

DECCW

Your reference :
Our reference : DOC09/52770
Contact : Alison McLeod 62297002

Mr Michael Young
Environmental Planning Officer
Major Development Assessment
Department of Planning
GPO Box 39
SYDNEY NSW 2001

2 December 2009

Attention: Dinuka McKenzie

Dear Ms McKenzie,

**RE: Proposed Highlands Source Project (MP09_0193)
Environmental Assessment Requirements**

I refer to the project application and preliminary assessment for the proposed Highlands Source Project, Project Application 09_0193, received by the Department of Environment, Climate Change and Water (DECCW) on 2 November 2009. I refer also to the request for the DECCW Environmental Assessment Requirements (EAR's) for the above mentioned proposal on 12 November 2009.

DECCW has considered the details of the proposal as provided by the Department of Planning (DoP) and has identified the information it requires to assess the environmental impacts. The proponent should ensure that the Environmental Assessment (EA) is sufficiently comprehensive and detailed to allow DECCW to determine the extent of the impact(s) of the proposal.

The detailed requirements are set out in Attachments 1 & 2. In summary, the DECCW requires an assessment on the actions that will be taken to avoid, mitigate or compensate for impacts of the proposal on the following:

1. The impact on surface water and groundwater quality and quantity (including water demand and management requirements);
2. The impact on air quality;
3. The impact on noise and vibration amenity;
4. The impacts of the project on threatened species, endangered ecological communities, and their habitat;
5. The impact on vegetation communities (in addition to threatened species) and provision of an offset strategy that will be implemented to ensure a maintain or improve outcome for biodiversity;
6. The impacts of the project on aboriginal cultural heritage; and

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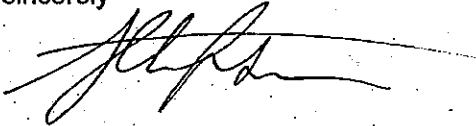
Department of **Environment and Climate Change** NSW

7. The action that will be taken to mitigate or compensate for unavoidable impacts identified in 1 to 6 above.

The proponent should be aware that any commitments made in the EA may be formalised as approval conditions. Consequently pollution control or conservation measures should not be proposed if they are impractical, unrealistic or beyond the financial viability of the development. It is important that all conclusions are supported by adequate data.

DECCW requests that 2 hard copies and 1 CD of the EA are provided for assessment. These documents should be lodged at PO Box 622, Queanbeyan NSW 2620. If you have any queries regarding this matter please contact Alison McLeod on 6229 7002.

Yours sincerely



JULIAN THOMPSON
Head of Operations Unit – South East Region
Environment Protection and Regulation Group

Attachment 1

Specific Information required by the DECCW

The EA must provide sufficient information for the DECCW to be able to fully assess the development in so far as how the impacts relate to environmental legislation administered by the DECCW. The EA must include a comprehensive description of the production processes, all discharges and emissions to the environment, an assessment of likely environmental impacts, and a comprehensive description of any proposed control measures.

Details are required on the location of the proposed development, including the affected environment, to place the proposal in its local and regional environmental context including surrounding land uses, planning zonings and potential sensitive receptors.

The EA should describe mitigation and management options that will be used to prevent, control, abate or mitigate identified environmental impacts associated with the project and to reduce risks to human health and prevent the degradation of the environment. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.

Based on the information provided to the Department of Environment, Climate Change and Water (DECCW), the Application will not require an Environment Protection Licence because the activity is not scheduled under the Protection of the Environment Operations Act 1997.

The following environmental impacts of the project need to be assessed, quantified and reported on:

- Water
- Air
- Noise
- Greenhouse Emissions
- Contaminated Land
- Threatened species
- Aboriginal cultural heritage

1. Water

The environmental outcomes for the project in relation to water should be:

- There is no pollution of waters (including surface and groundwater) during construction or occupation of the site by the final users;
- It is acceptable in terms of the achievement or protection of the River Flow Objectives and Water Quality Objectives.

The local drainage systems near the site are defined as 'waters' pursuant to the POEO Act. Section 120 of the POEO prohibits the pollution of waters by any person.

The impacts of any specific activities involved in site preparation should be identified. The environmental assessment should describe measures to control erosion and sedimentation during construction activities. Further guidance is available in the guideline *Managing Urban Stormwater - Soils and Construction*, NSW Landcom, Fourth Edition, March 2004.

The EPA emphasise that all activities must be carried out with due diligence, duty of care, and according with best management practices. Accordingly, all personnel involved in the construction works should be aware of the details of the works plans, legislation and associated pollution controls before any works commence.

2. Air

Dust is the primary air quality concern. Potential emission sources include open exposed areas, excavation, construction activities, transfer points, loading and un-loading, stockpiles, clearing of vegetation and haulage activities along unsealed roads. Details must be provided on proposed dust management strategies for all potential sources of dust.

The environmental assessment must be conducted in accordance with the DECCW publication "*Approved Methods for Modelling and Assessment of Pollutants in New South Wales*". The environmental assessment must assess PM10 (24-hour and annual average), total suspended particulates and deposited dust impacts.

The environmental assessment must include a cumulative assessment that examines the impacts of the proposal combined with all existing and approved dust generating activities in the area.

3. Noise

The environmental assessment should identify all potential noise sources and describe the extent to which noise emissions are likely to impact on any residential and/or other sensitive receivers in the vicinity of the site. The EPA publication *New South Wales Industrial Noise Policy* provides the methodology and assessment criteria applied by the EPA to assess the impacts and to determine project-specific noise planning levels. The environmental assessment should include a noise impact assessment in accordance with this Policy.

The noise impact assessment should take into account both the construction and operational phases of the development, clearly specify the proposed hours of operation for both phases, and take into account adverse weather conditions including temperature inversions. Sound power levels (measured or estimated) for all plant and equipment should be clearly stated and justified. There should be an assessment of cumulative noise impacts, having regard to any other developments existing and/or approved for the locality. Where adverse noise impacts are predicted, the impact assessment should provide details on proposed noise control measures.

4. Greenhouse Emissions

The *NSW Greenhouse Plan* (2005) commits the NSW Government to pursuing greenhouse gas emission reductions in NSW. The greenhouse impact of new development is therefore a key consideration in the Environmental Assessment and development consent process.

When considering new developments with potentially significant greenhouse implications, the DECCW considers key principles to be:

- The minimisation of direct greenhouse gas emissions (ie those generated on-site). This can be achieved, for instance, by the adoption of best available technology for fuel combustion and/or greenhouse gas capture and destruction.
- The minimisation of indirect greenhouse gas emissions (ie those generated off-site as a result of the activity, for example through electricity use). This can be achieved, for instance, by the adoption of measures to maximise energy efficiency and/or agreement by the proponent to purchase renewable energy (Green Power).
- The consideration of whether there are opportunities to offset residual greenhouse gas emissions that are associated with the activity, and of the cost effectiveness of these opportunities.

The DECCW requires the following in relation to greenhouse emissions:

1. A comprehensive assessment of and report on the project's predicted greenhouse gas emissions (tCO₂e). Emissions should be reported on a:

- a. Greenhouse intensity (emissions per unit of production) basis;

- b. Total annual emissions basis; and
 - c. Total project lifetime basis, including construction, operation and decommissioning.
2. The assessment of project emissions should include direct emissions (ie, those occurring on the project site), indirect emissions (eg those offsite as a result of the project, such as through electricity use) and any significant upstream and/or downstream emissions associated with the project.
 3. The emissions should be estimated using an appropriate methodology, in accordance with the Department of Planning's Draft *"Guidelines: Energy and Greenhouse in EIA"* (2002) and the Australian Greenhouse Office's *"Factors and Methods Workbook"* (2006).
 4. Emissions should be compared in the EA against:
 - a. Industry 'best practice' emissions intensity for the activity; and
 - b. Total annual NSW emissions, so the impact of the proposal on NSW emission reduction targets can be evaluated.
 5. The proponent should evaluate and report on the feasibility of measures to further reduce greenhouse gas emissions associated with the project.

5. Waste

The EA should describe all wastes that will be generated by the proposal including, for each of the main waste streams, the process from which it will be generated; its quantity and composition; its classification under the Protection of the Environment Operations Act 1997; and the proposed arrangements for dealing with the waste. Consideration should also be given to disposal of cleared vegetation and excess spoil material.

Guidance on waste classification and management issues can be obtained from the publication *Waste Classification Guidelines* (DECCW, 2008). The EA should clearly identify methods of reducing waste volumes and recycling and reusing wherever possible.

The avenues for disposal of industrial/hazardous waste are limited within New South Wales at present and the proponent should detail the likelihood of generation of these wastes and anticipated storage/disposal methods.

The EA must identify any fuel or chemical storage areas to be established on the site and describe the measures proposed to minimise the potential for leakage or migration of pollutants into the soil, groundwater or surface water systems.

6. Construction

The EA should identify and assess the impacts of any specific activity involved in site preparation associated with the construction of the Highlands Source Project.

Details and design specifications of appropriate sediment and erosion controls to mitigate any impacts from this component of the development on the environment should be included in the EA. Further guidance is available in the guideline *Managing Urban Stormwater - Soils and Construction*, NSW Landcom, Fourth Edition, March 2004.

The likelihood of disturbing acid sulphate soils and /or pre-existing site contamination during the construction phase must be detailed in the environmental assessment and, where applicable, contingency plans must be proposed for management of acid sulphate or contaminated soils.

The EA must also describe the rehabilitation works proposed to return disturbed areas to an appropriate state at the completion of the project. All areas disturbed during construction must be revegetated to a high standard.

The DECCW emphasise that all activities must be carried out with due diligence, duty of care, and according with best management practices. Accordingly, all personnel involved in the construction works should be aware of the details of the works plans, legislation and associated pollution controls before any works commence.

7. Contaminated Land

Under the Contaminated Land Management Act there is a responsibility to notify the DECCW of sites that pose a significant risk of harm to human health or the environment. The EA must document the management of any land contamination. This includes ensuring that land is not allowed to be put to a use that is inappropriate because of the presence of contamination, and incorporates mechanisms to ensure that:

- planning authorities consider contamination issues when they are making development decisions;
- local councils provide information about land contamination on planning certificates that they issue under section 149 of the Environmental Planning & Assessment Act; and
- Land remediation is facilitated and controlled through State Environmental Planning Policy 55 – Remediation of Land (SEPP55).

The following documents should form the basis for the contaminated land assessment for the proposed development:

- Managing Land Contamination: Planning Guidelines - SEPP55 - Remediation of Land, Department of Urban Affairs and Planning and NSW EPA, 1998;
- Contaminated Sites – Guidelines for Consultants Reporting on Contaminated Sites (Environment Protection Authority (EPA) 1997);
- Contaminated Sites – Guidelines on Significant Risk of Harm and Duty to Report (EPA, 1999).

Under the Contaminated Land Management Act there is a responsibility to notify the DECC of sites that pose a significant risk of harm to human health or the environment.

8. Impacts of the project on threatened species and their habitat

The proposed pipeline development area has the potential to provide habitat for several threatened species, many which have been recorded very close to the proposed route. A complete fauna and flora (including fish and aquatic vegetation) assessment should be undertaken which targets the following list of species. All survey work for these species should be undertaken at the appropriate time of year for each species to maximise the survey results and in accordance with *"Threatened Biodiversity Survey and Assessment Guidelines for Developments and Activities"* ..

The EA should consider all impacts on aquatic fauna within the project corridor as well as provide mitigation measures for changes in hydrology. Accordingly, impact abatement and management planning will form an important part of the EA for the proposal.

The project corridor may support Endangered Ecological Communities (EEC). Development will need to avoid EEC and provide an appropriate buffer and asset protection zone. EEC's which may be affected by the development include

- White Box Yellow Box Blakely's Red Gum Woodland
- **Montane Peatlands and Swamps of the New England Tableland**
- Southern Highlands Shale Woodlands in the Sydney Basin Bioregion
- Robertson Basalt Tall Open-forest in the Sydney Basin Bioregion
- Snow Gum – Black Sallee Grassy Woodlands, recommended to be listed as an EEC

The EA must describe what actions will be undertaken to avoid or mitigate impacts caused by the development on all threatened species described at the site. Threatened species that could potentially occur onsite and should be considered include:

Fauna

- The Golden Sun Moth *Synemon plana*;
- Pink-tailed Worm-lizard *Aprasia parapulchella*;
- Rosenberg's Monitor *Varanus rosenbergi*;
- Grassland Earless Dragon *Tympanocryptis pinguicolla*;
- Striped Legless Lizard *Delmar impar*
- Little Whip Snake *Suta flagellum*
- Giant Dragonfly *Petalura gigantea*
- Gang Gang Cockatoo, *Callocephalon fimbriatum*
- Koala, *Phascolarctos cinereus*
- Powerful Owl *Ninox strenua*
- Glossy Black Cockatoo *Calyptorhynchus lathami*
- Yellow Bellied Glider *Petaurus australis*
- Barking Owl *Ninox connivens*
- Diamond Firetail *Stagonopleura guttata*
- Speckled Warbler *Pyrholaemus sagittatus*
- Hooded Robin *Melanodryas cucullata cucullata*

Flora

- Silky Swainson -pea *Swainsona sericea*
- Broad leaved Salle *Eucalyptus aquatica*
- Camden Woollybutt *Eucalyptus macarthurii*
- Klaphake's Sedge *Carex klaphakei*
- Dwarf Phyllota *Phyllota humifusa*
- Wingecarribee Gentian *Gentiana wingecarribeensis*
- Dense Cord-rush *Baloskion longipes*
- Dwarf Kerrawang *Rulingia prostrate*
- Yellow Loose Strife *Lysimachia vulgaris*
- Slaty Leek Orchid *Prasophyllum fuscum*
- Wingecarribee Leek orchid *Prasophyllum uroglossum*
- Elusive Bush Pea *Pultanea elusa*

This list is not exhaustive and there is potential for a number of other threatened species to occur at the site. See Attachment B for a complete list of relevant threatened species and associated assessment requirements to be assessed for this project.

Other vegetation clearing

The EA should clearly outline the extent to which the development footprint will impact on areas of native vegetation.

Offsetting biodiversity and habitat loss is likely to be required as identified in the preliminary environmental assessment and the threatened species guidelines. There are formulas associated with the "maintain and improve" principle of the Government's vegetation reforms that DECCW considers should apply. Further, an adequate offset must aim to result in a net improvement in biodiversity over time. Enhancement of biodiversity in offset areas is required to be equal to or greater than the loss in biodiversity from the impact site and should be managed in perpetuity.

Further requirements regarding potential impacts on threatened species and endangered ecological communities are in **Attachment 2**.

9. Impacts of the project on Aboriginal cultural heritage values

The EA for the project should address and document the information requirements set out in the *"Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation"* (DEC, 2005). This should include undertaking an independent archaeological report and assessment according to the DECCW's *Aboriginal Cultural Heritage Standards and Guidelines Kit (1997)* and clearly demonstrate effective consultation with the Aboriginal community following the *DECCW's Interim Aboriginal Community Consultation Requirements for Applicants*.

The assessment and consultation should identify the nature and extent of impacts on Aboriginal cultural heritage values across the study area; the extent and significance of each Aboriginal site and value located; formulate actions to mitigate impacts on Aboriginal cultural heritage values in association with the Aboriginal communities; and develop long term management recommendations for the Aboriginal cultural values located in the study area. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.

The EA needs to clearly demonstrate that effective community consultation with Aboriginal communities has been undertaken in determining and assessing impacts, developing options and making final recommendations

A copy of the archaeological report and Aboriginal community consultation should be provided to DECCW for comment and assessment.

ATTACHMENT 2

DIRECTOR GENERAL'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS FOR THE EVALUATION OF IMPACTS ON THREATENED SPECIES AND ENDANGERED ECOLOGICAL COMMUNITIES for HIGHLAND SOURCE WATER SUPPLY PIPELINE

INTRODUCTION

The purpose of these Directors General's requirements is to provide the assessment requirements to allow you, as the applicant, to identify the issues pertaining to threatened species, populations, ecological communities or their habitats, and provide appropriate amelioration for adverse impacts resulting from the action and to assist the consent or approval authorities in the assessment of your proposal pursuant to the *Environmental Planning and Assessment Act 1979* (EP&A Act). The following requirements outline the type and level of survey required for this development by the DECCW to assess the impacts of this development; alternatively the proponent may apply the Biobanking Assessment Methodology to this development.

DEFINITIONS

The definitions given below are relevant to these requirements:

- **Development** has the same meaning as in the EP&A Act.
- **Activity** has the same meaning as in the EP&A Act
- **Proposal** is the development, activity or action proposed
- **Subject Site** means the area directly affected by the proposal.
- **Study Area** means the subject site and any additional areas which are likely to be affected by the proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account.
- **Locality** is the area within a 5km radius of the subject site
- **Subject Species, Populations or Ecological Communities** means those threatened species, populations or ecological communities that are known or considered likely to occur in the study area. The EVALUATION OF IMPACTS is to explicitly consider the impacts of the proposal on each of these entities.
- **Direct Impacts** are those that directly affect habitat and individuals, usually within the footprint of the proposal. They include, but are not limited to, clearing and habitat removal. Consideration must be given to all of the likely direct impacts of the proposed activity or development.

- **Indirect Impacts** occur when project-related actions affect species, populations or ecological communities in a manner other than direct loss, usually beyond the footprint of the proposal. Indirect impacts can include loss of individuals through predation by domestic and/or feral animals, deleterious hydrological changes (including increased runoff and raising or lowering of the water table), erosion, weed invasion, pollution, trampling or other impacts due to increased human activity within or directly adjacent to sensitive habitat areas, altered fire regimes, habitat fragmentation and disruption of wildlife movement corridors. As with direct impacts, consideration must be given to all of the likely indirect impacts of the proposed activity or development.
- **Life Cycle** is the series or stages of reproduction, growth, development, aging and death of an organism.
- **Viable** means the capacity to successfully complete each stage of the life cycle under normal conditions.
- **Risk of Extinction** is the likelihood that the local population of the species or local occurrence of the endangered population or ecological community will become extinct either in the short, medium or long-term as a result of direct or indirect impacts on the viability of that population and includes changes to the ecological function of communities.
- **Local Population** is the population that occurs in the study area. The assessment of the local population may be extended to include individuals beyond the study area if it can be clearly demonstrated that contiguous or interconnecting parts of the population continue beyond the study area, according to the following definitions.
 - The local population of a threatened plant species comprises those individuals occurring in the study area or the cluster of individuals that extend into habitat adjoining and contiguous with the study area that could reasonably be expected to be cross-pollinating with those in the study area.
 - The local population of resident fauna species comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area.
 - The local population of migratory or nomadic fauna species comprises those individuals that are likely to occur in the study area from time to time.

In cases where multiple populations occur in the study area, each population should be assessed separately.

- **Local Occurrence** means the ecological community that occurs within the study area. However the local occurrence may include adjacent areas if the ecological community on the study area forms part of a larger contiguous area of that ecological community and the movement of individuals and exchange of genetic material across the boundary of the study area can be clearly demonstrated.
- **Composition** means both the plant and animal species present, and the physical structure of the ecological community. Note that while many ecological communities are identified primarily by their vascular plant composition, an ecological community consists of all plants and animals as defined under the TSC Act that occur in that ecological community.

All other definitions are the same as those contained in the TSC Act.

1 CONTEXTUAL INFORMATION

1.1 Description of proposal, subject site and study area

A full description of the action proposed includes a description of all associated actions. These actions may occur on or off the subject site.

In describing the action proposed, the proportion of the subject site and the study area that will be affected is to be provided, including details of the location of any auxiliary infrastructure and all component parts of the proposal including, but not restricted to, (i) roadworks and temporary access and egress routes, (ii) drainage and settling ponds, stockpile areas, diversion banks, vehicle parking areas (iii) changes in surface water flows (iv) utilities such as electricity, drainage, sewage, gas, (v) any actions necessary for fire management, (vi) stockpile areas, (vii) temporary buildings etc.

The type of action proposed shall be detailed, including the timetable for the construction of the proposal. If a staged construction approach is adopted then the timetable shall clearly indicate this.

If subsequent development of adjacent land is proposed by the proponent in the future, including any additional road construction then this shall be identified to the extent that it is known at the time of preparing the EA. If existing structures are to be relocated, this should also be described and assessed.

The vegetation within the study area that is to be retained is to be fully documented, and shown on the relevant plans and maps. The proposed management regimes for such areas are also to be documented.

2. PROVISION OF RELEVANT PLANS AND MAPS

A detailed plan of the *study area* shall be provided at a preferred scale of 1:4,000 or finer. This plan shall show the *proposal*, the location and type of vegetation communities present within the *study area*, the full extent of vegetation clearing anticipated, and the scale of the plan. This plan shall also show the location of any key habitat resources for threatened species (eg. hollow-bearing trees, identified feed trees, potential breeding sites, rock outcrops). Where the general habitat of each *subject species, population or ecological community* within the *study area* can be clearly delineated, this habitat shall be represented on the plan.

Colour aerial photography of the *locality* (or a reproduction of such a photograph) shall be provided. This aerial photograph shall clearly show the *subject site* and the scale of the photograph.

The locations of the *subject species, populations or ecological communities* recorded in any survey conducted for the purposes of the EA shall be represented on a map of the *study area* that shows the *proposal* (preferred scale 1:4,000 or finer).

A topographic map of the general *locality* at a scale of 1:25,000 is to be provided. This map is to detail the location of the action proposed, landscape features including rivers, swamps, wetlands, any locally significant sites of *subject species, populations or ecological communities*, and areas of high human activity such as townships and major roads. This map shall incorporate the area within a radius of 5km from the subject site. All available historical records are to be included of *subject species, populations of ecological communities* sourced from various databases and other sources are to be included on this map.

2.1 Land tenure information

The land tenure across the *study area* is to be described and any limitations to sampling across the *study area* resulting from this tenure (e.g. denied access to private land) shall be noted.

3 INITIAL ASSESSMENT

3.1 Identifying subject species and populations

For the purposes of this Evaluation of Impacts, the species listed in Table 1 are to be addressed as *subject species*:

Table 1. List of *subject species*.

SPECIES	SCIENTIFIC NAME	STATUS
FAUNA		
Little Whip Snake	<i>Suta flagellum</i>	Vulnerable
Rosenberg's Goanna	<i>Varanus rosenbergi</i>	Vulnerable
Striped Legless Lizard	<i>Delma impar</i>	Vulnerable
Brown Treecreeper	<i>Climacteris picumnus victoriae</i>	Endangered
Diamond Firetail	<i>Stagonopleura guttata</i>	Vulnerable
Hooded Robin	<i>Melanodryas cucullata cucullata</i>	Vulnerable
Speckled Warbler	<i>Pyrrholaemus sagittatus</i>	Vulnerable
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	Vulnerable
Powerful Owl	<i>Nonox strenua</i>	Vulnerable
Barking owl	<i>Ninox connivens</i>	Vulnerable
Glossy Black cockatoo	<i>Calyptorhynchus lathami</i>	Vulnerable
Giant Dragonfly	<i>Petulura gigantean</i>	Endangered
Golden Sun Moth	<i>Synemon plana</i>	Endangered
Yellow Bellied glider	<i>Petaurus australis</i>	Vulnerable
Squirrel Glider	<i>Petaurus norfolcensis</i>	Vulnerable
Eastern Bentwing Bat	<i>Miniopterus schreibersii oceanensis</i>	Vulnerable
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	Vulnerable
Yellow Bellied Sheathtailed bat	<i>Saccolaimus flaviventris</i>	Vulnerable
Greater Long eared Bat	<i>Nyctophilus timoriensis</i>	Vulnerable
Greater Broad Nosed bat	<i>Scoteanax rueppellii</i>	Vulnerable
Large Footed Myotis	<i>Myotis adversus</i>	Vulnerable
Koala	<i>Phascolarctos cinereus</i>	Vulnerable
Tiger Quoll	<i>Dasyurus maculatus</i>	Vulnerable
FLORA		
Austral Toad Flax	<i>Thesium australe</i>	Endangered
Silky Swainson Pea	<i>Swainsona sericea</i>	Vulnerable
Doubletailed Buttercup	<i>Diuris aequalis</i>	Endangered

Tarengo Leek orchid	<i>Prasophyllum petilum</i>	Endangered
Camden Woollybutt	<i>Eucalyptus macarthurii</i>	Vulnerable
Broad Leaved Sallee	<i>Eucalyptus aquatica</i>	Vulnerable
Klaphake's Sedge	<i>Carex klaphakei</i>	Endangered
Dwarf Kerrawang	<i>Rulingia prostrate</i>	Endangered
Yellow Loose Strife	<i>Lysimachia vulgaris</i>	Vulnerable
Slaty Leek Orchid	<i>Prasophyllum fuscum</i>	Vulnerable
Wingecarribee Leek orchid	<i>Prasophyllum uroglossum</i>	Vulnerable
Elusive Bush Pea	<i>Pultaneae elusa</i>	Vulnerable
Dense Cord-rush	<i>Baloskion longipes</i>	Vulnerable
Wingecarribee Gentian	<i>Gentiana wingecarribiensis</i>	Endangered
Dwarf Phyllota	<i>Phyllota humifusa</i>	Vulnerable

Endangered Ecological Communities

Montane Peatlands and Swamps of the New England Tableland

Robertson Basalt Tall Open-forest in the Sydney Basin Bioregion

Southern Highlands Shale Woodlands in the Sydney Basin Bioregion

Snow Gum – Black Sallee Grassy Woodlands, recommended to be listed as an EEC

White Box, Yellow Box, Blakely's Red Gum Woodland

Natural Temperate Grassland of the Southern Tablelands (NSW and ACT) EPBC community

One of the roles of the Evaluation of Impacts is to determine which species, populations or ecological communities may be utilising, or present, on a development site. The entities to be considered for inclusion in the list of subject species, populations and ecological communities are listed in Table 2. This list is not exhaustive and other entities may also need to be included for assessment on the basis of desktop and habitat analyses and the outcomes of fieldwork.

Table 2. List of other entities for consideration as *subject species, populations or ecological communities*.

SPECIES	SCIENTIFIC NAME	STATUS
FAUNA		
Pink-tailed Worm-lizard	<i>Aprasia parapulchella</i>	Vulnerable
Grassland Earless Dragon	<i>Tympanocryptis pinguicollis</i>	Endangered
Turquoise parrot	<i>Neophema pulchella</i>	vulnerable
Superb Parrot	<i>Polytelis swainsonii</i>	Endangered
Swift Parrot	<i>Lathamus discolor</i>	Endangered

In determining whether the entities listed in Table 2, as well as other entities, should also be addressed as *subject species, populations and ecological communities*, consideration shall be given to the habitat types present within the *study area*, recent records of threatened species, populations or ecological communities in the *locality* and the known distributions of threatened species, populations and ecological communities. This analysis and its conclusion are to be documented in the Evaluation of Impacts.

Databases such as the DECCW Atlas of NSW Wildlife and BioNet, as well as databases held by the Australian Museum and Royal Botanic Gardens, should be consulted to assist in compiling the list of possible entities to be analysed. It should be noted that if the DECCW Atlas is the only database that is referred to, due to data exchange agreements, the data provided by DECCW will only include that for which DECCW is a custodian. In many cases, this may only be a small subset of the data available. Other databases must also be consulted to create a comprehensive list of entities for consideration as *subject species, populations or ecological communities*.

3.2 Identifying habitats

In describing the *study area*, consideration shall be given to the previous land uses and the effect of these land uses on the *study area*. Relevant historical events may include fire, clearing, logging, slashing, recreational use and agricultural activities.

A description of habitats including such components as the frequency of tree hollows, the presence of wetlands, the density of understorey vegetation, the composition of the ground cover, the soil type and the presence of heath and permanent or ephemeral swamps shall be given. The condition of these habitats within the *study area* shall be discussed, including the prevalence of introduced species. A description of the habitat requirements of threatened species, populations or ecological communities likely to occur in the *study area* shall be provided.

Any areas which may provide habitat connectivity between the *study area* and adjacent areas of likely habitat for *subject species, populations or ecological communities* shall be identified and described.

In defining the *study area*, consideration shall be given to possible *indirect impacts* of the proposed action on species/habitats in and surrounding the *subject site*. These could include impacts arising from altered fire and hydrology regimes, soil erosion or pollution, fencing, habitat fragmentation and disruption of wildlife movement corridors, edge effects, altered light and noise regimes, disturbance of roosting areas or other impacts due to increased use of the area by humans, and the impacts of increased levels of domestic and feral predators.

4 SURVEY

4.1 Requirement to survey

DECCW requests that the proponent collect data on the development and offset site using the Biometric methodology. The following 2 documents are key references to aid in providing adequate information to assess impacts and offset opportunities:

BioMetric Operation Manual (current version is v1.8)

BioMetric Field data sheets

Latest versions of these can be found at:

<http://www.environment.nsw.gov.au/projects/BiometricTool.htm>.

The BioMetric Operation Manual provides detail on data collection methodologies, with the BioMetric Field data sheets providing suitable proformas to collect field data. Also found at this link is the Reviewed Interim Vegetation Condition Benchmarks, which are required as a comparison to BioMetric plot data. Data collected from BioMetric field data sheets must be summarised in table 2 below:

Targeted surveys shall be conducted for all *subject species, populations and ecological communities* determined in accordance with Section 3.

All areas of known and potential habitat to be directly and indirectly impacted by pipeline corridor are required to be surveyed. It is not sufficient to only survey parts of the pipeline. In particular all areas of woody native vegetation within the pipeline corridor are to be surveyed for arboreal fauna, bats and birds, all areas of the native grassland within the pipeline corridor are to be surveyed for grassland reptiles.

Previous surveys and assessments may be used to assist in addressing this requirement. However, the efficacy of such previous surveys and assessments in meeting this requirement must be described in full. These previous surveys do not negate the need for the additional targeted survey work set out in Appendix 1 of these DGRs.

Particular attention shall be paid to the timing and climatic conditions for conducting fauna surveys including invertebrates, as many of the *subject species* will only be present or detectable for a few months each year or during certain climatic conditions. Additional advice on these matters should be sought from the DECCW contact officer.

Identification of all species is essential. Identification to genus only is not acceptable. Species of taxonomic uncertainty shall be confirmed by a recognised authority such as the Australian Museum or National Herbarium at the Royal Botanic Gardens, Sydney.

4.2 Documentation of survey effort and technique

Survey technique(s) shall be described and a reference given, where available, outlining the survey technique employed.

Survey site(s) shall be identified on a map with a clear legend. The size, orientation and dimensions of quadrat or length of transect shall be clearly noted for each type of survey technique undertaken. Full AMG grid references for the survey site(s) shall be provided in accordance with the *Biometric methodology*

DECCW survey proformas are to be used by field staff when applying a range of standard fauna survey techniques. Copies of standard proformas are included in Appendix 2 to these DGRs. Digital copies of these proformas can be requested from the nominated DECCW contact officer. These proformas shall be used by field staff when undertaking fauna surveys and completed data sheets are to be included as an appendix to the Evaluation of Impacts.

The time invested in each survey technique shall be summarised in the Evaluation of Impacts, based on completed proformas, e.g. number of person hours / transect, duration of call playback, number of nights that traps are set.

It is not sufficient to aggregate all time spent on all survey techniques. Effort must be expressed separately for each survey technique that is applied.

Personnel details including name of surveyor(s), contact phone number, qualifications and experience must be included. The person who identified records (e.g. Anabat, hair tubes, scat analysis) shall also be identified in this manner.

Environmental conditions during the survey shall be noted from the commencement of each survey technique until its completion. These conditions must be documented in the Evaluation of Impacts.

An assessment of the efficacy of each survey regime in detecting each species under the intensity utilised by the study is to be provided. The effect of the season and weather at the time of the field survey shall be considered with respect to the adequacy of survey results. An assessment will also be made of the adequacy of the survey and background information used to assess the likely area of use (home range) for each *subject species, population or ecological community*, and the areas providing habitat connectivity.

A full list of all flora and fauna species recorded during the course of surveys shall be included (such information is indicative of the habitat quality of the site). Completed Atlas of NSW Wildlife cards are to be provided for each threatened species record in any survey conducted for the purposes of the SIS. For confidentiality, these cards are not to be included in the Evaluation of Impacts but rather shall accompany the Evaluation of Impacts when supplied to the DECCW.

4.3 Specific survey requirements

Appendix 1 details the specific survey requirements for the *subject species, populations or ecological communities* identified in Table 1 of these DGEARs. These survey requirements can determine the presence of *subject species, populations or ecological communities* known or likely to be in the *study area* and/or can provide contextual information on habitats to allow appropriate assessment of impacts at a broader scale. The flora and fauna survey of the *study area* must include the use of these survey methods.

You are advised that discussions between the consultant(s) engaged to prepare the Evaluation of Impacts and DECCW may be necessary in order to derive an appropriate survey regime for some of these requirements, and to confirm the survey regimes proposed for any additional *subject species, populations and ecological communities* derived by analysis as part of this SIS.

All hollow bearing trees, impacted by the pipeline are required to be mapped and the following information recorded for each tree impacted.

- Location of tree
- Size of tree
- Amount of hollows within each tree
- Size of hollows within each tree
- Location of any scratch marks
- Evidence of use

All hollow bearing trees along the pipeline route to be directly impacted are to be stag watched, and if required surveyed using ANABAT recorders to determine the presence of micro bats.

5 ASSESSMENT OF LIKELY IMPACTS ON THREATENED SPECIES, POPULATIONS AND ECOLOGICAL COMMUNITIES

For all *subject species, populations and ecological communities*, the Evaluation of Impacts shall describe the following:

- a. the location, nature and extent of habitat removal or modification which will result from the action proposed;
- b. the likely and potential impact of the removal of habitat. Particular attention shall be given to the loss of:
 - i. Natural temperate grasslands ,
 - ii. Grassland habitat for Pink-tailed Worm Lizard, Little Whip Snake, Grassland Earless Dragon, Striped Legless Lizard,
 - iii. The likelihood of and extent of loss of hollow-bearing trees, foraging habitat and termite mounds utilised for breeding, roosting or denning by threatened fauna such as micro-chiropteran bats, small woodland birds and Rosenberg's Goanna respectively.
 - iv. Native grassland habitat for the Button Wrinklewort, Silky Swainson pea, Tarengo Leak Orchid, and the Michelago Parrot Pea
 - v. Habitats for Klaphake's sedge, Dwarf Phyllota, Wingecarribee Gentian, Dense Cord rush, Dwarf Kerrawang, Yellow loose Strife, Slaty Leek orchid, Wingecarribee Leek orchid, Elusive bush pea.
 - vi. Impacts from the development of the off take on Giant Dragonfly Larvae
 - vii. Similarly, attention is to be given to the likelihood of and extent of loss of food resources and the impact this may have on the *subject species, populations or ecological communities*.
- c. Any direct and indirect impacts of the proposal including:
 - i. the fragmentation or isolation of *local populations* and/or *local occurrences*, and the increased distance required for the movement of individuals/genetic material between habitat patches,
 - ii. change in vegetation floristics and structure resulting from edge effects,
 - iii. altered hydrology regimes in and around the edges of Wingecarribee swamp which may impact on the lifecycle of the Giant Dragon fly and the swamp dependent species. These may include changes in the moisture level on the edge of the swamp due, changes in the wet / dry regime for margins of the swamp and raising or lowering of the water table.
 - iv. soil erosion and pollution,
 - v. disturbance to feeding or nesting/breeding of species,
 - vi. trampling or other impacts due to increased use of the area by humans, and native grassland habitats, Box gum woodlands, Southern Highlands Shale Woodlands, Montane Peatlands and Swamps , Robertson Basalt tall open forest.
 - vii. habitat fragmentation and disruption of wildlife movement corridors and pollination mechanisms,
 - viii. altered light and noise regimes,
 - ix. the likely contribution of the action proposed to the threatening processes already acting on populations of those *subject species or populations* and occurrences of *subject ecological communities* in the *locality*.

All of the above contextual information (which can be incorporated into Sections 5.1 - 5.5 below) will assist with the assessment of cumulative impacts on the *subject species, populations and ecological communities*.

5.1 Assessment of species likely to be affected

This requirement allows refinement of the list of *subject species or populations* (given the outcome of survey and analysis of likely impacts) in order to identify which threatened species or populations may be affected, and the nature of the impact.

The remaining requirements in this section (5.2 – 5.5) need only be addressed for those threatened species or populations that are likely to be affected by the proposal.

5.2 Discussion of local and regional abundance

5.2.1 Discussion of other known local populations

A discussion of other known *local populations* in the *locality* shall be provided. The long-term security of other habitats shall be examined as part of this discussion. The relative significance of the *subject site* for the *subject species, populations and ecological communities* in the *locality* shall be discussed. It is essential that the Evaluation of Impacts includes some surveys conducted beyond the *study area* to clarify the conservation significance of the *subject site* to the *subject species and populations*.

The need for off-site surveys to provide context to the anticipated impacts of the *proposal* may also be required for other threatened species recorded during the surveys of the *study area* for the Evaluation of Impacts.

5.2.2 Discussion of habitat utilisation

An estimate of the number of individuals of each *subject species* utilising the *study area* shall be provided as well as a description of how these individuals use the *study area* (e.g. residents, transients, adults, juveniles, nesting, foraging). A discussion of the significance of these individuals to the viability of the *subject species* in the *locality* shall be provided.

5.2.3 Description of vegetation

The vegetation present within the *study area* and the surface area covered by each vegetation community shall be mapped and described. Reference to the vegetation classification system used (e.g. Specht, Benson, Keith) and to the ecological communities determined as endangered by the NSW Scientific Committee shall be provided. Classification must have regard to both structural and floristic elements.

5.2.4 Discussion of corridors

Particular attention shall be given to identifying movement corridors for *subject species* within the *study area*. The impact of the proposal on these corridors and the resulting impact on the resident *subject species* shall be discussed.

5.3 Assessment of habitat

5.3.1 Description of habitat values

Specific habitat features in the *study area* shall be described and quantified (e.g. frequency and location of stags, hollow bearing trees, culverts, rock shelters, rock outcrops, crevices, caves, drainage lines, soaks, area of ecological communities etc.), as well as the density of understorey vegetation and groundcover.

The condition of the habitat within the *study area* shall be discussed, including the prevalence of introduced species, species of weeds present and an estimate of the total weed cover as a percentage of each vegetation community, whether trampling or grazing is apparent, effects of erosion, prevalence of rubbish dumping, history of resource extraction or logging and proximity to

roads. Details of the *study area's* fire history (e.g. frequency, time since last fire, intensity) and the source of fire history (e.g. observation, local records), shall be provided.

5.3.2 Distribution and condition of regional habitats

For the habitats of *subject species and populations* found in the study area, the Evaluation of Impacts shall discuss the distribution and condition of similar habitats in the region. For the *subject ecological communities* found in the study area, the Evaluation of Impacts shall discuss the distribution and condition of these ecological communities in the region. Regional information may be obtained from existing datasets and from other sources.

5.4 Discussion of conservation status

Assessment shall include reference to the threatening processes that are generally accepted by the scientific community as affecting the *subject species, population or ecological community* and which are likely to be caused or exacerbated by the *proposal*. Assessment shall also include reference to any approved or draft recovery plans which may be relevant to the *proposal*. Up-to-date lists and copies of approved and draft recovery plans are available on the DECCW website www.environment.nsw.gov.au by following the links to threatened species.

6 IMPACT AMELIORATION

6.1 Description of ameliorative measures

6.1.1 Long term management strategies

Consideration shall be given to the information contained in approved and draft recovery plans or threat abatement plans for existing taxa, known or likely to occur in the *study area*, and whether any recommendation is applicable to the *proposal*.

The development of long-term management strategies shall be considered to protect areas within the study area which are of particular importance for the *subject species, populations or ecological communities* likely to be affected by the *proposal*. This may include proposals to restore or improve habitat on site where possible. If mitigation is to include rehabilitation of the site, then the rehabilitation strategy shall be detailed.

Any measures proposed to mitigate the effect of the proposal on *local populations* of threatened species and populations and/or *local occurrences* of ecological communities shall be described. The potential effectiveness of any such amelioration in maintaining a viable *local population* and/or *local occurrence* in the short, medium and long term shall be discussed (e.g. fauna underpasses, vegetation management).

6.1.2 Offset strategies

In accordance with the *Draft Part 3A Threatened Species Assessment Guidelines*. If significant modification of the *proposal* to minimise impacts on *subject species, populations or ecological communities* is not possible, then offset strategies shall be considered in order for the development to maintain or improve biodiversity values. These may include other off-site or local area proposals that contribute to long term conservation (offset areas) of the *subject species, populations or ecological communities*.

These areas should be assessed in accordance with the Principles for the Use of Biodiversity Offsets in NSW, which can be found on the following link on the DECCW website <http://www.environment.nsw.gov.au/biocertification/offsets.htm>.

The Biobanking Assessment Methodology (BBAM) or Biobanking calculator may be used to determine the level of offsetting required for this development.

The areas proposed to be used for offset strategies must be described in full including a detailed description of their biodiversity values, the BBAM outlines the information required to assess the quality of the offset area.

Where such proposals involve other lands, or where involvement of community groups is envisaged in such proposals, landholders, land managers and/or community groups are to be consulted and *proposals* shall contain evidence of support from these stakeholders and relevant land managers.

Compensatory benefits likely to result from such measures proposed for alternative sites are to be discussed and evaluated along with a discussion of the mechanisms through which they might best occur.

6.1.3 Ongoing monitoring

Any proposed pre-construction monitoring plans or on-going monitoring of the effectiveness of the mitigation measures shall be outlined in detail, including the objectives of the monitoring program, method of monitoring, reporting framework, duration and frequency. Generally, ameliorative strategies that have not been proved effective should be undertaken under experimental design conditions and appropriately monitored.

6.1.4 Translocation

DECCW does not consider that translocation of threatened species, populations and ecological communities is an appropriate ameliorative strategy for the purposes of considering impacts of a particular development/activity. It strongly supports the view that development proposals which may impact on significant local populations of *subject species and populations* or significant local occurrences of *subject ecological communities* as determined by the EVALUATION OF IMPACTS should aim to:

- i. minimise the impacts by considering all possible alternatives to the *proposal*, such that a significant impact is not likely; and
- ii. manage the remaining habitat (if any) to ensure that the *local population and/or local occurrence* continues to exist in the long term.

The translocation of *subject species, populations and ecological communities* is only supported by DECCW in specific conservation programs (e.g. recovery planning).

7 ADDITIONAL INFORMATION

7.1 Qualifications and experience

An Evaluation of Impacts must include details of the qualifications and experience in threatened species conservation of the person preparing the statement and of any other person who has conducted research or investigations relied on in preparing the statement.

7.2 Licensing matters relating to flora and fauna surveys

Persons conducting flora and fauna surveys must have appropriate licences or approvals under relevant legislation. The relevant legislation and associated licences and approvals that may be required are listed below:

National Parks and Wildlife Act 1974:

- General Licence (Section 120) to harm or obtain protected fauna (this may include threatened fauna).
- Licence to pick protected native plants (Section 131).

- Scientific Licence (Section 132C) to authorise the carrying out of actions for scientific, educational or conservation purposes.

Threatened Species Conservation Act 1995:

- Licence to harm threatened animal species, and/or pick threatened plants and/or damage the habitat of a threatened species (Section 91).

Animal Research Act 1985:

- Animal Research Authority to undertake fauna surveys.

Appendix 1: Survey Requirements for Subject Species - DGEARs for Goulburn Source Project

SPECIES	SURVEY REQUIREMENTS
Little Whip Snake	Surveys of the <i>subject site</i> and <i>study area</i> shall be undertaken for this species. All rocky slopes should be systematically surveyed. This shall involve rock rolling and searching under logs and debris. Surveys shall be undertaken between mid-August and the end of October preferably after rain. Daily temperatures shall not exceed 25°C during the survey period. Rocks, logs and debris shall be replaced carefully to sustain habitat integrity. Surveys of the <i>locality</i> for habitat of the species shall be undertaken. These shall involve determining the extent of potentially suitable habitat from aerial photographs or other means, and ground-truthing selected sites to validate habitat suitability, condition and extent. The sites sampled shall be used to provide context to the habitat affected by the action proposed.
Striped Legless Lizard <i>Delma impar</i>	Pitfall trapping for <i>Delma impar</i> should be undertaken for 6 weeks, starting in early to mid November and extending through to mid/late December. Pitfall traps should be placed in suitable habitat being natural temperate grassland or nearby secondary grassland, with a preference for denser Kangaroo grass <i>Themeda australis</i> or other grassland, including <i>Phalaris</i> . Traps should be positioned in cross-shaped arrays of 5 traps each, 10 metres apart, with a trap at the centre and drift fencing extending 5 metres past the outside traps. Traps must be checked daily. In addition, roof tiles should be placed within likely habitat for at least 4 months prior to checking. Checking of tiles should be undertaken at least fortnightly throughout spring and early summer.
Rosenberg's Goanna	Surveys of the <i>subject site</i> , <i>study area</i> and <i>locality</i> shall be undertaken for termite mounds. All termite mounds impacted by the pipeline route need to be recorded. In addition cage trapping involving 10 large cage traps randomly scattered across the site in close proximity to woodland areas shall be undertaken. Cage trapping should be undertaken for a minimum of three weeks in October- November during the breeding season. Traps should be baited using a suitably decomposing highly odorous carcass.
Brown Tree creeper, Diamond Firetail, Hooded Robin, Speckled Warbler	Diurnal bird census shall be undertaken in the early morning and/or late afternoon within the <i>subject site</i> on three occasions each separated by a period of one week. Each census shall comprise observations for birds, including call recognition, for a period of 45 minutes at a minimum of three locations spread across the subject site. Additional opportunistic bird census shall be employed across the <i>study area</i> and <i>locality</i> during the course of other surveys. Surveys can be undertaken at any time of the year, but shall avoid high-wind and/or rainy days.
Barking Owl Powerful Owl	Nocturnal call playback (1 site per 100 ha) with an initial listening period of 10 min then play the call of each subject species separated by at least a 2 min listening period, then finish with a 10 minute listening period. Identify and map all hollow-bearing trees (potential nest trees) on the subject site and estimate the availability of hollow-bearing trees in the locality.
Squirrel glider, Yellow Bellied	The consultant needs to determine the distribution and abundance of the species on the subject site and its status in the region. Squirrel Gliders may occur across

Appendix 1: Survey Requirements for Subject Species

SPECIES	SURVEY REQUIREMENTS
glider	a wide variety of forest and woodland vegetation type. Live-trapping in trees is the preferred survey method for detecting Squirrel Gliders. Traps should be either large Elliott box traps or wire mesh 'bandicoot' traps (200 mm wide x 170 mm tall x 500 mm long; Figure 2) (manufactured by R.E. Walters Pty. Ltd., Sunshine, VIC). Map the location of den sites and feed trees within and adjacent to the study area. All trees to be removed or isolated by the development must be assessed to determine if they are being used as den or feed trees. Map the location and size of the areas occupied by Yellow-bellied Glider family groups in the locality. Surveys must consist of stag watching, spotlighting, call play-back and habitat assessment. Spotlighting and call play-back surveys must be undertaken on foot. At each call play-back site, the call of the Yellow-bellied Glider should be played through a megaphone for 5 minutes, followed by at least 10 minutes of listening
Gang Cockatoo, glossy Black Cockatoo	Undertake diurnal bird surveys across the study area and nesting assessments using a combination of stagwatching and listening for calls of the birds returning to nests in the late afternoon during the known breeding season of the species, to ascertain the locations of any nest sites in the study area. These surveys should target hollow-bearing trees with hollows of suitable size (>10cm diameter) for the species that are to be removed for the proposal or which lie within 50m of areas to be disturbed by the proposal. Estimate the availability, condition and security of potential breeding habitat for the species in the locality by ground-truthing existing vegetation mapping datasets.
Eastern Pipistrelle, Eastern Bent Wing Bat, Large footed Myotis. Greater Broad nosed bat, Yellow Bellied Sheath Tailed Bat Greater long eared bat	Surveys using anabat recorders and stag watching should aim to identify the number and location of roost sites for the three subject bats and identify important foraging habitat in the study area and the locality. If required, the DECCW can provide further advice on bat survey techniques to acquire this information. Surveys of the subject site, study area and locality shall be undertaken for hollow-bearing trees. This shall involve intensive searches for hollow-bearing trees in the subject site and study area. Representative sampling of the locality for hollow-bearing trees shall involve the use of transects in selected locations and the gathering of data in conjunction with ground-truthing for endangered ecological communities. The number of hollow-bearing trees recorded shall be used to provide context to the potential breeding habitat affected by the action proposed.
Giant Dragon Fly	Surveys for the exuviae for this species in areas to be impacted by the pipeline should be undertaken from November thru to February. Adult Dragon fly may also be surveyed, Further information on appropriate survey methods can be obtained from DECCWW.
Golden Moth	Surveys of the <i>subject site</i> and <i>study area</i> shall be undertaken for this species. These surveys should target areas with higher than 40% <i>Austroanthonia</i> in the

Appendix 1: Survey Requirements for Subject Species

SPECIES	SURVEY REQUIREMENTS
	groundcover. Areas of habitat should be hand-netted during known flight periods. The flight period for this species is short therefore surveys should be undertaken when other known populations in the area are flying. The consultant should discuss these periods with the DECCW prior to the survey being conducted. Surveys of the <i>locality</i> for habitat of the species shall be undertaken. These shall involve determining the extent of potentially suitable habitat from aerial photographs or other means, and ground-truthing selected sites to validate habitat suitability, condition and extent. The sites sampled shall be used to provide context to the habitat affected by the action proposed.
ENDANGERED ECOLOGICAL COMMUNITIES	SURVEY REQUIREMENTS
Yellow box white box Blakely's Red Gum woodlands, Natural temperate grasslands Montane Peatlands and Swamps Southern Highlands Shale Woodlands Robertson Basalt Tall open forest	Surveys shall identify the extent and condition of this ecological community in the <i>subject site</i>, <i>study area</i> and <i>locality</i>. This shall involve the use of vegetation surveys in the <i>subject site</i> and the <i>study area</i>. The use of existing datasets held by DECCW in combination with ground-truthing of selected sites within areas mapped by DECCW as the ecological community is recommended for surveys of the <i>locality</i>. The sites sampled shall be used to provide context to the ecological community affected by the action proposed. Surveys can be undertaken at any time of the year under varied seasonal conditions.
FLORA	SURVEY REQUIREMENTS
Button Wrinkle wort. Dwarf Phyllota, Dwarf Kerrawang	Systematic surveys using evenly spaced transects located about 10 m apart through all areas of woodland and grassland.
Austral Toad flax, Broad Leaved Sallee, Camden Wollybutt	Systematic surveys using evenly spaced transects located about 10m apart through all areas of wet Kangaroo grass and any other damp swampy , open drainage areas located in the study area. DECCW should be consulted to confirm flowering times with known population and seasons, and appropriate survey methods.
Klahake's	All areas of wet heath, bog, swamp, wet forest, peatland should be surveyed with

Appendix 1: Survey Requirements for Subject Species

SPECIES	SURVEY REQUIREMENTS
Sedge, Dense Cord Rush, Slaty Leek orchid, Wingecaribee Leek orchid, Wingecaribee Gentian, Yellow Loosestrife , Elusive Bush pea	evenly spaced transects located about 10m apart through all area of potential habitat. Especially in around the edge of Wingecaribee swamp.
Silky Swainson Pea Tarengo Leek Orchid double tail buttercup.	Systematic surveys using evenly spaced transects located about 10 m apart through all areas of woodland/grassland must be undertaken. DECCW should be consulted to confirm flowering times with known population and seasons, and appropriate survey methods.

Appendix 2: Examples of suitable survey pro-formas**DIURNAL HERPETOFAUNA CENSUS SURVEY PROFORMA****Survey Details**

Date of survey	_____		
Name of surveyor	_____	Contact number	_____
Number of surveyors	_____		_____
Total effort expressed in person-hours	_____	Total effort expressed in number of rocks/logs rolled	_____

Location Details

Location (including basic habitat) description _____

Map number _____ Map name _____

Type of survey, e.g. transect or quadrat _____ AMG Zone _____

Active or passive search _____ Size of survey area (ha) _____

Survey area Eastings (6 digits) _____ Northings (7 digits) _____

Eastings (6 digits) _____ Northings (7 digit) _____

Start time (24hr) _____ End time (24 hr) _____

Weather Details

At start of survey, record: Cloud cover* _____

Wind direction and speed* _____ Rain* _____

Temperature (°C) _____ Moon* _____

At end of survey, record: _____

Temperature (°C) _____

Comments _____

Appendix 2: Examples of suitable survey pro-formas

DIURNAL BIRD CENSUS SURVEY PROFORMA

Survey Details

Name of surveyor _____ Contact number _____

Number of surveyors _____ Date of survey _____

Total effort expressed in person hours _____ Number of hectares covered or transect or point dimensions _____

Location Details

Location description _____

Map number _____ Map name _____

Full AMG reference(s) for survey site or transect _____ AMG Zone _____

Start details _____ Finish details _____

Easting (6 digits) _____ Easting (6 digits) _____

Northing (7 digits) _____ Northing (7 digits) _____

Start time (24hr) _____ End time (24 hr) _____

Weather Details

At start of survey, record: _____ Cloud cover* _____

Wind direction and speed* _____ Rain* _____

Temperature (°C) _____ Moon* _____

At end of survey record: _____

Temperature (°C) _____

Comments _____

Species name	Ob. type	MH type	Grid reference (full AMGs)	Accuracy

* See Appendix 3: Standard reporting codes

Appendix 2: Examples of suitable survey pro-formas

[illegible]

* See Appendix 3: Standard reporting codes

Appendix 2: Examples of suitable survey pro-formas

DIURNAL HOLLOW-BEARING TREE CENSUS SURVEY PROFORMA

Survey Details

Date of survey _____

Name of surveyor _____ Contact number _____

Number of surveyors _____

Total effort expressed in person-hours _____

Location Details

Location (including basic habitat) description _____

Map number _____ Map name _____

Type of survey, e.g. _____ AMG Zone _____

transect or quadrat _____ Size of survey area (ha) _____

Survey area _____

Eastings (6 digits) _____ Northings (7 digits) _____

Eastings (6 digits) _____ Northings (7 digit) _____

Start time (24hr) _____ End time (24 hr) _____

[illegible]

* See Appendix 3: Standard reporting codes

DIURNAL TERMITE MOUND CENSUS SURVEY PROFORMA

Date of survey

Date of survey _____

Name of surveyor _____

Contact number : _____

Number of surveyors

Total effort expressed in person-hours

Location (including basic habitat) description

Map number

Map name

Type of survey, e.g.
transect or quadrat

AMG Zone

Size of survey area (ha)

Survey area
Eastings (6 digits)

Northings (7 digits)

Easting (6 digits)

Northings (7 digit)

Start time (24hr)

End time (24 hr)

[illegible]

[illegible]

Appendix 2: Examples of suitable survey pro-formas

VERTEBRATE FAUNA SURVEY OPPORTUNISTIC RECORDS

Survey name _____ Fauna surveyors _____
 Surveyor's contact details _____ Call analysis _____

AGM Zone _____

[illegible]

* See over ** Include initials of observer and any other information that will help relocation of site.

Appendix 2: Examples of suitable survey pro-formas

Cloud cover. Record cloud cover in eights of sky.

Moon. Record using the following codes. 0=None, 1=1/4 moon, 2=1/2 moon, 3=3/4 moon, 4=full moon.

Wind direction and speed. Record wind direction to nearest cardinal point. Record wind speed using the following codes. 0=calm 1= Light, leaves rustle 2= Moderate, branches move 3=Strong, tops of trees move

Rain. Record using the following codes. 0=none, 1=drizzle - light, 2=drizzle - heavy 3=heavy rain

Sizes of hollows. Record using the following codes. S=Small (1-5cm diameter), M=Medium (5-15cm diameter), L=Large (greater than 15cm diameter).

Types of hollows. Record using the following codes. T=Trunk hollow, B=Branch hollow

Observation type

Use the following codes:

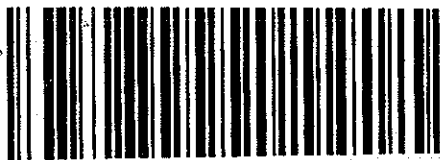
O Observed (sighted)	R Road kill	F Tracks, scratching
W Heard call	D Dog kill	Z In raptor/owl pellet
X In scat	C Cat kill	M Miscellaneous
P Scat	V Fox kill	E Nest or roost
T Trapped or netted	K Dead	B Burnt
H Hair or feathers	S Shot	Y Bones or teeth
A Stranded/beached	I Fossil/subfossil	N Not located

MH (microhabitat) type

Use the following codes:

AC Flying above canopy	IB In burrow	OB On (beach) sand
BR In/on bridge	IC In cave	OL On log
BU In building	IG In grass	OR On rock
CK Crevice in rock	IH In tree hollow	OW Over water
CL Crevice in log	IL In litter	RD On road
DA Farm/fire dam	IR In reeds	TK On trunk
DT In dead tree (stag)	IS In soil	UB Under bark
EW Edge of water	IT In (live) tree	UC Upper canopy
FC In/on post or stump	IW In water	UG Undergrowth
FL Flying within canopy	LC Lower canopy	UL Under log
GR On ground	LS Low shrub	UR Under rock
HS High shrub	MC Mid canopy	UT Under iron
		WH Waterhole

The Department of Environment and Conservation NSW is now known as
the Department of Environment and Climate Change NSW



PCU000965



Hawkesbury-Nepean



CMA

CATCHMENT MANAGEMENT AUTHORITY

[Objective Number: A298643]

Dinuka McKenzie
 A/ Team Leader – Energy & Water
 NSW Planning
 GPO Box 39
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Contact: Gillian Young
 Phone: (02) 4828-6770
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 Email: Gillian.Young@cma.nsw.gov.au

File number: HN00663
 Your ref: SO7/01018
 File: 23rdNov09_HighlandSourceProject_GMC_Let.doc
 Request Number: n/a

25th November 2009

Dear Ms McKenzie,

Proposed Highlands Source Project – Goulburn Mulwaree and Wingecarribee Local Government Areas (MP 09 0193)

I am writing in reference to a letter dated 12th November 2009 from NSW Planning inviting comments from Hawkesbury Nepean Catchment Management Authority (HNCMA) on the draft environmental assessment requirements for the proposed Highlands Source Project. This letter will identify key issues that should form part of the environmental impact assessment.

Goulburn Mulwaree Council (the proponent) proposes to construct and operate a water pipeline to transfer water from Wingecarribee Reservoir to the Goulburn water supply network in the Southern Highlands to secure the City of Goulburn's water supply. The pipeline extends for approximately 83km and will be located within Goulburn Mulwaree and Wingecarribee local government areas. I note that NSW Planning (being the determining authority) are compiling key issues to be addressed as part of the environmental impact assessment under Part 3A of the *Environmental Planning and Assessment Act 1979*.

Catchment Management Authorities are approval authorities for clearing of native vegetation under the *Native Vegetation Act 2003* (NV Act), and are responsible for implementing the objectives of this Act. These include:

- "to prevent broad scale clearing unless it improves or maintains environmental outcomes, and
- to protect native vegetation of high conservation value having regard to its contribution to such matters as water quality, biodiversity, or the prevention of salinity or land degradation"

HNCMA supports activities that achieve the objects of the NV Act, and considers proposed developments should be located and designed to minimise impacts on native vegetation and the environment, with any clearing required mitigated by establishing offset areas.

Goulburn Mulwaree Council's Preliminary Environmental Assessment states that the proposed development falls under Part 3A (Major Infrastructure and other developments) of the *Environmental Planning and Assessment Act 1979* (EP&AA) and that the Minister for Planning is the determining authority under the Act. Therefore an approval under the NV Act for the

clearing of native vegetation as part of the proposed development is **not** required (Clause 75(B)1 of the EP&AA). **As such, HNCMA has no approval role for any clearing of native vegetation required for this development.**

However, it is understood that Priority E4 of the NSW State Plan, the Catchment Condition Targets of the Hawkesbury-Nepean Catchment Action Plan, and the objects of the NV Act represent NSW government policy on native vegetation. Collectively, these require maintenance of or increase in the extent of native vegetation, an improvement in native vegetation condition, and the need for clearing of native vegetation to result in an "Improved or Maintained" environmental outcome through the use of secured off-set areas.

Determination of whether a clearing and offset proposal will result in an improved or maintained environmental outcome is made by the "Environmental Outcomes Assessment Methodology". This has been authorised by the Minister for this purpose, and is used for assessment of clearing proposals under the NV Act. The Environmental Outcomes Assessment Methodology (EOAM) provides a scientifically recognised and established means of determining vegetation values and the impacts of clearing. The "PVP developer" is the assessment mechanism used to apply the EOAM to specific vegetation clearing proposals requiring approval under the NV Act. The EOAM also provides the basis of the assessment methodology used in the NSW Biodiversity Banking and Offsets Scheme.

The following comments and recommendations are based on application of NSW government policy and NV Act objects and principles to the proposed development. A summary of the key issues at the end of this letter are HNCMA's recommendations for incorporation into the environmental assessment requirements. These comments are provided in our capacity as the authority for implementing the *Native Vegetation Act 2003* in the Hawkesbury-Nepean catchment.

Information about this proposal is based on the document '*Report for Highlands Source Project – Preliminary Environmental Assessment, October 09*' provided, and a desk-top analysis of the data sets contained in the BioMetric Tool of the PVP Developer.

Vegetation Values in the Development Area

The Preliminary Environmental Assessment states that the proposed development footprint is a ten to twenty metre wide easement running for approximately 83 km in total, where 17.8 ha of woody native vegetation would be directly impacted. Vegetation proposed for clearing consists of 12 vegetation communities (Tozer et al., 2001) of which, 4 vegetation types were listed under either the *Threatened Species Conservation Act 1995* (TSC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

A desk top analysis of PVP Developer indicates native vegetation within the pipeline easement contains the following values:

Mitchell Landscapes

Eleven Mitchell Landscapes occur within the proposed pipeline easement. An overcleared Mitchell Landscape is defined as being more than 70% cleared. The EOAM states that any native vegetation occurring within an overcleared Mitchell Landscape is of high conservation value and can not be approved for clearing, if it is in "moderate to good" condition as determined by criteria in the EOAM. Five of the eleven landscapes are listed as overcleared, these being 1) Breadalbane Swamps and Lagoons (91% Cleared), 2) Crookwell Basalts and Sands (92% Cleared), 3) Oberon Kialla Granites (89% cleared), 4) Robertson Basalts (74% Cleared) and 5) Wingecarribee Swamp (70% Cleared). These Mitchell Landscapes are scattered throughout various sections of the pipeline easement.

Vegetation Types

Page 24 of the Preliminary Assessment indicates the presence of twelve vegetation types as occurring within the pipeline easement. Two of these vegetation types - Tablelands Grassy Box Gum Woodland and Tableland Bog are identified as Endangered Ecological Communities under both the NSW *TSC Act* and the Commonwealth *EPBC Act*. An additional two vegetation types - Southern Highlands Shale Woodland and High Range Sheltered Forest are listed as Endangered Ecological Communities under the *TSC Act*. Another two vegetation types - Tableland Hills Grassy Woodland & Tableland Swamp Flats Forest are listed as overcleared (ie. more than 70% cleared). Any overcleared vegetation types can not be approved for clearing under the NV Act, if the vegetation is in moderate to good condition.

One other vegetation type - Tableland Low Woodland, is listed as 70% cleared. At 70% cleared, this vegetation type narrowly avoids the 'overcleared' category but must be considered as having high conservation value.

Therefore seven of the twelve vegetation types predicted to occur within the proposed pipeline easement are of high conservation value due to their rarity at national, state and regional levels.

Regional Biodiversity Corridors

I note that the pipeline easement is partly located within the Abercrombie River to Morton National Park Regional Biodiversity Corridor, and that clearing is proposed within this area. Regional Biodiversity Corridors were identified within the Greater Southern Sydney Region following an extensive investigation of species distribution and habitat use by the former Department of Environment and Conservation. These were mapped and a paper prepared by DEC to inform development of the Hawkesbury-Nepean Catchment Action Plan, 2008.

The HNCMA Catchment Action Plan identifies the retention of native vegetation in regional corridors, and achieving an improvement in condition of this vegetation, as priority actions. This corridor is a critical link providing for the movement of plant and animal species through the landscape, underpinning their sustainability and survival in the face of climate change. HNCMA is concerned at any development in and around this corridor that has the potential to adversely affect its ecological integrity.

Impacts of the Development on Native Vegetation and the Environment

A significant portion of the pipeline easement consists of non-native and native pasture, with some areas of secondary grassland. The impact is considered to be high within areas containing native grasslands. Where native grasslands do exist, clearing should be kept to a minimum and the area of native grassland disturbed noted for offsetting purposes. The presence of any native grasslands that fit the description of 'Natural Temperate Grasslands of the Southern Tablelands' (Listed as Endangered under the EPBC Act) should also be investigated along all parts of the pipeline during field assessment.

The proposed development will also require the clearing of 17.8 ha of forest, woodland or isolated trees, located along various parts of the pipeline easement. This vegetation is dominated by vegetation types of high conservation value (as mentioned above) due to their rarity, including four Endangered Ecological Communities and two overcleared vegetation types. It is also important to note that some portions of the woody vegetation are also located within overcleared Mitchell Landscapes.

The use of construction machinery in removing vegetative cover during pipeline installation may also encourage more weeds to colonise in new areas along the pipeline route. Machinery hygiene is crucial in reducing the spread of weed seeds.

The Preliminary Assessment states that native vegetation within the pipeline easement constitutes potential habitat for a number of threatened fauna species as well as 33 flora species and 12 migratory species (p. 25) and that 'about 17.8 ha of native woody vegetation would be removed from the pipeline easement (p. 23).

Therefore HNCMA considers that the proposed clearing of native vegetation has a high environmental impact at a regional scale, as a result of clearing high conservation value vegetation types, degrading a major Regional Biodiversity Corridor, and destroying habitat for threatened fauna species.

The value of vegetation cover in contributing towards soil stability are well known. Digging soils to install the pipe line increases the susceptibility of soils to erosion. This could potentially impact water quality through erosion and excess nutrients running into waterways. There is also the impact of installing the water pipeline across waterways and managing the impacts associated with stopping creek flow. Another matter is ensuring bedrock and other materials remain stable on the creek beds once the trench is dug for the pipeline and re-establishing normal water flow within the creek after the pipe is installed.

Clearing vegetation also contributes to climate change, which is predicted to further contribute to water shortages into the future. HNCMA encourages Council to continue community education programs as part of their water management strategy to reduce water use and improve water efficiencies. It is noted under section 2.1.1 on page 4 of the preliminary assessment that there is no mention of community education, financial rebates to promote sustainable households or water recycling as an alternative option to additional water supply. This proposal may contribute to further demand for water supply within a landscape that is predicted to receive less rainfall into the future.

Key Assessment Requirements:

HNCMA recommend the following key issues to be incorporated into the environmental assessment:

1. **Assessing the impacts of clearing native vegetation for the pipe line is a key environmental issue**, including but not limited to clearing high conservation value vegetation types, degrading a major Regional Biodiversity Corridor, and destroying key habitat (ie – hollow bearing trees) for threatened fauna species. The proposal is also estimated to remove 3.22 hectares of Endangered Ecological community.
2. Clearing is seen to contribute to degradation of soils, which can then lead to further impacts on water quality. **Identifying the impacts of clearing and trenching on soils and waterways within the pipeline easement should be a key environmental requirement.**
3. **If the project is approved then site rehabilitation should be a key requirement.** This will ensure adequate rehabilitation of the pipeline easement with correct species known to have occurred onsite prior to clearing. It should also mention temporary removal and replacement of habitat features (hollow logs, rocks and fallen timber) after each section of the pipeline has been installed. A soil rehabilitation plan should also be developed to ensure long term soil stability within the pipeline easement.
4. Clearing vegetation is a known factor contributing to climate change. This project aims to provide more water to Goulburn over the long term within a landscape predicted to receive less rain due to climate change. **Therefore HNCMA supports the 'Strategic Planning and Project Justification' key assessment requirement for identifying feasible alternatives to pipeline construction.**

Recommendations for surveying native vegetation

In accordance with NSW government policy on assessing the values of native vegetation, the following methods are recommended when carrying out field data collection to survey native vegetation:

- All parts of the pipeline easement are investigated on foot to note presence of native vegetation cover. Geographic position system coordinates (waypoints) should be taken around the boundary of each remnant. Dominant species of trees, shrubs and groundcovers should be noted as well as the condition of the vegetation (and existing disturbance factors).
- All vegetation remnants within the pipeline easement need to be grouped into 'Vegetation Zones' – for example, one particular zone would contain similar species, habitat components and vegetation in similar condition. These will form separate 'zones' that require more stringent survey.
- Once zones are identified, a full floristic and structural vegetation survey should be carried out within each vegetation zone, noting species richness and cover abundance of trees, shrubs and ground cover. Habitat components should also be recorded onsite. For vegetation zones identified to contain suitable potential habitat for threatened flora, targeted surveys should also be carried out for each separate area at the appropriate time of the year.
- Survey of potential offset areas is also recommended. They require a similar methodology in field survey to determine their ecological suitability. HMCMA can provide advice on the likely ratio of clearing to offset areas that would be necessary in a clearing PVP assessment under the NV Act 2003. This would be determined by assessment using the BioMetric and other tools within the PVP Developer. Alternatively participation in the Biodiversity Banking and Offsets Scheme would involve a similar assessment and would require the assistance of an accredited Biobanking officer.

Further advice on offset areas

Any clearing of native vegetation for the proposed development should be offset before the clearing occurs, using either the requirements of the EOAM to ensure the offset areas will result in an improved or maintained environmental outcome, or by participation in the Environmental Outcomes Assessment Methodology.

Offset areas are areas of existing native vegetation which are managed to improve the quality of the vegetation and habitat, such that the improvement in quality is equal or greater than the loss of vegetation and habitat incurred by clearing.

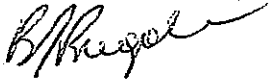
Each area containing native vegetation (including groundcover) proposed for clearing should be grouped into zones (as described above) and have a corresponding offset area identified. Offset areas for both PVP and Biodiversity Banking assessments are based on the principle that offsets proposed for a development site must meet prescribed criteria of compatibility i.e. the offset and development site must be from within the same CMA subregion, vegetation types and formation and the surrounding vegetation cover class of the offset site must be equal to or greater than that of the development site. Lastly, the patch size of the offset site must be equal to or greater than that of the development site.

Neither the PVP developer or Biodiversity Banking and Offsets Scheme considers the impacts on Regional Biodiversity Corridors. Therefore any clearing of vegetation within or adjacent to the Abercrombie River to Morton National Park Regional Biodiversity Corridor should also be offset within or adjacent to the corridor, to prevent a loss of corridor function. A digital map of the corridor can be provided on request.

Offset areas and associated management actions should be secured in perpetuity by a conservation covenant attached to land title.

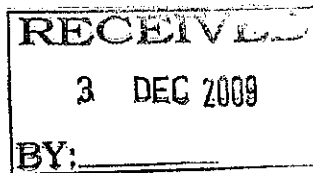
I have asked Gillian Young, Catchment Officer (PVP Consents) at our Goulburn office to assist you should you require further information on any of the above. Gillian may be contacted by telephone on 4828 6770.

Yours sincerely

A handwritten signature in black ink, appearing to read 'B. Bugden', with a stylized flourish extending from the end.

Bernie Bugden
General Manager

Our ref: AOO.204



Monday, 30 November 2009

GHD Pty Ltd
Level 7
16 Marcus Clarke Street
CANBERRA CITY ACT 2601

Attention: Mr James Earle

Jemena Asset
Management Pty Ltd
ABN 53 086 013 461

Unit 1, 5-7 Hume Place
Hume, ACT 2620
Telephone: 02 6203 0600
Facsimile: 02 6203 0601
www.jemena.com.au

Dear Sir,

**WATER for GOULBURN
HIGHLANDS SOURCE PROJECT**

In response to recent letter and email correspondences between GHD and Jemena, this letter is to confirm and advise the following:

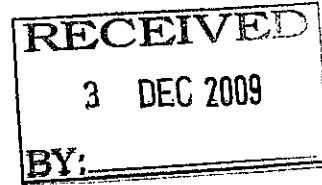
1. Jemena provides "in Principal Approval" for this proposed project.
2. Jemena acknowledges that "for the portion of pipeline that will be adjacent to the MSP, the pipeline will be on the southern side of the MSP"
3. Jemena advise that this proposed easement will impact on existing high pressure gas mains and associated equipment that supply the City of Goulburn, and Marulan.
4. GHD must consult very closely with this office during the design phase to identify in exact detail, the location of all gas assets, and to ensure that appropriate engineering protocols and measures are understood, documented, and approved.
5. Please ensure that all future correspondence is forwarded directly to this office.

Please contact me if you have any questions, or concerns.

A handwritten signature in black ink, appearing to read "Jim Dawson".

Jim Dawson
Capital Programs & Construction ACT
Jemena Asset Management Pty Ltd
Phone: (02) 6203 0622

30 November 2009



Integral Energy Ref: ENL1213 – 2005/00053/001

GHD Pty Ltd
GHD Reply Paid 1877
Canberra ACT 2601

Attention: James Earle

Dear Sir/Madam

ENL1213 – Enquiry Application Water Pipeline Wingecaribee Reservoir, Wingecarabee

Integral Energy acknowledges your enquiry and it is filed under the Customer Application Number shown above. Please quote this number on any further correspondence.

Integral Energy will assess your application and you will receive further advice about your requirements after an initial investigation has been carried out which should take approximately two weeks.

This letter does not allow release of plans from the Constituent Council or from your Private Certifier.

Should you have any enquiries regarding your application please do not hesitate to contact our Customer Consultant on (02) 9853 6234.

Yours faithfully

Tina Loucos
Customer Consultant
NETWORK CONNECTIONS - Huntingwood

Going further for you is what we do

In Reply Quote: ENL1213
Huntingwood Drive, Huntingwood NSW 2148 □ Postal Address: PO Box 6366, Blacktown NSW 2148. DX 8140 Blacktown
Telephone: (02) 9853 6234 Facsimile: (02) 9853 6461 ✉ integral@integral.com.au



The power is in your hands



Office
of Water

Ms Dinuka McKenzie
NSW Department of Planning
GPO Box 39
SYDNEY NSW 2001

Contact: Janne Grose
Phone: 02 9895 7651
Fax: 02 9895 7501
Email: janne.grose@dnr.nsw.gov.au

4 December 2009

Our ref: ER20865
Your ref:

Attention: Anna Timbrell

Dear Ms McKenzie

Major project - Highlands Source Project – pipeline to transfer water from Wingecarribee Reservoir to Goulburn - Director General Requirements – Goulburn Mulwaree and Wingecarribee Councils

Thank you for your letter of 12 November 2009 requesting key issues and assessment requirements from the Department of Environment, Climate Change and Water (NSW Office of Water) for the project proposal.

The NSW Office of Water's (NOW) key issues in relation to the construction of the proposal include :

- the protection and rehabilitation of waterways and riparian land
- the protection of wetlands
- groundwater and groundwater dependent ecosystems.

Specific comment is outlined in Attachment A.

The NOW is providing on-going assistance on this project through its participation in the development of Goulburn's Integrated Watercycle Management Strategy.

Contact Details:

Should you have any queries in respect to this matter, please contact me on (02) 9895 7651.

Yours sincerely

Janne Grose
Planning and Assessment Coordinator
Major Projects and Assessments

Department of
Environment, Climate Change and Water NSW





ATTACHMENT A

Specific Comments from the DECCW (Office of Water)

**Major Project – Highlands Source Project – pipeline to transfer water
from Wingecaribee Reservoir to Goulburn**

Director-General's Environmental Assessment Requirements

Relevant Legislation

The NSW Office of Water (NOW) is responsible for administering the Water Act 1912 and the Water Management Act 2000 (WMA) which manage and regulate the use of surface water and groundwater resources. The Environmental Assessment (EA) is required to take into account the objectives and regulatory requirements of these Acts, as applicable.

Relevant Policies

The EA is required to take into account the following NSW Government policies, as applicable:

- NSW Groundwater Policy Framework Document - General
- NSW Groundwater Quantity Management Policy
- NSW Groundwater Quality Protection Policy
- NSW Groundwater Dependent Ecosystem Policy
- NSW State Rivers and Estuaries Policy
- NSW Wetlands Management Policy
- NSW Farm Dams Policy

Protection of the waterways and riparian land

Section 7.3.1 of the Preliminary Environmental Assessment (PEA) indicates the proposed alignment of the pipeline proposal will intersect a number of tributaries.

Department of
Environment, Climate Change and Water NSW



The NOW recommends the proposal seeks to protect, maintain and enhance waterways and the values and functions of riparian land along the pipeline route.

The NOW's considerations for protecting and enhancing waterways and riparian lands are embodied in natural resource policy documents including:

- The New South Wales State Rivers and Estuaries Policy. The objective of the policy are to manage the rivers and estuaries of NSW in ways which:
 - *Slow, halt or reverse the overall rate of degradation in their systems*
 - *Ensure the long term sustainability of their essential biophysical functions, and*
 - *Maintain the beneficial use of these resources.*
- The New South Wales Wetlands Management Policy
- The State Plan 2009 and the priorities and targets, particularly:
 - *protect our native vegetation, biodiversity, land, rivers and coastal waterways*
 - *Meet our State-wide targets for natural resource management to improve biodiversity and native vegetation sensitive riverine and coastal ecosystems, soil condition and socio-economic wellbeing*
 - *over the next 2 years we will increase the extent and improve the condition of native vegetation and habitats*
- the Metropolitan Strategy which includes an objective to Improve Health of Waterways, Coasts and Estuaries (E2.1).
- State wide manual: Managing Urban Stormwater: Soils and Construction (NSW Government, Chapter 5 4th edition 2004) (the Blue Book).

The NOW recommends the EA provides details on the following:

- all waterways and native riparian vegetation that may be adversely impacted by the proposal
- assess the existing stability of waterways in the vicinity of pipeline crossings
- assess the potential impact of the proposal on the stability of waterways
- any disturbance of waterways associated with the proposal and rehabilitation to emulate a naturalised system for aquatic and terrestrial environments.
- assess the potential impact of the proposal on existing riparian vegetation and the rehabilitation of riparian vegetation (including potential to disturb riparian vegetation during routine maintenance and repair to the pipeline)
- mitigative measures to protect and enhance the waterways and riparian land including creek stabilisation; rehabilitation of creeks as natural systems; protection/establishment of riparian vegetation

The EA needs to demonstrate that the pipeline route will not adversely affect the stability of watercourses or existing native riparian vegetation, particularly any threatened species or community. The proposal should not result in the permanent clearing of riparian vegetation for the locating of above-ground structures, maintenance and access to these points. Any access areas for the maintenance of the pipeline should be located outside riparian lands.

The design and construction footprint, and extent of disturbances within the watercourses and riparian land should be minimised. It is noted in Section 7.12.2 of the PEA that 85% of the pipeline route is through or parallel to existing easements.

Pipeline crossings of waterways:

Section 7.2.1 of the PEA notes the pipeline would cross various waterways including the Wingecarribee River and Wollondilly River (page 26). Crossings of waterways/riparian land should be under bored or attached to existing structures (such as bridges) to avoid direct impacts on the aquatic and riparian environment, where : (i) there is permanent flow in the waterway or (ii) there is existing native riparian vegetation or (iii) the creek is in good natural condition or (iv) there is potential fish passage Class 1 or 2.

The NOW recommends that underground boring commence from the outer edge of the riparian land and that it is bored for the full width of the watercourse and riparian land.

Trenching may be an option if:

- (i) the waterway is a dry intermittent creek
- (ii) the native riparian vegetation has previously been cleared and
- (iii) there are no watercourse instability issues.

If there are areas of existing creek instability below the pipeline route , the EA will need to provide a detailed assessment so as to ensure for the future stability of the waterways and reduce risk to the pipeline itself.

Wetlands

The EA should provide on a scaled plan, details on the location of:

- a. any wetlands on/or adjacent to the pipeline route
- b. buffer setbacks around the wetlands

Section 7.2.1 of the PEA (page 26) notes no listed wetlands were identified from within 1 km radius of the pipeline route. The EA needs to address the potential impact of the proposal on any wetlands, including modification to the wetlands hydrologic regime / groundwater recharge; water quality and loss/degradation of habitat needs to be assessed and safeguard measures provided to protect and minimise impacts on the wetlands.

Groundwater

The NOW is responsible for the management of the groundwater resources. The proposal needs to protect groundwater resources in accordance with NSW State groundwater policy, enhance groundwater quality and protect groundwater dependent ecosystems (GDEs).

The EA should identify groundwater issues and potential degradation to the groundwater source and provide the following details:

- the predicted highest groundwater table at the site.
- any works likely to intercept, connect with or infiltrate the groundwater sources.
- any proposed groundwater extraction, including purpose, location and construction details of all proposed bores and expected annual extraction volumes.

- a description of the flow directions and rates and physical and chemical characteristics of the groundwater source.
- the predicted impacts of any final landform on the groundwater regime.
- the existing groundwater users within the area (including the environment), any potential impacts on these users and safeguard measures to mitigate impacts.
- an assessment of the quality of the groundwater for the local groundwater catchment
- an assessment of groundwater contamination (considering both the impacts of the proposal on groundwater contamination and the impacts of contamination on the proposal).
- how the proposed development will not potentially diminish the current quality of groundwater, both in the short and long term.
- measures for preventing groundwater pollution so that remediation is not required.
- protective measures for any groundwater dependent ecosystems (GDEs).
- proposed methods of the disposal of waste water and approval from the relevant authority.
- the results of any models or predictive tools used.

Where potential impact/s are identified the assessment will need to identify limits to the level of impact and contingency measures that would remediate, reduce or manage potential impacts to the existing groundwater resource and any dependent groundwater environment or water users, including information on:

- any proposed monitoring programs, including water levels and quality data
- reporting procedures for any monitoring program including mechanism for transfer of information.
- an assessment of any groundwater source/aquifer that may be sterilised from future use as a water supply as a consequence of the proposal.
- identification of any nominal thresholds as to the level of impact beyond which remedial measures or contingency plans would be initiated (this may entail water level triggers or a beneficial use category).
- description of the remedial measures or contingency plans proposed.
- any funding assurances covering the anticipated post development maintenance cost, for example on-going groundwater monitoring for the nominated period.

Licensing

Section 7.3.2 of the PEA indicates that groundwater aquifers and management units may be disturbed by the trenching and excavation activities during construction (page 32).

If the proposal is likely to intercept or use groundwater, the need for a water license under Part 5 of the Water Act 1912 should be addressed in the EA.

All proposed groundwater works, including bores for the purpose of investigation, extraction, dewatering, testing or monitoring must be identified in the proposal and an approval obtained from NOW prior to their installation.

Groundwater Dependent Ecosystems

The EA should provide details on the presence and distribution Groundwater Dependent Ecosystems (GDEs) in the vicinity of the site and identify any potential impacts on GDEs as a result of the proposal.

GDEs are ecosystems which have their species composition and natural ecological processes wholly or partially determined by groundwater. GDEs represent a vital component of the natural environment and can vary in how they depend on groundwater, from having occasional or no apparent dependence through to being entirely dependent. GDEs occur across both the surface and subsurface landscapes ranging in area from a few metres to many kilometres. Surface and groundwaters are often interlinked and aquatic ecosystems may have a dependence on both.

Ecosystems that can depend on groundwater and that may support threatened or endangered species, communities and populations, include:

- Terrestrial vegetation that show seasonal or episodic reliance on groundwater.
- River base flow systems which are aquatic and riparian ecosystems in or adjacent to streams/rivers dependent on the input of groundwater to base flows.
- Aquifer and cave ecosystems.
- Wetlands
- Estuarine and near-shore marine discharge ecosystems.
- Fauna which directly depend on groundwater as a source of drinking water or live within water which provide a source.

Water supply Pipeline in Hume Highway Corridor, supplying Goulburn from Wingecarribee reservoir.

Issues for consideration.

Placement within corridor

North of Medway Rivulet, the Hume corridor is Freeway, with the land vested in RTA, and with no accesses across the boundary. The freeway is designed for high speed traffic with no conflicts with adjoining access and with no public utilities within the road reserve.

If the pipeline must be within the road reserve, the location needs to minimise future impact on pipeline as well as impact on road and maintenance activity. This will indicate a location as close to a road reserve boundary as possible. The pipeline should be at least 2.5m clear of the road formation and drainage structures

Any other location, including median, is not acceptable, as it will adversely impact future maintenance and traffic management activity including drainage and widening potential.

Bridges and river crossings

Attachment options for bridges are limited and potentially costly, and would include substantial traffic disruption. The need to accommodate large expansion movements further complicates any pipeline attachment. Future bridge maintenance is compromised by pipeline attachment.

Consequently, directional drilling under the waterways is preferred.

Other Utilities

There will need to be a comprehensive search for the presence and locations of other utilities within the corridor, to identify if the pipeline can go adjacent a fence line.

We must assess the need to identify or reserve a corridor for future utilities.

Access for construction and maintenance of the pipe line

Wherever possible, access to the corridor for construction should be made through the adjacent property.

If there is no alternative but to access from the freeway or motorway, the contractor will be subject to Road Occupancy Licence provisions. This licence will restrict working hours, and necessitate Traffic Control Plans, Vehicle Movement Plans to be provided to ensure safety for freeway traffic as well as contractor staff.

Future maintenance of water main

The water main design should aim to make it maintenance free for its design life. All future maintenance access will require the same level of ROL control as for construction.

Peter Meers

Road Maintenance Planner

RTA Southern Operations and Engineering Services

8 May 2007

General:

- X 1) All activities, including delivery of materials will not impede traffic flow along the Roads and Highways
- X 2) Work carried out by boring under the Roads and Highways will be concrete encased.
- X 3) The pits for the bores will be located outside the road reserve, wherever possible. Where this is not practical then they are to be no closer than three metres from the road pavement for both entry and exit holes. The depth will be not less than 1.2 metres below road surface level to the top of the pipe or concrete.
- X 4) The Authority does not permit lane closures on the Hume Highway, Southern Freeway, The Northern Distributor or Princes Highway, between 6:00am and 7:00pm, and as such, any work requiring activity on the road would have to be done at night.
- X 5) Where an underbore is required, there is normally a requirement for the bore head to be followed across the road. If this is the case then full traffic control will be required for this activity.
- X 6) If the conduit (pipeline) is to be decommissioned, if necessary at any time, then the pipe shall be cut off at the entry and exit pits, leaving the conduit (pipeline) permanently under the roadway.
- XXX 7) Future maintenance and contingency plans for any infrastructure failures should be submitted and agreed to by the RTA prior to the commencement of work.
- X 8) All areas within road reserve that are disturbed by your work are to be restored to their original condition upon completion of the work and all restoration work is to be carried out to the satisfaction of the Roads and Traffic Authority.
- X 9) The area shall be revegetated on completion of work to ensure scouring of the area is minimal.
- X 10) Longitudinal trenching is to be at a minimum of 0.6m whilst in the road reserve and as close as possible to the road boundary. At no time is the trench to be within 3m of the road edge line. Only in exceptional circumstances and never on the Hume Highway will transverse trenching of the road be permitted.
- 11) The conduit (pipeline) is to be placed within 2 metres of the boundary fence line and at a depth of not less than 600mm below surface.
- 12) Markers are to be placed at regular intervals to show location of conduit.

13)The Principal (and it's contractors) are to be fully responsible for matters regarding :

- a. Public Liability Insurance which should be in the amount of not less than \$20 million should be affected and extended to cover the interest of the RTA or its agent by any contractor engaged in the construction or maintenance of the work.
- b. Occupational Health & Safety matters.
- c. Environmental control and restoration.
- d. Traffic management.

14)You may need to consult with the Workcover Authority in regards to their requirements for this work.

15)You may need to consult with Council in this regard.

16)If any widening of the Southern Freeway is required at a future date in this location, then Telstra to relocate this line at no cost to the Roads & Traffic Authority.

Road Occupancy Licence:

- 1) You need to submit an application for a Road Occupancy .
- 2) Give as much lead time as possible as processing of the Road Occupancy Licence may take as long as 10 days.

Works with major involvement with traffic:

- 1) A Traffic Control Plan (TCP), developed by an accredited person in the design of TCP's, will be put in place prior, for any work being commenced on the Authority's roads. This TCP will need to be kept on site at all times and be made available for surveillance by the Authority's representative.
- 2) The traffic control signs will be removed overnight or at cessation of work for the day.
- 3) All persons involved with the placement and removal of traffic control signs will be accredited and ticketed traffic control persons.
- 4) The vehicle used in the placement and removal of signs will have flashing amber lights on the roof and have a 'Workman Ahead' sign attached to the rear tailgate.
- 5) There will be no work within three metres of the travelling public with the exception of traffic control persons placing and removing signs advising the travelling public of works.

- 6) A certification that a Review of Environmental Factors (REF) has been completed and will not have any significant environmental impacts.
- 7) The Principal will ensure that due notification of work is advertised in the local media, and, that suitable advance warning signs are erected on each side of the works advising the public of minor disruptions due to the work.
- 8) The Principal will advise the local Police of any proposed disruption to traffic



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Ref: D2009/06057

Ms. Dinuka McKenzie
Major Infrastructure Assessments
Department of Planning
PO Box 39
SYDNEY NSW 2001

Dear Ms. McKenzie

Proposed Highlands Source Project – Goulburn Mulwaree and Wingecarribee Local Government Areas (MP09_0193)

The Sydney Catchment Authority (SCA) appreciates the opportunity to provide its environmental assessment requirements in relation to the construction of a water-supply pipeline from Wingecarribee Reservoir to Goulburn.

The pipeline and associated works will be wholly located within the Wollondilly River catchment which is part of Sydney's Drinking Water Catchments. Consequently the SCA considers it is important that the proposed pipeline and associated works are constructed and operated in a manner which does not adversely affect the water quality of both surface and ground waters.

The *Drinking Water Catchments Regional Environmental Plan No.1* addresses the water quality issues and requirements that should be addressed in the assessment process of Part 4 developments and Part 5 activities within the Drinking Water Catchments. The SCA considers that the pipeline and associated works, although a Part 3A matter, should nevertheless address these REP criteria. In particular there should be an assessment as to whether the proposal will have a "neutral or beneficial effect on water quality", and the assessment should identify how SCA endorsed Current Recommended Practices (CRPs) will be incorporated into the development. The SCA's list of endorsed CRPs can be found at <http://www.sca.nsw.gov.au/the-catchments/regional-plan/regional-plan-current-recommended-practices>, while the REP can be found at <http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+289+2006+cd+0+N>

More specifically the SCA's requirements for the Environmental Assessment are as follows:

- a clear identification of the preferred and alternative routes for connection to Goulburn's water supply system including the different crossings of the Wollondilly River;
- a clear identification as to whether raw or treated water would be pumped through the pipeline;
- a consideration of the *Drinking Water Catchments State Regional Environmental Plan No.1* and have regards to the water quality requirements detailed in the plan;

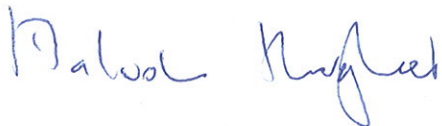
- a Water Cycle Management Study (WCMS) that addresses the following matters for the preferred option:
 - details the route characteristics including intersections with watercourses and other natural and artificial features, the proposed crossing mechanisms, and identifies the likely pollutants of concern during the construction and operational stages of the pipeline and associated works at such intersections;
 - identifies the potential impacts on the water quality of surface and ground waters during construction and all aspects of the operation of the pipeline and associated works;
 - for each identified pollutant of concern assesses the post-activity condition in relation to the pre-activity condition in terms of load and concentration for both wet and dry weather conditions;
 - details the proposed water quality protection measures and practices during construction and operation stages of the development, along with the performance criteria for each measure and an assessment of whether the measures are sustainable for the periods for which they are expected to be required;
 - incorporates or relates such measures to the SCA endorsed CRPs for the protection of water quality, or includes practices and standards that will achieve equivalent or better water quality outcomes;
 - addresses the proposed water quality protection measures and practices to treat both stormwater and sewage associated with site compounds and other construction sites occupied for a longer term, the separation of clean and dirty water management, as well as optimisation and recycling to minimise offsite impacts on surface and ground waters;
 - identifies how the proposed water quality protection measures and practices relate to the transport and storage of fuels, oils, other liquids and materials during the construction and operational phases, to ensure they are contained and managed to avoid spills and pollution of waters;
 - details how water resulting from the scouring of the pipeline (whether raw or treated) will be managed, treated and disposed of to dams, to ensure there is no erosion or other detrimental impact on water quality, and pays particular attention to potential contaminants, including chlorine, sludge, organic matter and BOD. This and other matters should be incorporated into a conceptual OEMP;
 - identifies any proposed rehabilitation and measures to offset major vegetation clearances;
 - determines whether a neutral or beneficial effect on water quality of receiving waters (surface and groundwater) will occur during construction and all aspects of operational stage of the pipeline and associated works.
- The WCMS should also include a conceptual Erosion and Sediment Control Plan (ESCP) based on *Managing Urban Stormwater: Soils and Construction (vols. 1 & 2)* (<http://www.environment.nsw.gov.au/stormwater/publications.htm>) which should contain:

- sample ESCP and component ESCP plans to be used at primary and secondary site compounds, under-boring sites, watercourse and drainage depression crossings and all other intersections identified in the proposal;
- a list of standard erosion and sediment control measures and drawings to be used during construction;
- methods to be used in the rehabilitation and stabilisation of watercourse crossings.
- The Water Cycle Management Study should also include a conceptual Operational Environmental Management Plan based on DIPNR's Guidelines for the preparation of an EMP (P:\Environment & Planning\Development Control\Environmental Management\Guideline for the Preparation of an EMP DIPNR 2004.pdf) that incorporates:
 - all aspects relating to the ongoing environmental management of the pipeline and associated works, and water quality management and rehabilitation measures;
 - an identification of what should be done, when things should be done and who has responsibility for such matters;
 - measures for dealing with incidents including contact details;
 - relevant monitoring and reporting requirements.

The SCA proposes that the consultant should liaise with the SCA's contacts in relation to its requirements for preparation of the Environmental Assessment report. It would also appreciate being involved in the assessment of the application and provided with copies of subsequent environmental assessment documents.

If you wish to discuss any matter raised in this letter, please do not hesitate to contact Jim Caddey on 4824 3401 (james.caddey@sca.nsw.gov.au) or Dr Bob Banens on 4724 2458 (robert.banens@sca.nsw.gov.au).

Yours sincerely



MALCOLM HUGHES
A/Manager, Planning & Assessments

27/11/09



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26 November 2009

Major Infrastructure Assessments
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Attn: Dinuka McKenzie

Dear Dinuka

**Re: Proposed Highlands Source Project – Goulburn Mulwaree and
Wingecarribee Local Government Areas (MP 09_0193)**

Council would like to provide the following input pursuant to Section 75F(4) of the *Environmental Planning and Assessment Act 1979* in relation to the project.

Council would like the following concerns to be addressed as part of the consultation with the proponent during the preparation of the Environmental Assessment:

Noxious and Environmental Weed Management

Environmental weeds continually threaten our diverse bushland, wetland and other natural areas. These may be native plants from other parts of Australia, but are generally exotic species.

Environmental weeds are distinct from noxious weeds in that they have not been declared under the Noxious Weeds Act 1993, therefore there are no legal requirements to control environmental weeds.

The Environmental weeds of the Southern Highlands are plants that are adapted to cool climates. These same species in warmer climates generally do not invade bushland. Most of the plants that become environmental weeds are commonly grown in home gardens, and are available in local nurseries. A list of Noxious and of Environmental weeds is available from Wingecarribee Shire Council.

Council is concerned that the spread of both Noxious and Environmental weeds throughout the construction and maintenance phases of the Highlands Source Project be minimised and that policies and procedures be put in place that prevent the tracking of vegetation from any one property onto adjacent properties. Mitigation measures could include the use of vehicle wash downs, inspections and an awareness of the importance of minimising the spread of environmental weeds through any induction programs.

The environmental assessment should include an environmental risk analysis to identify potential adverse environmental impact associated with the project and proposed mitigation measures to prevent the spread of Noxious and Environmental weeds.



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Siting, Design and Landscaping of Rural Developments

Council has developed a Development Control Plan No. 53 for the "*Siting, Design and Landscaping of Rural Developments*".

Included in the objectives of this DCP is to ensure that developments are landscaped in a way that complies with the definition and standards of a vegetative barrier planting and is compatible with and which complements and enhances the scenic quality and historic character of the locality, using plant species that are appropriate to the natural and cultural land form.

The Environmental Assessment in particular should demonstrate how design in addition to landscaping comprised of indigenous native plants endemic to the particular area and or appropriate ornamental plants will be used to provide amenity, privacy and protection and an attractive setting to any additional built environment and throughout the rehabilitation of the development area.

Ecological Impacts

Council acknowledges the consent authority roles of the Sydney Catchment Authority, Hawkesbury Nepean Catchment Authority, Department of Environment Climate Change and Water in order to provide an assessment of ecological impacts.

Rural Fire Service

An assessment of access opportunities for both hazard reduction fire fighting purposes, and wild fire fighting purposes to various points of the pipeline for the Rural Fire Service. A suitable water storage off take could be provided out of the service corridor with a lockable access to stop theft of water, for use by the RFS without accessing the service corridor.

Salinity

An assessment of the impacts of salinity processes, and the critical nature of material selection in minimising salinity impacts should be included. Demonstrated measures to prevent water sources mobilising, redistributing or concentrating salts throughout the construction and maintenance phases.

Road Crossings

Council suggests that the impacts of construction within both local and main road reserves should be specifically considered. Mitigation measures should be identified to minimise construction impacts on existing road pavements and other infrastructure located within road reserves. Impacts on road side vegetation should also be considered.

Yours faithfully

Scott Lee
Acting General Manager

