the Parkes Peaking Power Plant Project is also, in part, a response to the "Request For Proposals" (RFP) issued in October 2006 by TransGrid, which described electricity constraint scenarios in the Cowra / Forbes / Parkes region of central western NSW and sought, inter alia, generation proposals as alternatives to augmentation of its high voltage transmission systems.

IPRA has formally responded to TransGrid's *"Request for Proposal No. 123/06 for Non-Network Solutions in the Western and Central Western Area of NSW"* by proposing to construct the nominal 120MW to 150MW electricity generation facility at Parkes. The proposed site at Parkes is a strategic location for peaking power generation, being adjacent to an existing substation on the 132kV high voltage network servicing Central NSW.

Except for emergencies as allowed in its operating licence, the Parkes Peaking Power Plant would operate on an as-required, intermittent basis for a total maximum period of up to 10% of any year to provide:

- NEM and NEMMCO support at times of high inter-regional demand and/or constraints;
- Transmission network support to ensure reliability and quality of electricity supply; and
- Security of local electricity supply at times of system (planned or accidental) shut-down.

The multi-unit Parkes Peaking Power Plant concept offers:

- significant mitigation of growing peak electricity demand within NSW; and
- significant regional reinforcement in the event of extensive transmission system problems.

The facility would be capable of providing the full 120MW to 150MW of capacity until such time as the transmission system can be stabilised, at which point Parkes Peaking Power Plant would resume its normal peaking role.

Gas fired peaking plants have two thirds the greenhouse emissions of the traditional coal fired base load power plants. One particular environmental benefit of the gas-fired plant proposed by IPRA for Parkes is that generation at Parkes will alleviate the need for coal-fired plant to run when transmission system problems create a regional capacity shortfall.

Alternatives

A range of alternatives were considered as presented in Chapter 3 of this Environmental Assessment. The natural gas-fired gas turbines operating in open cycle mode as proposed are considered to be the only practical option when compared to alternatives such as hydro, wind, combined cycle gas turbines, reciprocating gas engines and coal fired generation for meeting the peak electricity demand and network support requirements described above.

The "do nothing" option was not considered by IPRA to be an option in light of the NSW Government Green Paper, the NEMMCO *SOO 2006 and 2007* load growth forecasts for NSW and the TransGrid *Needs Statement* (March 2006) and *Request For Proposals* (October 2006) as discussed in **Chapter 2**.

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In addition to desktop studies and field investigations, extensive consultation has been undertaken with NSW regulatory agencies, in particular with officers from DoP, DECC and DoH in regard to environmental aspects of the proposal. The outcome of this consultation is the proposal presented in this Application.

Provided that the project is commercially viable, is consistent with State and Local Government policy and satisfies relevant Acts and prescribed Regulations (zoning, environmental, heritage etc), IPRA considers that the key “alternatives” parameters are associated with cost effective plant and site selection. These factors comprise:

(A) Plant selection, these being:

- proven plant technology and “buildability” using local industries and other resources;
- satisfying environmental and socio-economic community requirements;
- plant sizing to satisfy the range of network support scenarios envisaged;
- plant capability for dual firing of gas with seamless transition to back-up distillate firing;
- available fuel(s) and reliability of fuel supply;
- plant capability to meet power quality, responsiveness, reliability and security parameters;
- procurement lead times to meet project deliverability requirements;
- whole-of-life operational and maintenance requirements;

(B) Site selection, these being:

- land availability;
- convenient network access for grid connection;
- environmental and other community impacts;
- proximity to electricity load centre(s);
- access for gas connection and a supply centre for distillate fuel;
- access to water for plant process uses;
- other local resources and infrastructure such as communications, transport access, etc which impact upon construction and ongoing operation.

Plant

Desktop studies were carried out to review plant characteristics best suited to providing both market and network support services at a commercially viable price. These very quickly centred on the plant type proposed in this application for the reasons set out in Chapter 3 (Section 3.1)

NO_x air emissions would be controlled through water injection being the most technically and cost efficient control mechanism to meet the required air emission standards for the operating regime envisaged. The modelling undertaken using conservative “Worse Case” emission scenarios demonstrates that other prescribed air emissions (including carbon monoxide, particulates, volatile organic compounds and so on) would fall well within Regulatory limits.

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Site Location

As explained in Chapter 2 (Section 2.2.6) it is clear, from a regional perspective, that locating the proposed peaking plant at Parkes optimises the network support outcomes sought by TransGrid while still providing NEM management support opportunities to NEMMCO and NEM participants.

Desktop studies identified two primary sites and two secondary sites in reasonable proximity to the Parkes load centre, the high voltage grid and natural gas from the Central West Pipeline as the preferred fuel option. IPRA conducted field visits to these sites - including a review of local Parkes resources and infrastructure - together with further technical studies and discussions with TransGrid.

The preferred site was identified as being Alternative Site 4 - adjacent the TransGrid 132/66kV substation some 10km west of Parkes on the Condobolin Road. Access to infrastructure, land availability and the relative distance of sensitive receptors were determining factors in selecting the Condobolin Road site.

IPRA's experience in this field determined that the overwhelming advantage of this site is the flexibility that direct connection to TransGrid's high voltage substation bus allows in providing the range of network and grid support services sought by TransGrid.

The substation is also close enough to the township of Parkes and the North Parkes Mine to be able to provide power supplies in the event of system emergency.

The Development Site is agricultural land and has a rural 1(a) zoning. The proposed development would be permissible within this land use zone with consent from the appropriate authority.

IPRA has secured an option to purchase the site if the project is approved and options for the natural gas pipe easements have been secured from relevant landowners.

Reasonable access to infrastructure, land availability and the low proximity of sensitive receptors were also determining factors in selecting the Condobolin Road site.

The altitude for this region is approximately 280m and is common to each site and any constraints to power output in hot weather would be mitigated by evaporative cooling.

Environmental and other studies included in this Application have demonstrated that there are no major impediments to the project proceeding on the preferred site provided that appropriate plans are in place to manage the issues identified.

Pipeline Route

Following the iterative process described in **Chapter 3** (Section 3.9) the preferred natural gas pipeline route was finalised from several alternatives as it provided the following benefits:

- provided the most direct route addressing the identified criteria;
- avoid likely opposition by ARTC to building along their rail corridor for risk management reasons;
- minimise impact on the extent of vegetation along Condobolin and other road reserves;
- minimise the number of landowners on alternative "cross-country" routes;

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- the three southern alternative natural gas take-off points could prove problematic due to either their physical location or other existing infrastructure.
- the route utilised Gold Rush Road reserve for some 40% of the un-acquired route.
- from Gold Rush Road to the Power Plant site, this direct route generally crossed broad acre farming lots with low potential environmental impact.
- Issues identified with crossing of the Condobolin Road were addressed through further refinement of the route to avoid the potential Aboriginal scarred tree and minimise the crossing distance and area of impact across the Endangered Ecological Community Fuzzy Box Woodland.

Project Description

The Parkes Peaking Power Plant Project would have total output of between 120MW and 150MW, comprise three nominal 40MW to 50MW gas turbines, operating in open cycle fuelled by natural gas supplied via a new 10km long underground pipeline from the existing Central West Pipeline at Parkes. The turbine plant would have a “dual fuel” capability to allow a seamless transition from firing on gas to burning distillate as a backup to ensure continuity of generation during gas supply interruptions.

The multi-unit concept of three gas turbine units would be capable of operating individually or in conjunction, together providing - with a reliability factor in excess of 99% on an annual basis - reliable generation capacity embedded within the region but also able to respond to NEM peak demands.

The electricity generated at the facility would be fed into the 132kV high voltage transmission network via the TransGrid substation immediately abutting the power plant site.

A natural gas valve station would be required at the CWP pipeline connection in Goldrush Road at Parkes to ensure flow control, pressure control and isolation. A natural gas receiving and conditioning station (valves, heaters and metering) would be located at the power plant site.

The Parkes Peaking Power Plant would occupy an area of approximately 4.7ha and comprises the following main features:

- Three gas turbine enclosures (including air inlet, gas turbine and generator) generally up to 10m high depending upon final plant selection and three associated exhaust stacks (up to 20m high);
- Auxiliary system structures
- Fuel and water storage tanks generally up to 8m high;
- Three 132kV step-up transformers and associated electrical equipment;
- An above-ground natural gas metering and regulating station; and
- Control room incorporating offices and ablutions, a switch room and a workshop.

The plant would be built over a 6-8 month duration in one continuous phase with an expected average workforce of 27 persons and a peak workforce of 140 persons.

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The operating regime for the Parkes Peaking Power Plant in the short to mid term peaking role is anticipated to encompass:

- Operating hours per turbine per annum Nominal Average: 600hrs Maximum: 875hrs
- Total Generation per annum Nominal Average: 75GWh Maximum: 115GWh
- Natural gas consumption per annum Nominal Average: 850TJ Maximum: 1240TJ
- Raw water consumption per annum Nominal Average: 20ML Maximum: 40ML
- Backup "low sulphate" distillate consumption (if required) of up to 6000 tonnes per annum total; with up to 1,200 tonnes of distillate normally stored at site. The proponent is seeking approval for up to 200 operating hours per turbine per annum firing distillate in the event of natural gas supply interruption.

During normal operation, staff levels are expected to average one person with up to two more on an intermittent basis. Minor plant inspections will involve up to 5 additional personnel. Major overhauls would occur once every three to five years and involve 20 to 40 personnel for a four to six week period.

It is intended that treated effluent from Parkes Sewage Treatment Plant would be recycled for use at the site as process water, making good use of otherwise wastewater. Up to 150kL of raw water would be stored at the site before treatment. Up to 300kL of process water would be stored at the site for use on an as required basis. In addition a minimum of 150kL of treated water will be reserved for fire fighting purposes. Rainwater would be captured and used on site as much as practicable.

All surface water captured on the developed area would be collected in a sedimentation pond and treated for use where possible. All waste and contaminated water would be captured and directed to an evaporation pond on site. An oil and grit interceptor and appropriate bunding and traps would ensure the surrounding environment of the site remains free of spills risk. The facility will be a zero wastewater discharge site.

All air emissions will comply with statutory requirements. In particular, NO_x air emissions will be controlled through water injection being the most cost efficient control mechanism to meet the required air emission standards.

Small amounts of chemicals and oil would be stored on site and all storage will comply with statutory requirements.

Parkes Peaking Power Plant will be subject to Protection of the Environment Operations Act licence requirements. The site operations will be in accordance with its environmental management program and environmental management system ISO 14001: 2004 standard, OH&S ISO 18801 OHSAS and OH&S AS/NZS 4801 standards.

Statutory Planning

The Parkes Peaking Power Plant Project is subject to the development and assessment processes and requirements of Part 3A of the EP&A Act. A Project Application was submitted by IPRA to the Department of Planning on 6 October 2006, including a supporting Preliminary Environmental Assessment. On 28 October 2006 the Executive Director of the Department of Planning, as delegate for the Director-General, issued Environmental Assessment Requirements.

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Other licences and approvals required for the Parkes Peaking Power Plant Project include:

- Environment Protection Licence under the provisions of the POEO Act;
- Licence under the Pipelines Act 1967; and
- Licence to Keep Dangerous Goods from NSW WorkCover under the Dangerous Goods Act 1975 for the storage and handling of licensable quantities of dangerous goods.

The Development Site is zoned 1(a) (Rural “A” Zone) where energy generation activities are permissible with development consent from the relevant authority.

Community and Stakeholder Consultation

A stakeholder consultation process was developed and implemented to advise community stakeholders, Council representatives and relevant government authorities about the details of the project and to solicit issues that should be addressed during the preparation of the Environmental Assessment.

Issues identified during the initial consultation phase included:

- limited awareness of the proposed peaking plant power plant and associated natural gas pipeline project;
- choice of power plant site and pipeline route;
- environmental impacts: visual amenity, flora and fauna, air quality, noise and water;
- impacts on land values, rezoning, and compensation;
- operational potential and future plant expansion;
- road traffic and public safety; and
- flooding.

It is intended that an additional consultation phase will be conducted with information session(s) proposed to be held in Parkes during the period when the Environmental Assessment report is on public display, where representatives of IPRA and members of the URS study team would be present to answer specific queries of the broader community.

If the Parkes Peaking Power Plant Project is approved, ongoing consultation with the key stakeholders would be maintained during the key phases of construction and operation.

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Air Quality

An air quality assessment of the proposed Parkes Peaking Power Plant has undertaken investigating local air quality impacts and aviation safety. A greenhouse gas assessment has also been performed.

The impact of the proposed Parkes Peaking Power Plant on local air quality has been assessed using the TAPM dispersion model. The modelled species included oxides of nitrogen (NO_x), particulate matter (PM_{10}), carbon monoxide (CO), sulphur dioxide (SO_2) and Hazardous Air Pollutants (HAP).

The assessment has used a conservative approach, in accordance with the DEC (2005) *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW*. This conservative approach assumed that all three turbines would be running for every hour of the year and assessed both natural gas and distillate fuel scenarios.

IPRA is seeking a licence to only operate for up to 10% of a year except where extraordinary market or transmission system circumstances prevail as identified by the Minister in granting the Approval and stipulated in the associated environmental licence conditions. Low sulphur distillate is proposed as a backup fuel in the event of an interruption to or constraint of the natural gas supply.

In order to calculate the cumulative impact of the peaking power plant emissions on the local air quality, worst case background concentrations of the primary pollutants were obtained from the nearest Department of Environment & Climate Change (DECC) monitoring stations.

The results of the "All Units Operating All hours" dispersion modelling showed that the predicted peak impacts in ground level concentrations of NO_2 , PM_{10} , CO and SO_2 , when added to peak background concentrations, were still within the DECC regulatory criteria (notwithstanding the plant run regime would only be up to 10% of the modelled scenario).

The highest concentration of NO_2 (1 hour averaging - assuming all peaking power plant emitted NO_x presented as NO_2) was predicted to be $179.8 \mu\text{g}/\text{m}^3$ against the criteria of $246 \mu\text{g}/\text{m}^3$. This peak NO_2 concentration was shown to occur at approximately 3.5 km south of the site. The annual average impact of NO_2 was shown to be minor and within regulatory criteria.

The 24 hour averaged background levels of PM_{10} were shown to have a cumulative maximum impact of $47.6 \mu\text{g}/\text{m}^3$ against the criteria of $50 \mu\text{g}/\text{m}^3$, however a background PM_{10} concentration of $45.0 \mu\text{g}/\text{m}^3$ was used, indicating impacts from the peaking power plant were low, whilst the worst case background concentrations were approaching regulatory criteria. The annual average impact of PM_{10} was shown to be minor and within regulatory criteria. SO_2 and CO were shown to have minor impacts.

HAPs were also assessed for incremental impact (from the power plant alone) and were well below regulatory criteria. Under natural gas operation, the most significant incremental impact was formaldehyde, for which the worst case 1 hour concentration ($0.268 \mu\text{g}/\text{m}^3$) constituted 1.3% of DECC assessment criteria. Under distillate operation, Polycyclic Aromatic Hydrocarbons (PAH) emissions formed the most significant incremental impact, in which the worst case 1 hour concentration ($0.021 \mu\text{g}/\text{m}^3$) constituted 5.2% of DECC regulatory criteria.

The greenhouse gas assessment indicated that based on the upper limit of proposed operation, total greenhouse gas emissions from the Parkes Peaking Power Plant are estimated to be 0.109 Mt $\text{CO}_2\text{-e}$ per year, which will contribute 0.07% of all existing greenhouse gas sources in NSW, and up to 0.019% of the Australian emissions of greenhouse gases for all sectors.

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A plume rise assessment / aviation safety study was performed which shows that the peaking power plant would produce exhaust plumes with vertical velocities that exceed 4.3m/s above the Obstacle Limitation Surface for approximately 5% of the year, based on a full year of three turbines operating.

Given the infrequent operating time of the peaking power plant and the conservative nature of the air quality assessment, it is considered that the potential for adverse air quality impacts of the proposed Parkes Peaking Power Plant will be negligible.

Soils, Geology and Ground Water

Groundwater at the proposed Parkes Peaking Power Plant Project Site is well below the surface and therefore would be well below any power plant site excavations or excavations associated with the construction of the natural gas pipeline to the site.

The mitigation measures and safeguards implemented would ensure that soils and groundwater are managed using appropriate design, construction and management procedures. Accordingly any impacts on soils and groundwater resulting from the construction and operation of the proposed Parkes Peaking Power Plant Project would be negligible.

Visual

A total of 17 view locations were selected and assessed. The main components of the proposed Parkes Peaking Power Plant site that may be visible from surrounding areas include exhaust stacks up to 20m, turbine enclosures and air inlet ducts up to 10m, fuel and water storage tanks and workshop and auxiliary structures.

The exhaust stacks, which are the highest structures, have assumed as 20m high for the purposes of this assessment. Subject to final design parameters and air emission considerations the final height may be somewhat less than 20m.

An assessment of the visibility rating for each view location indicated that:

- 12 of the 17 view locations have been determined to have a **NIL** visibility rating;
- 5 of the 17 view locations have been determined to have a **LOW** visibility rating;

Only one of the view locations from residences included in this visual assessment was determined to have a direct line of sight toward the Parkes Peaking Power Plant.

The visual assessment concluded that the proposed Parkes Peaking Power Plant would have a low visual impact on people in areas surrounding the site due to a combination of the following factors:

- Existing trees and natural landforms generally screen the majority of views to the site and would, in most instances, screen the exhaust stacks from surrounding areas.
- Distant and partial views to the upper portions of the exhaust stacks may occur from a limited number of surrounding properties or road corridors, although views would generally be restricted to areas of unoccupied agricultural land surrounding residences.
- The exhaust stacks, which are the highest structures, would only be directly visible from a limited number of surrounding properties, and views to the exhaust stacks would generally be restricted to partial views only.

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- The use of colours that blend into the surroundings and non-reflective materials would minimise the visual contrast between the power plant structures and tree canopy background to the north of the site from potential surrounding views.
- In the long term, tree planting around the boundary of the site would provide additional visual screening to potential views from surrounding areas.
- Lighting design would generally avoid direct line of sight from residences that are located to the west of the site.
- Emissions discharged from the gas turbine exhaust stacks will generally not be visible.

The visibility of machinery and excavations for the construction and installation of a natural gas supply pipeline would be temporary during the installation of the pipeline. Disturbed surface areas will be returned to existing ground conditions. The preferred route for the natural gas supply pipeline would require minimal disturbance to existing trees along the pipeline alignment.

Traffic and Transportation

The Parkes Peaking Power Plant Project site is located approximately 500m south of the Condobolin Road approximately 10 kilometres west of Parkes. The site is accessed via Pat Meredith Drive - an easement over Crown land - along a sealed road to the TransGrid substation and a section of gazetted road reserve south of the Crown land reserve. IPRA are currently negotiating an easement for access to the proposed site.

This traffic and transport assessment found that Condobolin Road can satisfactorily and safely accept the additional traffic generated by the development during the construction, operational and maintenance phases.

Access to the site was assessed on the basis of a 19m semi-trailer turning left into Pat Meredith Drive, from Condobolin Road (Route 90), westbound. As it is anticipated that most construction trucks would approach from the east (from Parkes), it is expected that there would not be significant impact on the existing Condobolin Road/Pat Meredith Drive intersection. However, this would be confirmed in the detailed design phase once the size and number of vehicles is confirmed.

Over-mass and over-dimensional loads such as the gas turbines, generators and transformers must be transported to site under RTA and NSW Police permit conditions and along approved routes.

IPRA proposes to upgrade the section (approximately 200 metres) between the existing sealed section of road servicing TransGrid's substation and the proposed site entrance (which includes the gazetted road reserve section) to comply with applicable standards for the purposes of constructing and operating the Parkes Peaking Power Plant. The upgrade would also include an additional 200m of gazetted unmade road reserve south of the Crown land reserve.

Noise

The construction, operational and traffic noise and vibration impacts due to the proposed Peaking Power Plant at Parkes have been assessed primarily in accordance with the following policy guidelines published by the Department of Environment & Climate Change (DECC):

- *NSW Industrial Noise Policy (INP);*
- *Environmental Criteria for Road Traffic Noise (ECRTN); and*
- *Environmental Noise Control Manual (ENCM).*

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No exceedance is predicted at the existing six closest residences to the site during the operation of the proposed peaking power plant.

The potential for sleep disturbance from the operation of the development was found to be negligible.

Noise impacts due to extra traffic along Condobolin Road (both during construction and operation) were found to be negligible.

A preliminary assessment of noise during the construction phase shows no exceedances except potentially at the existing residential receiver at Location 1. The predicted construction noise levels would be reviewed prior to commencement and a Construction Noise Management Plan should be developed to ensure a suitable construction program to avoid or minimise the actual noise levels.

It is predicted that there will be no vibration impacts.

Final selection of the gas turbine type will include consideration of the assumptions included in this assessment and a review of the operational noise impacts of the selected plant. The operational plant will conform to regulatory requirements.

Flora and Fauna

Development for the proposed Parkes Peaking Power Plant is mainly restricted to cleared agricultural land with low ecological values. Construction of the entrance road will require the clearing of some mature trees and a small area of disturbed natural vegetation. Flora and fauna within this area are generally widespread and common species. Impacts associated with this clearing will be partially offset by areas of landscape plantings around the Site. Threatened Species Conservation Act (TSC Act) listed species and communities are likely to occur in the surrounding area however construction and operations at the Peaking Power Proposed power plant site are unlikely to have significant impacts.

Construction along the proposed natural gas pipeline will require the clearing of an area of the TSC Act listed Endangered Ecological Community Fuzzy Box Woodland. Impacts were assessed on the basis of a low impact construction approach being adopted through this area, which would minimise the amount of clearing required. A 7-part Test of significance determined that the proposal is unlikely to place the local occurrence of this community at risk of extinction due to the area of extant Fuzzy Box Woodland in the local area and the temporary nature of the impact.

Fuzzy Box Woodland in the local area is known to support the Grey-crowned Babbler and may also support the Koala and Greater Long-eared Bat, all listed as Vulnerable under the TSC Act. The proposal will have a negative impact on resident fauna species, and potential threatened species but these impacts are not likely to be significant given the mobility of the species, the temporary nature of the disturbance and the amount of suitable habitat remaining in the local area.

A section of the natural gas pipeline route will impact upon disturbed remnant woodland requiring the clearing of adult trees. This loss of habitat is not inconsiderable in the context of the extent of clearing of the surrounding area, however is unlikely to place local populations of the Greater Large-eared Bat or other arboreal species at risk of extinction.

The remainder of the natural gas pipeline route passes through ploughed cropland and cleared grazed land with low ecological values. There are unlikely to be significant impacts on flora and fauna associated with construction through these areas.

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Bushfire

The proposed site for the Parkes Peaking Power Plant has been assessed as not being bush fire prone according to Parkes Shire Councils *Bush Fire Plane Land Map* (2004), and as such has not been assessed under the *Rural Fires Act 1997*. Consultation was undertaken with the local Rural Fire Service and the NSW Rural Fire Service Head Quarters to seek feedback on the proposal. Mitigation measures are given to ensure any risk of bush fire at the site is appropriately managed.

Water Management

The water requirements, wastewater production, stormwater management and flooding potential have been assessed for both construction and operation of the Parkes Peaking Power Plant Project.

Process water is proposed to be sourced, if practicable, primarily from treated effluent from the Parkes Sewage Treatment Plant, transported to the site in tankers and treated on site by a water treatment unit (having a reverse osmosis capability) for use as demineralised process water. Maintenance and domestic water is proposed to be sourced from rainwater tanks and, when required, supplemented by mains water transported to the site in tankers. Fire fighting water is proposed to be sourced either (a) from effluent from the Parkes Sewage Treatment Plant and treated by reverse osmosis, or (b) imported mains water. Landscaping water is proposed to be sourced from rainwater, treated effluent and recycled waste water.

Process wastewater would be generated at the facility by the reverse osmosis treatment unit. The expected average volume of wastewater generated is up to 12ML/annum. This water would be discharged to evaporation ponds lined with an appropriate impermeable liner to minimise the risk of the saline waste water escaping into the natural groundwater system. When required the accumulated waste sludge collected in the lined evaporation pond would be disposed of by a licensed contractor.

Rainwater runoff from part of the landscaped areas would be directed into stormwater cut-off drains. The outlet of these drains would be designed to maximize the dispersion of these high flows and thereby minimize their potential to cause soil erosion downstream.

Surface runoff from the developed part of the site will be collected for use as much as possible and the accumulated water within bunds would be directed to the evaporation ponds after passing through the interceptor.

All construction works would be undertaken in a manner to minimise the potential for soil erosion and sedimentation.

Wastewater volumes have been estimated and management strategies developed to maintain zero discharge from the site except for part of natural surface flows.

The potential for flooding on the site has been addressed through the application of filling and management of overland flows is addressed through suitable drains and dispersion techniques.

Heritage

No Aboriginal or European sites were located on the proposed Parkes Peaking Power Plant site during the course of the field survey. There are no cultural heritage constraints to the peaking power plant development.

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One possible Aboriginal scarred tree (P1) was located near the initially proposed natural gas pipeline easement route. The currently proposed route of the pipeline avoids the location of this tree and will not impact on any of its heritage values. As a consequence its location does not pose any heritage constraint to the proposed development.

One historic house site (P2) was located within the natural gas pipeline easement. The site does not fulfil any of the criteria for heritage listing and does not pose any heritage constraint to the proposed development.

Land Use

The Parkes Peaking Power Plant site is 10km west of the township of Parkes. A TransGrid 132kV substation abuts the northern boundary of the site. Other developments immediately surrounding the site are rural enterprises on medium size holdings and smaller rural home sites.

The proposal would result in changes to the land use of the site itself as it is currently used for wheat cultivation. However, the site is located in an area that is zoned for 1(a) (Rural "A" Zoning) and development for the purposes of 'generating works' is permissible with development consent.

The natural gas pipeline route follows road corridors and transects private property. Being underground it does not impact current land use.

Mitigation measures detailed in this Environmental Assessment relating to the control of noise levels, air and water quality, traffic and transportation, visual amenity and other environmental matters, would be implemented to ensure that the proposal is managed in an effective and efficient manner, with minimal impact on existing zoned adjacent land uses during construction or operation.

Potential development areas identified by Parkes Shire Council are not in the vicinity of the power plant site.

On the basis of these assessments, it is considered that the Parkes Peaking Power Plant Project would not have a significant impact on existing land use surrounding the power plant site or the natural gas pipeline.

Socio-Economic

An economic impact assessment has been undertaken of the Parkes Peaking Power Plant to determine the effect of the potential developments that may occur as part of the project. The assessment considers the impact of constructing and operating the peaking power plant on the national economy.

The economic impact assessment highlights that the direct and indirect value added or GDP effects for the construction period are \$20.7 million, while the total operational GDP effects are \$1.5 million per annum. Employment effects range from 312 Full Time Employment (including direct & flow on effect employment) FTE positions during the construction period to 16 FTE positions per year of operations when both direct and indirect effects are considered. The effect of this increase in employment on household incomes is \$32 million during the construction stage and \$1.0 million per annum during the operational period.

The analysis shows positive economic and social benefits at the national level in terms of contribution to GDP, income and employment resulting from the peaking power plant construction and operation.

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Preliminary Hazard Analysis

The preliminary hazard analysis (PHA) assessment has been carried out in accordance with the Department of Planning's HIPAP No 6 (*Guidelines for Hazard Analysis*) and HIPAP No 4 (*Risk Criteria for Land Use Planning*). The main hazard associated with the proposed project is associated with the handling of natural gas (predominantly composed of methane gas), which is a flammable gas held under pressure.

Other, less significant hazards are associated with the handling of flammable and combustible liquids. Despite the fact that many of the assumptions in the PHA are highly conservative, the results show that the risk of injury to public associated with this development is very low. The most stringent risk criteria, as required by the Department of Planning, are adhered to.

The risk assessment carried out in this study assumed that the safety assessment process would continue throughout the design, construction and commissioning of a potentially hazardous facility to refine and update the outcome of the development approval / environmental risk process.

Draft Statement of Commitments

The Draft Statement of Commitments has been prepared in accordance with section 75F (6) of the EP&A Act.

The inclusion of appropriate environmental management measures into the detailed design and construction of the project would mitigate adverse impacts on the environment. The proposed adoption of the relevant measures identified in the Draft Statement of Commitments into Construction Environmental Management Plans (CEMP) and Operation Environmental Management Plan (OEMP) would be an important component of the proposal and reiterate the commitment of IPRA and its contractors to mitigation of environmental impacts identified in this assessment.

The Draft Statement of Commitments describes the environmental management and monitoring to be undertaken during the construction and operation of Parkes Peaking Power Plant.

Conclusions

Project Approval under Part 3A of the EP&A Act is being sought by IPRA for the construction and operation of a natural gas fired power plant at Parkes, NSW with a nominal total generating capacity of between 120MW and 150MW.

The proposed Parkes Peaking Power Plant would comprise three gas turbine generators operating in open cycle mode, each rated at approximately 40MW to 50MW, using natural gas as the primary fuel with distillate as a backup in the event of disruption to gas supplies. The plant would operate for up to 10% of the year.

Mitigation measures - to ensure impacts to both the bio-physical and socio-cultural environment remain acceptable throughout the planned facility lifespan - have been factored in through:

- The proposed type of generation technology;
- Specific power plant design and site layout; and
- Environmental Management Plans (EMP's) covering both Construction and Operations, which would set out specific compliant environmental policies and management plans.

Executive Summary

The Environmental Assessment has been produced to ensure that the following regulatory and community requirements and interests have been addressed:

- Environmental Planning and Assessment Act 1979;
- State Environmental Planning Policies and Regional Environmental Plans;
- specific requirements identified by the Department of Planning Director – General; and
- local residents and businesses.

Having regard to the Environmental Assessment findings and the principles of Ecologically Sustainable Development, the reasons justifying the carrying out of the development in the manner proposed are as follows:

- environmental issues associated with the proposed development of the generating facility have been fully considered;
- where modelling of impacts was carried out it was on the basis of the worst case scenario, utilised conservative assumptions and considered cumulative impacts with existing facilities;
- potential impacts identified are capable of being mitigated and the proposed development does not represent a threat of serious or irreversible environmental damage; and
- biological diversity and ecological integrity of the area would not be affected by the proposed development.

Environmental impacts associated with the proposed Parkes Peaking Power Plant have been identified and addressed in this Environmental Assessment according to the Environmental Assessment Requirements issued by Department of Planning. Where appropriate, environmental safeguards, in the form of mitigation measures, have been recommended to minimise the environmental effects of the project.

No significant adverse environmental impacts have been identified through the course of studies. Environmental impacts that have been identified comply with relevant standards and are capable of being mitigated through the use of appropriate environmental controls.