



Land & Property
Management Authority
Lake Illawarra Authority

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



Attention: Belinda Scott

8 March 2011

Dear Ms Scott

**Environmental Assessment for Early Release Lead-in Works
for West Horsley (MP10_0197)**

Reference is made to your letter of 28 February 2011 regarding the above.

The Lake Illawarra Authority (LIA) has reviewed Sydney Water's Environmental Assessment and generally supports the process outlined for undertaking the construction works.

The mitigation measures proposed during construction to ensure potential impacts to down stream water flows are minimised are supported. Also supported is the use of the leak tight pipes in the wastewater system that reduces potential for wet weather overflows.

The LIA has on-going concerns about the potential impact of proposed future development on the environment of Lake Illawarra. Future development should not result in increases in sediment, nutrient and water borne pollution loads on down stream flows.

The Lake Illawarra Authority appreciates being kept informed of any new developments in the West Dapto Urban Release Area and adjoining growth areas that may impact on water quality within Lake Illawarra.

Should you require further information concerning the above, please contact Mr Garry Clarke on (p) 4275 9470 or email garry.t.clarke@lpma.nsw.gov.au.

Yours faithfully

for: Brian Dooley
Executive Officer





PCU021174

Page 1 of 2

28 March 2011

Attention: Belinda Scott
 Department of Planning
 GPO Box 39
 Sydney NSW 2001



Re: Environmental Assessment for Early Release Lead-in Works for West Horsley (MP10_0197)

To whom it may concern,

Southern Rivers Catchment Management Authority (Southern Rivers CMA) is a consent authority under the Native Vegetation Act 2003 (NVA). The NVA primarily applies to rural and rural residential land.

The NVA incorporates an assessment methodology which aims to 'improve or maintain' native vegetation. This concept of 'improve or maintain' is assessed using a tool called NVAT. NVAT assesses the impact of the proposed clearing on water quality, threatened species, land and soil capability (including salinity) and biodiversity. The negative impact of clearing is 'offset' by areas that are managed for environmental purposes.

Whilst the NVA does not apply to Part 3A developments, Southern Rivers CMA suggests that the principles incorporated in NVAT represent 'best practice' in vegetation management. Therefore we suggest that the assessment requirements reflect those articulated in the Environmental Outcomes Assessment Methodology (EOAM) which underpins NVAT. This methodology can be found at <http://www.environment.nsw.gov.au/vegetation/eoam/index.htm>

Desktop analysis

The study area is located on the coastal floodplain. All vegetation communities located in this part of the landscape within the Illawarra are under significant pressure. Most vegetation communities are either threatened or over cleared.

The Southern Rivers CMA recommend avoiding any further disturbance of these vegetation communities. The CMA recommends following existing easements, property boundaries and other cleared

Southern Rivers Catchment Management Authority

5 O'Keefe Avenue, Nowra NSW 2541 | PO Box 309, Nowra NSW 2541 ☐

Telephone: 02 4429 4444 | Facsimile: 02 4429 4458 | Website: www.southern.cma.nsw.gov.au



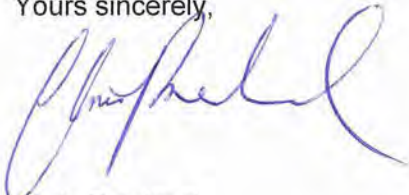
areas wherever feasible to avoid further fragmentation of existing remnants.

Furthermore, the spread of noxious and environmental weeds should be carefully avoided during the construction and operation phase of the pipeline. In particular the movement of machinery and the use of infill containing weed material. The CMA recommends the proponent take appropriate measures to avoid further spread of weeds particularly between the remnant patches of vegetation.

The CMA supports the currently proposed routes for wastewater and water pipelines as outlined in Figure 3.1 of the report and considers them as having the least impact on remnant native vegetation.

If you have any further questions regarding our advice please contact Michael Fiedler on 4429 4452.

Yours sincerely,



Chris Presland
Program Manager



Our Ref: 86M5003 (11/257) STH07/00674
Contact: Andrea Boes 4221 2771
Your Ref: MPI0_0197



14 MAR 2011

The General Manager
Department of Planning
GPO Box 39
Sydney NSW 2001

Department of Planning
Received
16 MAR 2011
Scanning Room



Attention: Belinda Scott

WOLLONGONG CITY COUNCIL - EXHIBITION OF ENVIRONMENTAL ASSESSMENT - WEST HORSLEY - SYDNEY WATER EARLY RELEASE LEAD-IN WORK

Dear Sir/Madam

Reference is made to your letter dated 28 February 2011 regarding the subject Environmental Assessment for early release lead-in works for West Horsley forwarded to the Roads and Traffic Authority (RTA) for consideration.

The RTA has reviewed the information provided. The RTA notes that works are proposed at Fairwater Drive and Shone Avenue/Bong Bong Road, Horsley which are unclassified, local roads. Given this, the RTA does not object to the subject Environmental Assessment in principle.

In accordance with Section 79C(1)(b) of the EP&A Act, Council as the Consent Authority, is responsible to consider any likely impacts on the natural or built environment in the road reserve fronting this proposed development. For instance there could be traffic noise impacts on adjacent residences, impacts on indigenous or non-indigenous heritage items or threatened species. The RTA will not be making a separate Part 5 environmental assessment of the environmental impacts in the road reserve for this proposal.

Yours faithfully

Rob Reynolds
Manager, Road Safety and Traffic Management
Southern Operations and Engineering Services

Cc - The General Manager, Wollongong City Council (via email)

Belinda

4a

Agriculture

Weed management during construction accord with existing State, regional or local weed management plans or strategies. Destruction or removal of Noxious Weeds may require a permit from Industry & Investment NSW - Primary Industries http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0015/170232/weed-permit.pdf

Minerals

There are no minerals issues.

Fisheries

Will most likely comment regarding the works by due date.

Regards

Andrew Docking | Resource Management Officer | Primary Industries

Industry & Investment NSW | Locked Bag 4 | Bld M14 Castle Road | Richmond | NSW 2753

T: 02 4588 2128 | F: 02 4588 2159 | M: 0431 651 015

E: Andrew.Docking@industry.nsw.gov.au | W: www.industry.nsw.gov.au

Land use planning information and guidelines are available at:

www.dpi.nsw.gov.au/environment/landuse-planning

<http://www.dpi.nsw.gov.au/environment/landuse-planning/agriculture/analysis-census-data>

This message is intended for the addressee named and may contain confidential information. If you are not the intended recipient, please delete it and notify the sender. Views expressed in this message are those of the individual sender, and are not necessarily the views of their organisation.



primefacts

FOR PROFITABLE, ADAPTIVE AND SUSTAINABLE PRIMARY INDUSTRIES

OCTOBER 2010

PRIMEFACT 1063

RURAL DEVELOPMENT GUIDELINES

Infrastructure proposals on rural lands

Mary Kovac and Glenda Briggs

Resource Planning and Development Unit

The purpose of this Primefact is to help consent authorities to maintain sustainable primary production and development opportunities and minimise land use conflict when assessing infrastructure proposals affecting rural resource lands.

This guideline relates to infrastructure facilities for: electricity and gas transmission and distribution, telecommunication facilities, railways, sewage systems, air transport facilities, wind farm proposals and other small scale renewable energy developments. Secondary minor local government work on roads, road realignments and associated facilities such as bridges) are also included.

This guideline does not address classified road and road traffic facilities or waste or resource management facilities¹.

Specific guidance should be sought for facilities which will increase the numbers of people living or working in rural lands such as housing, group homes and educational facilities due to the high risk of land use conflict.

This document is part of a guidelines series that helps streamline the Development Application (DA) process, by setting out the key agricultural issues, impacts and recommendations for consent authorities to consider.

The guideline may also help applicants, developers, consultants and the general public identify issues to be addressed.

¹ issues related to landfills in rural areas are outlined in the Primefact *Agricultural Issues for Landfill Developments* available on the Department's web site (see further information).

The guidelines focus on agricultural issues rather than the full range of issues that consent authorities must address.

Integrated development proposals that trigger provisions of the *Fisheries Management Act 1994*, the *Mining Act 1992*, or the *Plantations and Reafforestation (Code) Regulation 2001* should still be routinely referred to the relevant section of Industry and Investment NSW (I&I NSW).

Development assessment guidelines

Well planned infrastructure developments, such as electricity transmission lines or communication towers can be compatible with ongoing agricultural land use. Lease fees or access agreements may also provide a supplementary income source.

Landholder consultation, good design and effective planning controls are critical for such outcomes.

To minimise impacts on agricultural resources and enterprises from infrastructure development proposals, I&I NSW recommends that:

- Proposals are clearly justified in a regional context and identify the merits and community benefit of the proposal.
- Agricultural resource lands are identified and avoided. New infrastructure is located within existing infrastructure corridors wherever possible.
- Land use conflicts are minimised.
- Landholders are effectively consulted during planning, construction and rehabilitation works and the expectations of local communities are managed.
- Development proposals identify suitable mitigatory / remediation responses for all likely agricultural impacts.

Infrastructure impacts that are of particular significance for sustainable agriculture are:

Resource loss and fragmentation

Impacts on farming operations and livestock

Increased weed, biosecurity and bushfire risks

Site rehabilitation

Recommended considerations and possible consent conditions for the above specific issues are set out in the following sections.



A rail loop for coal loading designed to avoid productive alluvial farm lands. Photo: D Barnes.

Resource loss and fragmentation

Infrastructure that fragments rural resource lands can permanently reduce the economic and environmental sustainability of the farming enterprise and constrain future development options. Ideally infrastructure developments should be directed away from rural resource lands and critical farming infrastructure (eg buried irrigation pipes, pumps, livestock yards).

To minimise resource losses and impacts on farm productivity consent authorities are advised to verify that infrastructure developments:

- Consider agricultural land use and holding patterns in the locality, existing infrastructure and primary industry resources.
- Identifies important agricultural resources and farm infrastructure, including surface and groundwater resources on which agriculture depends.
- Minimises the footprint of proposed works and easements.
- Minimises further resource fragmentation and does not create lots smaller than the current minimum lot size for that zone.

- Where possible facilitates the consolidation of existing lots and any isolated farm lands.
- Co-locates infrastructure within existing corridors (eg road or rail reserves or existing easements) where ever possible.
- Buries pipelines and cables where feasible, subject to appropriate land rehabilitation considerations.

Impacts on farming operations and livestock

Infrastructure proposals can result in interruptions to internal or external farm access and to farm services that may affect the efficient operation and sustainability of agricultural businesses.

Farm businesses rely on access to road networks for supplies, employees, specialist support services and selling products. Access to infrastructure such as power, communication and water can also be critical for animal welfare and business survival.

Reliable, effective access to the road network and services is particularly critical at peak selling or harvesting times and for intensive livestock operations (eg dairies, poultry), horticultural and vegetable enterprises.

Internal access to water, pastures, feed storage and farm infrastructure (eg irrigation equipment) can also be vital for animal welfare and sustainable farming. Operating farms often comprise more than one allotment and need to access resources, livestock and crops spread across the holding.

Facilities such as proposed overhead electricity lines may also create concerns about air safety for agricultural operations such as crop spraying or the safe movement of agricultural machinery movement where ground clearance may be limited.

Infrastructure proposals should:

- Assess potential impacts on the safe use of farm machinery and routine farm activities. For instance crop dusting might be affected by the development of new power line routes.
- Avoid, or promptly mitigate significant changes to access to the road network, internal farm tracks and critical farm infrastructure (eg buried irrigation systems or phone lines).
- Locate infrastructure developments in consultation with landholders. Siting facilities parallel to or immediately adjoining to existing farm infrastructure (eg fence lines or irrigation lines) is usually preferred.
- Plan the timing of construction operations and the location / design of temporary fencing and

temporary access routes to minimise impacts on farm operations and livestock.

- ☑ Where the proposal will divide existing farm operations or properties the proposal should include measures to ensure ongoing access between each section.

Access must be of an appropriate design standard to support ongoing agricultural use and should be developed in consultation with the landholder.

Develop site access protocols that lists the relevant landholder contact details and includes measures to minimise adverse impacts such as:

- Leaving gates open or shut as found.
- Driving carefully to minimise disturbance to livestock, crops and pastures, and
- Minimising disturbance to the environment e.g. land clearing.

Increased biosecurity, pest and weed risks and impacts on livestock

Biosecurity for agriculture, including genetically modified crops, relies on limiting vehicle and people movements on rural properties and being able to trace vehicle, people and stock movements if any disease outbreaks arise.

Infrastructure developments typically result in temporary, but significant increases in vehicle movements on and off rural properties. This risk is increased if new access points are created and if machinery moves across multiple rural properties.

Pest animals may also be encouraged by food sources from construction works and new access tracks. The additional vehicle movements and development activities may also increase the risk of bushfires.

Construction activities may also increase the risk of straying livestock, especially if gates are left open or if fences need to be cut or replaced.

Livestock can also be panicked or stressed by rapid vehicle movements or sudden noises which may result in injury or escape.

Consent authorities are advised to verify that development proposals appropriately identify:

- ☑ Potential biosecurity risks such as any increased vehicle movement onto and off farms that could spread animal or plant material or diseases. This is particularly critical if genetically modified (GM) crops or organic crops occur within or adjoining the proposed development route.
- ☑ Significant weed species within the proposed development footprint and risks of spread.

- ☑ The location, status and management of current and former livestock dip sites and other potentially contaminated sites within the infrastructure corridor or area.

- ☑ Bushfire or other emergency management risks.

- ☑ Impacts on livestock including the pollution of waterways and noise risks that may result in injury or escape.

Where infrastructure proposals transect more than one property I&I NSW recommends that consent conditions require the development of a Weed management plan in consultation with relevant Weed Authorities.

A Weed Management Plan should identify:

- ☑ Notifiable and problematic environmental weeds that could affect farm productivity
- ☑ the additional risks resulting from the proposed development and their assessment. Advice is available from the local council weeds officer or on the website listed at the end of this guideline
- ☑ State, regional or local plan or strategies for relevant to specific weeds that occur on the property area or that may be transported to the proposed works from surrounding areas.
- ☑ Weed suppression, management and containment strategies for all disturbed areas. For instance soil stockpiles, roadsides leading to the landfill site and disturbed areas.

Measures to limit the spread of existing weeds include cleaning vehicle tyres before moving from property to property, footwear checks, minimising and monitoring soil movement between properties.

- ☑ Monitoring programs for noxious and problematic weeds on site and in the surrounding areas and proposed follow up controls if weed problems occur.

I&I NSW also recommends that consent authorities require infrastructure proponents on rural lands to develop protocols to:

- ☑ Ensure effective consultation with landholders regarding the timing of operations, site access needs and any special measures to minimise impacts on livestock and crops. For instance the project design should seek to avoid or minimising the need to cut farm fences or traverse crops.
- ☑ Manage vehicle movements onto and across farms. This might include separating work sites

from farm areas, restricting the number of vehicles accessing farm properties and monitoring vehicle movements on farms.

- ☑ Avoid biosecurity risks and ensure appropriate decontamination of vehicles moving between properties if necessary.
- ☑ Manage wastes and pollution risks.
- ☑ Manage, mitigate and monitor emergency risks as part of emergency management planning for the proposed development.



*Well rehabilitated rural road bridge at Kywong.
Photo: M Dingham.*

Site rehabilitation

Rehabilitation is important to prevent erosion and the sedimentation of waterway or dams, limit weed germination and restore productive land use options.

Consent authorities are advised to ensure that proponents:

- ☑ Develop appropriate rehabilitation objectives and strategies in consultation with landholders and relevant agencies (eg the local government weed authorities and catchment management authorities).

I&I NSW additionally recommends that proponents are required to develop a comprehensive Environmental Management Plan that documents:

- ☑ Environmental policies, rehabilitation objectives and strategies.
- ☑ Specific measures to protect catchment values and productive capacity including soil and erosion mitigation proposals.

Any residual (ie permanent) impacts on agricultural or other primary industries.

Project staging and the timeframes for site rehabilitation. Progressive site rehabilitation is encouraged.

- ☑ Topsoil management proposals to make best use of this resource and maximise rehabilitation and revegetation success. Recommended practices include:
 - the removal of topsoil before disturbing sub-soils or erecting permanent structures.
 - The immediate reuse of topsoil. If this is not feasible, topsoils should be temporarily stored in accord with best practices.

Critical Best Practice actions focus on maintaining soil health and the vigour of native seed, limiting weed germination, and avoiding soil loss and catchment impacts.

Proposals to reform the landscape to blend with surrounding landforms and avoid land use conflicts.

Vegetation re-establishment strategies and actions.

Recommended practices include:

- De-compaction of areas traversed by heavy machinery to encourage plant growth and minimise run off.
 - Consideration of seasonal conditions and timing revegetation efforts to maximise success.
 - Sowing of cover crops or pastures to stabilise disturbed sites and reduce weed growth.
 - Using species suitable for the proposed end use and locality. A particular priority should be the use of clean seed and species with a low risk of contributing to weed problems.
 - Rehabilitating unwanted tracks to reduce pest animal problems.
 - Allowing for soil settling and provisions to refill disturbed sites.
- ☑ Monitoring proposals to assess the effectiveness of rehabilitation efforts and repair as required.
 - ☑ The responsible person and organisation for site management and remediation during and post construction.

Additional issues

I&I NSW recommends that consent authorities ensure that proponents:

- ☑ Consult with relevant agencies such as the local government weed authorities and catchment management authorities on the design, construction and operation of the proposed infrastructure.

- ☑ Consult with the owners and managers of affected and adjoining agricultural operations in a timely and appropriate manner about: the proposal, the likely impacts and suitable mitigation measures or compensation.
- ☑ Provide sufficient documentation to demonstrate that all significant impacts on current and future agricultural developments and resources have been identified and can be reasonably avoided or adequately mitigated.
- ☑ Minimise land use conflict. The publication '[Living and Working in Rural Areas: A handbook for managing land use conflict issues on the NSW North Coast](#)' outlines conflict issues and suggestions on dealing with land use conflict. It also provides a guide for conflict risk assessment and mitigation that may be useful.

Strategic planning for infrastructure in agricultural areas

Councils are encouraged to strategically review desired planning outcomes for rural lands; and identify important resources and sustainable development opportunities for agricultural enterprises.

Strategic studies should identify infrastructure needs and preferred infrastructure corridors or locations to minimise the risk of land use conflict.

Further information

I&I NSW has additional web based information (www.dpi.nsw.gov.au) and publications on pasture and weed management and minimising conflict risks with adjoining agricultural land uses.

This includes information on:

Weeds (www.dpi.nsw.gov.au/weeds)

Minimising conflict and Land Use Conflict Risk Assessment ([Living and Working in Rural Areas](#))

Agricultural Issues for Landfill Developments - a guideline for Assessing agricultural impacts related to Waste Management (landfill) facilities in rural areas.

Additional information on animal diseases and pests can be sourced from local Livestock Pest and Health Authorities.

Other information in relation to these developments are available at the register for development guidelines at <http://rdaguidelines.planning.nsw.gov.au/register.cf?thistopicid=573>

Some relevant guidelines found at this site include:

Department of Water and Energy 2008 *Guidelines for controlled activities: Instream Works and Guidelines for controlled activities: Laying pipes and cables in water courses*.

Department of Infrastructure, Planning and Natural Resources 2004 *Guideline for the Preparation of Environmental Management Plans*.

State of NSW and Department of Environment and Climate Change 2009 *Interim Construction Noise Guide*.

NSW Rural Fire Service 2006 *Planning for Bushfire Protection*.

Acknowledgement

The authors would like to acknowledge the following people for their contribution to this Primefact:

Andrew Docking, Rik Whitehead, Wendy Goodburn, I&I NSW, and Mark Parker, NSW Department of Planning.

© State of New South Wales through Department of Industry and Investment (Industry & Investment NSW) 2009. You may copy, distribute and otherwise freely deal with this publication for any purpose, provided that you attribute Industry & Investment NSW as the owner.

ISSN 1832-6668

Check for updates of this Primefact at:
www.dpi.nsw.gov.au/primefacts

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (October 2010). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of Industry & Investment NSW or the user's independent adviser.

Job number 10346 PUB 09/40

Hi Belinda,

thank you for referring the above EA to I&I NSW for consideration. I understand that you have already been advised of issues in relation to Agriculture and Minerals.

I note that the works will take place within the catchment of Reed Creek which drains to Lake Illawarra. Lake Illawarra supports valuable fish habitats and important commercial and recreational fishing industries. The fish habitats in particular are sensitive to damage from sediments and nutrients emanating from the catchment.

I&I NSW does not agree with the conclusions of the Environmental Risk Analysis (Section 7). In particular, the Department considers that the:

1. Risks of impacts upon aquatic flora and fauna during construction
2. Risks of soil erosion during construction
3. Risk of sedimentation into waterways

are all HIGH rather than LOW as presented.

This is due to the high rainfall nature of the area and the dispersive nature of some soils along the pipeline routes as well as the sensitive nature of the downstream habitats.

I&I NSW considers that erosion and sediment control requires particular attention. As such we recommend that DoP include Conditions of Approval along the lines of:

1. An Erosion and Sediment Control Plan is to be prepared by a suitably qualified person prior to the commencement of any on-ground works. The Plan is to be approved by the Department of Planning.
2. The Erosion & Sediment Control Plan is to be fully implemented throughout the construction period and erosion and sediment controls are to be maintained in place until all works are completed and the site has been fully stabilised.
3. An independent Audit of adherence to the Erosion & Sediment Control Plan is to be carried out by a suitably qualified and independent person approximately 1 month after commencement of on-ground works and again at completion of on-ground works. Any deficiencies in implementation of the Erosion & Sediment Control Plan identified by the audit are to be rectified immediately.

I&I NSW has no objection to the planned temporary blockage and diversion of the ephemeral creek to enable trenching and pipe laying. We recommend that DoP include a condition of consent requiring that these works only be done when flows in the creek are low or very low.

Finally, please note that we agree with the assessment of the likelihood of occurrence of threatened fish (not likely to occur).

If you require clarification of any of the above please feel free to call me.

Regards Allan

Allan Lugg | Senior Fisheries Conservation Manager | Aquatic Habitat Protection
 Industry & Investment NSW | PO Box 97 | 4 Woollamia Road | HUSKISSON NSW 2540 |
 T: 02 4428 3401 | F: 02 4441 8961 | M: 0409 912 686 | E: Allan.Lugg@industry.nsw.gov.au
 W: www.industry.nsw.gov.au | www.dpi.nsw.gov.au

From: "Belinda Scott" <Belinda.Scott@planning.nsw.gov.au>
 To: <landuse.enquiries@industry.nsw.gov.au>
 Date: 28/02/2011 09:11 AM
 Subject: West Horsley EA - Email 1 of 2



**Environment,
Climate Change
& Water**

Your reference: MP10_0197
Our reference: DOC11/11218
Contact: Bernie Brompton
9995 6844

Belinda Scott
Senior Planning Officer
Infrastructure Projects
Department of Planning
GPO Box 39
Sydney 2001

Dear Ms Scott,

RE: Exhibition of Environmental Assessment for Early Release Lead-in Works for West Horsley (MP10_0197)

I refer to your letter which we received on the 1st March 2011 inviting the Department of Environment, Climate Change and Water (DECCW) to make a submission on the environmental assessment (EA) for the Early Release Lead-in Works for West Horsley.

DECCW has undertaken a detailed review of the EA. Whilst some of the issues identified by DECCW in the adequacy review have not been addressed, DECCW is of the opinion that this development can proceed, providing the attached issues are addressed through the approval process.

The key environmental impacts associated with the proposal relate to the impact on endangered ecological communities, the likely noise impacts associated with the construction of this project and the potential for soil erosion during and after construction.

While DECCW supports approval of the project it is strongly recommended that the comments in attachment 1 are considered in any consent. DECCW seeks an opportunity to review the draft Director-General's Environmental Assessment Report for this project to ensure that the relevant environmental requirements stipulated in this letter and attachments have been adequately addressed. Should this not be possible, DECCW would welcome the opportunity to discuss the impacts of the development, with particular regard to the impacts on identified Endangered Ecological Communities with the proponent and DoP.

If you wish to discuss any of the issues raised in this letter, please contact Bernie Brompton on 9995 6844.

Yours sincerely

G Howard 31/3/11

GISELLE HOWARD
Director Metropolitan
ENVIRONMENT PROTECTION AND REGULATION

Enclosure

Attachment 1

Impacts on Endangered Ecological Communities

Compensatory Measures

In correspondence dated February 2011, DECCW requested that the proponent clarify the area in hectares and location of any endangered ecological communities (EEC) to be impacted by the proposal. It still remains unclear whether EEC/s may be directly or indirectly affected by the proposal, especially within roadside reserves or electricity easements.

Biodiversity offset strategies are a last resort and should only be considered where the impacts cannot be avoided or mitigated. However the EA states that compensatory actions are not considered warranted 'given the minimal impacts of the proposal.' DECCW does not consider adequate clarity exists to support this conclusion.

Native vegetation in the subject site is of 'highest conservation significance' (DECCW 2002) both for representative and threatened species. Should any threatened species, populations, endangered ecological communities (EEC) and their habitats be directly or indirectly affected by the proposal, impacts must be compensated by the development of a suitable biodiversity offset package.

To satisfy the DGRs, DECCW seeks the following Statement of Commitment:

1. Biodiversity Offset Package
 - a. The Proponent shall develop and submit for the approval of the Director-General, a Biodiversity Offset Package (the Offset) to compensate for the loss of threatened species, populations, endangered ecological communities (EEC) and their habitats. The Offset shall include, but not be limited to the following:
 - i. The Offset shall be developed in accordance with the *Principles for the Use of Biodiversity Offsets in NSW* (DECCW, 2009).
 - ii. The Offset shall be developed in consultation with DECCW.
 - iii. Identification of the conservation mechanisms to be used to ensure the long term protection and management of the offset sites.
 - iv. An appropriate Management Plan (such as vegetation or habitat) that has been developed as a key amelioration measure to ensure any proposed compensatory offsets, retained habitat enhancement features within the development footprint and/or impact mitigation measures (including proposed rehabilitation and/or monitoring programs) are appropriately managed and funded.

Ecological Constraints

Figure 5 of the *West Horsley Pipelines Flora and Fauna Impact Assessment* (Ecological 2011) identifies 'ecological constraints.' The ecological constraint zones identify areas of Illawarra Lowlands Grassy Woodland and Swamp Oak Floodplain Forest, endangered ecological communities (EEC) under the *Threatened Species Conservation Act 1995* (TSC Act).

The Illawarra Lowlands Grassy Woodland EEC is endemic to the Illawarra, with an estimated 5 percent remaining within the Southern Rivers region. The *Bioregional Assessment Study Part III* (DECCW, 2002) identifies all Illawarra Lowlands Grassy

Woodland EEC remnants within the scheme envelop, including those in the preferred wastewater pipeline route, as being of the 'highest conservation significance.' The Illawarra Lowlands Grassy Woodland EEC in the locality is known to support a number of threatened species and populations listed under the TSC Act and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) including, but not necessarily limited to, the Illawarra Greenhood Orchid (*Pterostylis gibbosa*) and threatened microchiropteran bat species.

The *West Horsley Pipelines Flora and Fauna Impact Assessment* concedes that a variety of threatened species, populations and ecological communities may be directly or indirectly affected by the proposal, including Illawarra Lowlands Grassy Woodland EEC, Swamp Oak Floodplain Forest EEC and 7 threatened microchiropteran bat species.

Notwithstanding the potential for species, populations and ecological communities and their habitats to be directly or indirectly affected by the proposal, no targeted surveys were undertaken for the Illawarra Greenhood Orchid (*Pterostylis gibbosa*) in the area of the proposed water pipeline and no targeted surveys for threatened microchiropteran bat species have been undertaken in the study area.

In correspondence dated February 2011, DECCW requested that the proponent provide justification for omission of targeted surveys were undertaken for the Illawarra Greenhood Orchid (*Pterostylis gibbosa*) in potential habitat along the proposed water pipeline. DECCW also requested that the Proponent identify and describe all measures to avoid impacts on ecological communities and fauna habitats, such as hollow-bearing trees. No additional surveys or information has been provided to date.

To address the above issues DECCW seeks the following Statement of Commitments:

2. Ecological Constraint Zones

a. General

- i. The boundary of ecological constraint zones, as identified in Figure 5 of the *West Horsley Pipelines Flora and Fauna Impact Assessment*, shall be clearly defined in consultation with a fully qualified ecologist prior to the commencement of any construction works.
- ii. Site supervisors should be provided with aerial images, including the boundary of the defined ecological constraint zones.
- iii. All hollow bearing trees shall be retained and protected, with no excavation within the critical root zone (extending to 2 m beyond the drip line) of hollow bearing trees.

b. Pipelines

- i. Pipelines shall be located to avoid high constraint or moderate-high constraint or moderate constraint areas as identified in Figure 5 of the *West Horsley Pipelines Flora and Fauna Impact Assessment*.
- ii. Pipelines shall be located in low constraint (pasture/urban) areas as identified in Figure 5 of the *West Horsley Pipelines Flora and Fauna Impact Assessment*, where practicable.

c. Construction

- i. Vehicles, heavy plant and machinery shall be restricted to designated areas in low constraint (pasture/urban) areas as identified in Figure 5 of the *West Horsley Pipelines Flora and Fauna Impact Assessment*, where practicable.

- ii. Access roads for the construction of pipelines shall be located in low constraint (pasture/urban) areas as identified in Figure 5 of the *West Horsley Pipelines Flora and Fauna Impact Assessment*, where practicable.
- iii. In locations where high constraint or moderate-high constraint or moderate constraint areas as identified in Figure 5 of the *West Horsley Pipelines Flora and Fauna Impact Assessment* may be disturbed, erosion and sediment control fencing shall be installed around vegetation that is to be retained with no access to occur in the fenced areas. Signs shall be placed on the fencing that identifies these areas as 'no access zones.'
- iv. In locations where high constraint or moderate-high constraint or moderate constraint areas as identified in Figure 5 of the *West Horsley Pipelines Flora and Fauna Impact Assessment* may be disturbed, hygiene protocols shall be implemented for vehicles, heavy plant and machinery used for earthworks.

Landscape Rehabilitation Management Plan

DECCW considers that opportunities exist as part of rehabilitation to implement programs to increase biodiversity values for threatened species, populations and EEC/s within the subject area. In correspondence dated February 2011, DECCW requested that the Proponent detail what measures will be put in place to rehabilitate the study area following construction. No information has been provided to date.

To address the above issue, DECCW seeks the following Statement of Commitments:

3. Landscape Rehabilitation Management Plan

- a. The proponent shall prepare and implement a Landscape Rehabilitation Management Plan (LRMP) for the Surface Project Area, to the satisfaction of the Director-General prior to the commencement of construction. The LRMP shall include, but not limited to the following:
 - i. The LRMP shall be prepared in consultation with a fully qualified ecologist prior to the commencement of any construction works.
 - ii. The LRMP shall define the rehabilitation objectives and goals for the area, clearly set out the proposed actions required, monitoring regimes, as well as performance indicators to report on the implementation of rehabilitation.
 - iii. The LRMP shall include an accompanying work or action plan which includes specific restoration actions, site preparation, rehabilitation techniques to be used, as well as care and maintenance following rehabilitation.
 - iv. The LRMP shall address the management weed and pest animal species, weed eradication methods, protocols for the use of herbicides, stock exclusion fencing, as well as methods to treat and re-use weed infested topsoil.
 - v. The LRMP shall be implemented progressively, that is, rehabilitation shall occur as soon as reasonably practicable following the disturbance.

Aboriginal Heritage

DECCW notes that the technical archaeological reports undertaken for this EA have not been provided to DECCW for review and comment.

DECCW further notes that the Draft Statement of Commitments has been largely amended to reflect DECCW's request outlined in the adequacy review. However, in relation to the section regarding the discovery of human remains, it is recommended that in the event that human remains are discovered the following procedure is followed:

If any human remains are discovered and/or harmed in, on or under the land, the proponent must:

- (a) not further harm these remains
- (b) immediately cease all work at the particular location
- (c) secure the area so as to avoid further harm to the remains
- (d) notify the local police, the Department of Planning and DECCW's Environment Line on 131 555 as soon as practicable and provide any available details of the remains and their location, and
- (e) not recommence any work at the particular location unless authorised in writing by the Department of Planning and the DECCW.

Noise and Vibration

DECCW notes that the proponent has referenced the Interim Construction Noise Guidelines (ICNG) and has used the appropriate daytime construction working hours.

DECCW recommends that any approval restrict construction activities that would generate noise greater than 5dBA above background noise levels to within Standard Construction Hours other than for:

- the delivery of oversized or other such items required by the RTA and or police to be made out of hours;
- emergency works necessary for preventing loss of life or harm to property or the environment;
- other activities as approved prior by Planning.

DECCW notes that within their stated "Mitigation Measures", the proponent has listed processes to operate in a quiet and efficient manner and for community notification. DECCW considers that the proponent should formulate a "Construction Noise Management Plan" for the proposed 6 to 9 month construction period and incorporate the stated noise mitigation measures into it. The Construction Noise Management Plan, should include, but not necessarily be limited to:

- i. a community information/notification process;
- ii. a complaint response process;
- iii. hours of construction;
- iv. duration and timing of the project and its elements, and where and when there will be any potentially high noise generating activities such as rock hammering, if any;
- v. feasible and reasonable mitigation measures that will be implemented, particularly respite for highly noise affected receivers, if any.

It should be noted that any construction noise impact at one location should be less than a week in duration.

DECCW does not consider operational noise to be an issue as the pumping stations will be located underground.

Water Quality, Hydrology and Soils

The construction activities identified in this project have the potential to impact on water quality and the use of appropriate erosion and sediment controls is essential to ensure compliance with s120 of the Protection of Environment Operations Act.

DECCW recommends that the proponent formulate a comprehensive Sediment and Erosion Control Plan for the proposed works that incorporates the specific soil erosion mitigation measures to be implemented for this project. These measures shall be identified and implemented in accordance with the guideline "*Managing Urban Stormwater: Soils and Construction*" Landcom 2006. Factors to be considered when developing this plan should include, but are not necessarily limited to:

- i. Assessment of the soil types and potential for erosion;
- ii. Identification of soil erosion measures to be implemented;
- iii. Identification of sediment control measures to be implemented;
- iv. Identification of sites for appropriate erosion and sediment controls (such as sediment basins) during construction to ensure that there is sufficient space allocated for these measures.
- v. Rehabilitation measures to be implemented if required.



WOLLONGONG CITY COUNCIL

Address 41 Burelli Street Wollongong Post Locked Bag 8821 Wollongong DC NSW 2500
 Phone (02) 4227 7111 • Fax (02) 4227 7277 Email council@wollongong.nsw.gov.au
 Web www.wollongong.nsw.gov.au ABN 63 139 525 939 • GST Registered



016

ATTN: Ms Belinda Scott
 Project Contact Officer
 Infrastructure Projects
 Major Project Assessments
 Department of Planning
 GPO BOX 39
 SYDNEY NSW 2001



PCU021684

**APPLICATION****MP-2010/197**

Date

4 April 2011

Dear Ms Scott

SUBJECT: EXHIBITION OF ENVIRONMENTAL ASSESSMENT FOR EARLY RELEASE LEAD-IN WORKS FOR WEST HORSLEY (MP10_0197)

I refer to your correspondence dated 28 February 2011 and advise that Council has reviewed the exhibition of the Sydney Water Environmental Assessment for Early Release Lead-in Works for West Horsley (MP10_0197) and offers the following comments for your consideration in relation to the proposal.

Environmental Matters

- No dry weather overflows should occur.
- No planned wet weather overflows should occur.
- No dry weather un-planned wet weather overflows should occur in the Duck Creek channel or on the creek riparian corridor.
- Standard conditions relating to air pollution (dust generation), water pollution, soil erosion, sediment mobilisation, noise, hours of work, and waste management should apply to the proposal.

Flora and Fauna Assessment

The Flora and Fauna Assessment does not appear to provide an adequate assessment of significance for the following reasons:

- No fauna surveys were carried out along the water pipeline route; even though four hollow-bearing trees are located within the proposed area of disturbance and a further three are located along the margins of disturbance.
- The report does not provide any arboricultural input and assumes that three of the four hollow-bearing trees, as well as the three adjacent individuals will not lose a significant proportion of their Structural Root Zones and will survive the proposed disturbance. It is likely that all of these trees would die as a result of the proposed disturbance, if adequate protection measures are not followed.

- No bat surveys were carried out, even though recent surveys commissioned by Council detected the occurrence of four threatened microchiropteran bat species in adjacent land. Of the four threatened species, a lactating female Greater Broad-nosed Bat was trapped, indicating the occurrence of nursery roosts in the area.
- The Assessment of Significance for Illawarra Lowlands Grassy Woodlands does not consider the cumulative impact of much greater destruction of this EEC for subdivision development on adjacent sites.
- The Assessments of Significance are based on the assumption that the Wastewater Pipeline route follows the “recommended” route. If several of the alternate routes are selected, there will be greater clearing of native vegetation and habitat.

Recommendations:

Bat surveys should be carried out along the water pipeline route, in order to justify the conclusions of the Assessments of Significance for microchiropteran bat species.

Offsets should be sought to compensate for the loss of Illawarra Grassy Woodlands.

An Arborist’s Report should be prepared which assesses the likelihood of survival of the seven hollow-bearing trees. The report should include details relating to tree protection during excavation as well as post-construction maintenance and monitoring.

Traffic

It is noted that the water pipeline will be located in the existing road verge along the southern side of the Bong Bong Road easement between Hayes Lane and Shone Avenue.

The Traffic Section does not object to the proposal subject to further consultation with the Design and Technical Services Manager, Wollongong City Council, to ensure that the location of the water pipeline complies with the final alignment of Bong Bong Road.

Recommendations

A Site Management, Pedestrian and Traffic Management Plan must be submitted as part of an application for a permit under Section 138 of the Roads Act 1993. Approval must be issued by Manager Regulation and Enforcement prior to works commencing on the site. This plan should address what measures will be implemented for the protection of adjoining properties, pedestrian safety and traffic management and should be in compliance with the requirements of the latest versions of Australian Standard AS1742 - Traffic Control Devices for Works on Roads and the RTA Traffic Control at Worksites Manual.

This plan is required to maintain public safety, minimise disruption to pedestrian and vehicular traffic within this locality and to protect services, during demolition, excavation and construction phases of the development. This plan should include the following aspects:

- a) proposed ingress and egress points for vehicles to/from the construction site;
- b) proposed protection of pedestrians, adjacent to the construction site;
- c) proposed pedestrian management whilst vehicles are entering/exiting the construction site;
- d) proposed measures to be implemented for the protection of all roads and footpath areas surrounding the construction site from building activities, crossings by heavy equipment, plant and materials delivery and static load from cranes, concrete pumps and the like;
- e) proposed method of loading and unloading excavation machines, building materials formwork and the erection of any part of the structure within the site;
- f) proposed areas within the site to be used for the storage of excavated material, construction materials and waste containers during the construction period;
- g) proposed traffic control measures such as advanced warning signs, barricades, warning lights, after hours contact numbers etc are required to be displayed where works are in progress in any road reserve and should be in accordance the latest versions of the NSW Roads and Traffic Authority’s Specification - “Traffic Control at Work Sites Manual” and the Australian Standard

AS1742. – “Manual of Uniform Traffic Control Devices” and accompanying field handbooks (SAA HB81);

- h) proposed method of support of any excavation, adjacent to adjoining buildings or the road reserve. The proposed method of support is to be certified by an accredited certifier in Civil Engineering; and
- i) proposed measures to be implemented, in order to ensure that no soil/excavated material is transported on wheels or tracks of vehicles or plant and deposited on the roadway.

The approved plan should be implemented, prior to the commencement of any works upon the construction site.

Note: Any proposed works or placement of plant and equipment and/or materials within any road reserve will require the separate approval of Council, prior to the commencement of such works, pursuant to the provisions of the Roads Act 1993.

If a road closure is required an approval should be obtained from City of Wollongong Traffic Committee and Wollongong City Council.

Note: It may take up to 6 weeks for approval. An application for approval should include a Traffic Control Plan prepared by a suitably qualified person which is to include the date and times of closure and any other relevant information. The traffic control plan should satisfy the requirements of the latest versions of Australian Standard AS1742 – Traffic Control Devices for Works on Roads and the RTA Traffic Control at Worksites Manual.

Approval, under Section 138 of the Roads Act should be obtained from Wollongong City Council’s Regulation and Enforcement Division prior to any works commencing or any proposed interruption to pedestrian and/or vehicular traffic within the road reserve caused by the construction of this development. A traffic control plan prepared and implemented by a suitably qualified person should be submitted for approval and the appropriate fees paid a minimum of five working days prior to the expected implementation. The traffic control plan shall satisfy the requirements of the latest versions of Australian Standard AS1742 – Traffic Control Devices for Works on Roads and the RTA Traffic Control at Worksites Manual.

Note: This includes temporary road closures for the delivery of materials, plant and equipment, concrete pours etc.

Regulation & Enforcement – Civil Works within Road Reserve

Recommendations

Water and sewer mains should be located within the footpath area of the road reserve and not within the road carriageway except where road crossings are planned is inevitable.

Water and sewer infrastructure such as pumping stations should be not be located within the road reserve but located within newly created lots in private property with easements or within public reserves.

Sydney Water contractors should obtain consent, under Section 138 of the Roads Act from Wollongong City Council’s Regulation and Enforcement Division prior to any works commencing or any proposed interruption to pedestrian and/or vehicular traffic within the road reserve caused by the construction of this development. A traffic control plan prepared and implemented by a suitably qualified person should be submitted for approval and the appropriate fees paid a minimum of five working days prior to the expected implementation. The traffic control plan should satisfy the requirements of the latest versions of Australian Standard AS1742 – Traffic Control Devices for Works on Roads and the RTA Traffic Control at Worksites Manual.

Note: This includes temporary road closures for the delivery of materials, plant and equipment, concrete pours etc. should apply to Council’s Regulation and Enforcement Division and obtain consent to carry out the restoration works, prior to the works commencing.

All restoration works should be carried out in accordance with Council's standard document, "Specification for Work within Council's Road Reserve." Asphalt restoration of road crossings should extend beyond the vertical alignment of the trench.

Sydney Water should supply the names and contact numbers of the Contractor's representative for emergency situations and after hours contact.

Details of the Programme of Works should be supplied to Council's Infrastructure, City Works and Regulation and Enforcement Divisions.

Underboring all road crossings should be used as the primary objective before alternative methods such as open trenching is implemented.

Sydney water Contractors should not carry out any work other than emergency procedures to control dust or sediment laden runoff outside the normal working hours, namely, 7.00 am to 5.00 pm, Monday to Friday and 8.00 am to 4.00 pm Saturday.

The Wollongong City Council Divisions of Infrastructure, City Works and Regulation and Enforcement should be included in any stakeholder or community consultation meetings.

During the design phase of the project, serious consideration should be given to minimise the number of road crossings required.

Where vehicular access is required to service any new infrastructure, the applicant should construct new concrete vehicular crossings to service this infrastructure across the footpath area of the road reserve in accordance with Council's current policies and standards.

The applicant should arrange, through Council's Regulation and Enforcement Division a qualified concrete contractor to carry out the works.

The entire length of any vehicular crossings should be constructed:

- a) to Council's currently adopted standard drawings;
- b) for the full width of the footpath; and
- c) by one of Council's qualified concrete contractors at the developer's expense.

Stormwater Drainage

Recommendations

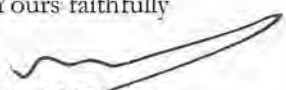
The depth and location of all services (i.e. gas, stormwater, water supply, sewer, electricity, telephone etc) should be ascertained prior to the commencement of works on site.

The design of the works should ensure there are no adverse effects to adjoining properties as a result of flood or stormwater run-off.

Any redirection or treatment of run-off should not adversely affect any other property.

Should you require any further assistance with regard to this matter please contact Geoffrey Hunt – Senior Development Control Officer direct on telephone (02) 4227 7332.

Yours faithfully



David Farmer
General Manager
Wollongong City Council
Direct Line (02) 4227 7010



Office of Water

14 April 2011

Ms Belinda Scott
Infrastructure Projects
Department of Planning
GPO Box 39
SYDNEY NSW 2001

c: Janne Grose
t: 02 4729 8262
f: 02 4729 8141
e: Janne.Grose@water.nsw.gov.au

Our ref : ER21443
Your ref: MP10_0197

Dear Ms Scott

MP10_0197– Early Release Lead-in Works for West Horsley – Environmental Assessment – Wollongong LGA

I refer to your letter of 28 February 2011 seeking comments from the NSW Office of Water (NOW) on the Environmental Assessment (EA) for the above major project proposal.

Attachment A provides the NOW's detailed comments on the project proposal.

Contact Details:

If you require further information please contact Janne Grose on (02) 4729 8262 at the Penrith office.

Yours sincerely

A handwritten signature in blue ink, appearing to read "Mark Mignanelli".

Mark Mignanelli
Manager Major Projects and Assessment

NSW Office of Water Comments

MP10_0197– Early Release Lead-in Works for West Horsley – Environmental Assessment

The figures in the Impact Assessment (IA) and the Environmental Assessment (EA) do not show the location of the watercourses in relation to the proposed pipeline routes, however, based on information provided, the proposal will cross three small ephemeral drainage lines (see Appendix D of the Impact Assessment (IA), page 80).

Comparing Figures 1 and 2 in the IA with the topographic map, the recommended route for the wastewater pipeline appears to mainly be located away from the watercourses and remnant riparian vegetation which the NOW supports. NOW notes a section of the wastewater pipeline route appears to be located in close proximity to remnant riparian vegetation. It is also noted the riparian areas in the study area "contain almost pure stands of Swamp Oak *Casuarina glauca*" which is consistent with the Swamp Oak Flood plain forest endangered ecological community (see Section 4.3.1 of the IA) and the pipelines would be bored under EEC vegetation and no EEC would be impacted by the proposal (see Section 6.1.4 of the EA, page 29).

It is not clear if permanent or temporary access track crossings are required as part of the proposal. If access tracks are required the potential impact of the access crossings on watercourse stability and riparian vegetation needs to be assessed. Access track crossings need to be stable and appropriately designed in relation to bed and bank stability and minimising disturbance of riparian vegetation.

Section 1.1 of the Impact Assessment (IA) indicates that where the wastewater pipeline crosses the ephemeral drainage lines the pipe will be trenched under the creek. The NOW recommends advice be obtained from a fluvial geomorphologist to determine if the creek crossing should be trenched or under bored. Neither the EA nor IA identifies the type of watercourses that are proposed to be crossed by trenching and whether they are fragile systems, for example are the watercourses fragile chain of ponds systems, channelised fill systems or valley fill systems? Chain of Ponds systems are quite rare and fragile and disturbance of the pond connections can result in the incision of a channel within the connections that can lead to significant erosion.

If the watercourses are sensitive chain of ponds, valley fill systems or channelised fill systems the NOW recommends the crossings of waterways /riparian land are under bored. NOW also recommends the crossings of waterways /riparian land are under bored where:

- (i) there is permanent flow in the waterway or
- (ii) the creek is in good natural condition or
- (iii) the bed of the watercourse has a mobile bed and not rock
- (iv) there is existing native riparian vegetation or
- (v) there is potential fish passage Class 1 or 2

Trenching may be an option if:

- (i) the waterway is a dry intermittent creek
- (ii) there are no watercourse instability issues
- (iii) the bed of the stream is rock
- (iv) the native riparian vegetation has previously been cleared and
- (v) the potential fish passage Class is 3 or greater.

Depth of trench at crossings

Section 3.3.2 of the EA the wastewater pipeline trenches would range in depths from 3-5m depending upon topography (page 11). Where trenching is to occur at creek crossings, scour calculations for bankful flow need to be undertaken to determine the appropriate depth to prevent scouring of the pipeline during high velocity water flows in the watercourse. For sand bed streams the rule of thumb is sand scour is equal to the water depth during bankful flow.

Sodic soils

It is noted in Section 6.5 of the EA that soils around the creeks have a very high erosive potential and in some areas are prone to sodicity. Sodic watercourse crossings are more prone to erosion and the effects of tunnel erosion. In areas of high sodicity any reinstatement of bank soils will require suitable compaction of trenches to minimise tunnel erosion, soil ameliation and topsoiling combined with a soil-rock mix. The Works Plan needs to address this issue.

Erosion and Sediment Control

It is noted in Section 6.4.2 of the EA it may be possible to construct the pipeline crossing when there is no water in the creek (page 39). If the crossing is to be trenched and there is flowing water at the time an additional erosion and sediment control measure needs to be included for a sediment curtain to prevent turbid water from going downstream.

Waterway Mitigation Measures

Details need to be provided on the watercourse type and what part of the stream is proposed to be crossed and what geomorphic units are present at the exact crossing type (i.e. is the crossing point at a pool or a riffle? Is the crossing point to be located at the upstream, middle or downstream end? Are the banks unstable at the crossing point? etc).

Any disturbance of waterways associated with the proposal must be rehabilitated to emulate a naturalised system for aquatic and terrestrial environments.

Statement of Commitments

Flora and Fauna

In relation to Statement of Commitment (SOC) 4 it is recommended at creek crossings the pipeline construction corridor width is reduced, where possible, to assist in reducing disturbance and potential impacts on the bed and banks and riparian vegetation.

Geomorphology

NOW recommends an additional SOC be included to obtain advice from a qualified fluvial geomorphologist prior to construction to ensure the proposed crossings of creeks do not cause instability issues. The geomorphologist needs to assess the waterway type, the geomorphic units present at the proposed crossing location and provide advice as to whether the creek crossings should be trenched or bored and appropriate location of the crossings.

Rehabilitation and Monitoring

NOW recommends additional Statement of Commitments be included for rehabilitation and monitoring. In relation to the rehabilitation of riparian land it is recommended any riparian land disturbed by the proposal is to be rehabilitated in a two step process. The primary stage will rapidly stabilise disturbed riparian areas and the second phase will establish a permanent cover of vegetation that reflects the species that originally occurred and if the existing riparian vegetation is native, then the local native species must be rehabilitated and re-established.

A monitoring program should be undertaken to assess the outcomes of the works undertaken including areas of potential erosion and ground instability associated with the construction impact. The monitoring program should include monitoring and maintenance of any bank stabilisation and stream bank, bed and floodplain rehabilitation that will need to be undertaken as part of this proposal. NOW recommends a commitment be included that the pipeline crossings be inspected particularly after major rainfall events to ensure the rehabilitation and stabilisation works have been effective.

Rehabilitation and monitoring will need to continue until the waterway crossing sites are identified as stable by an independent suitably qualified certifier.

Rehabilitation of other non native vegetation in riparian areas should be maintained until it is established and the area has been certified as stable.

Groundwater

The NOW notes Statement of Commitment 9 in the EA refers to "pumping out groundwater encountered during construction and treating it prior to discharge, if required" (page 64). In this regard, if the pipelines are installed in segments and dewatering is restricted to short lengths of open excavation then a licence under Part 5 of the Water Act 1912 is not considered necessary by NOW. However, if as stated in Section 6.4.2 of the EA, boreholes with pumping apparatus are installed to manage groundwater inflows then a licence will be required from NOW under Part 5 of the Water Act 1912.

In addition, NOW recommends:

- Commitment 9 is expanded to include provision of data from all geotechnical studies conducted, together with quantification of the likely magnitudes of groundwater to be extracted
- the results of the geotechnical studies are provided to NOW as they are completed for further assessment of the need for any licensing.

Whilst the likely groundwater impacts are not considered to be significant this needs to be demonstrated by the progressive reporting of results of all intrusive investigations conducted for the project.

Soils

Commitment 9 - NOW recommends a commitment be included that the watercourse crossings be assessed to determine whether the soils are sodic or non-sodic. The soil properties (such as sodicity) at watercourse crossings should be assessed to determine appropriate crossing methodologies and rehabilitation measures. The investigations should be undertaken before construction commences.

**End Attachment A
14 April 2011**