Department of Primary Industries
Office of Water

Contact Christie Jackson
Phone 02 6701 9652
Fax 02 6701 9682
Email christie.jackson@water.nsw.gov.au

Our ref ER21606
Your ref SSI-4963

Director Infrastructure Projects
Department of Planning & Infrastructure
By email: Dominic.Crinnon@planning.nsw.gov.au

Dear Mr Crinnon,

Subject: Review of Response to Submissions – Pacific Highway Upgrade – Woolgoolga to Ballina (SSI 4963) [Our Ref: ER21606]

The NSW Office of Water (Office of Water) has reviewed the Response to Submissions (RTS) to the Pacific Highway Upgrade – Woolgoolga to Ballina section and provides the following comments with more detailed comments provided in Attachment A. The Office of Water provides recommended conditions of approval in Attachment B, as included in our previous response to the Environmental Impact Statement.

The Office of Water understands that comments from the broader Department of Primary Industries has already been submitted, and therefore submits these comments in addition, and I apologise for the delay.

Key points

1. Connected water source impacts and quantification of water take.

The Project covers an extended area and with that numerous locations where the groundwater resource could be impacted have been identified. RMS has referred to the Environmental Impact Statement "Groundwater Working Paper (2012)" as being the "Concept Design" and thus has only gone as far as identifying priority areas for further groundwater assessment. While the RMS do not require licences from the Office of Water for water taken for road construction or maintenance, the predicted volumes of water that will be taken (including by seepage) should be quantified.

The Office of Water requests that a method for estimating or measuring the water taken from each water source is identified, and these volumes reported to the Office of Water.

2. The requirements of AI Policy

While this activity is defined as a minimal impact activity under the NSW Aquifer Interference Policy, the Office of Water recommends that RMS meet with the Office of Water to discuss how impacts on groundwater can best be understood and managed.

3. Groundwater modelling

A groundwater model has not been prepared for this assessment but water table maps have been prepared based on relevant input data. The interpolated water table depths presented are considered satisfactory for the identification of risk and setting priority assessment areas for the bore monitoring infrastructure. Analytical modelling is likely to be required to address Point 1.

4. Management and monitoring to be incorporated within future water management plan development.

The detail on assessing, monitoring and possible mitigation of groundwater impact areas is satisfactory.

Endorsed by Mitchell Isaacs
16 December 2013

Office of Water contact details:
Christie Jackson, Water Regulation Officer (Tamworth)
t: (02) 6701 9652
e: christie.jackson@water.nsw.gov.au

NSW Office of Water Comments
Response to Submissions – Pacific Highway Upgrade – Woolgoolga to Ballina

Groundwater

Over one third of the project overlies areas where groundwater is inherently close to the ground surface. There is a high potential for impact in those areas. In particular, the floodplains of the Clarence and Richmond Rivers are underlain by shallow groundwater tables. There are a large number of listed wetlands (which are intermittently supported by groundwater) that may be affected by the project.

Acid sulfate soils (ASS) are widespread throughout the project in low lying areas, requiring appropriate acid sulfate soil management techniques to be adopted during construction to avoid adverse environmental impacts.

There is a significant local reserve groundwater supply near Woodburn (managed by Rous Water) that has been developed with the potential to supply 5,000 people and licenced to extract 242 ML/yr from three bores. The Project bisects this town water supply (TWS) and as there is a shallow groundwater table, there is potential for impact on both water quantity and quality.

Groundwater Dependent Ecosystems (GDEs)

Five vegetation communities and habitats have the potential to be affected by impacts to groundwater. The RTS outlines that changes to the condition of GDEs would be identified by monitoring groundwater quality before and after construction. Since the original Environmental Impact Statement was submitted, groundwater monitoring infrastructure has now been established for the W2B Pacific Highway upgrade. Water quality monitoring would continue post-construction until the mitigation measures have been proven successful, after which the need for further monitoring would be reviewed in consultation with the relevant agencies. Monitoring groundwater levels and quality using the groundwater monitoring infrastructure installed for the W2B Pacific Highway upgrade is to be undertaken for the freshwater wetlands and ground dependent ecosystems.

Existing Groundwater Users

Groundwater is not a major source of consumptive water throughout the project area. However, one particular important groundwater source is located near Woodburn, where up to 242 megalitres per year is licenced to be taken by three bores as part of the Rous Water town water supply entitlement. The Project bisects the borefield.

Groundwater Model

No new groundwater modelling was undertaken as part of the earlier Environmental Impact Statement or RTS. However, depth to water table and water table surface maps (m AHD) were prepared using a combination of digital terrain data, registered bore water levels, previous known modelling studies and from a selection of boreholes completed as standpipe piezometers installed where rock cuttings as part of the Project would be located.

Groundwater Impacts

The Project has been divided into a number of sections with each section of the project assessed for potential impact to groundwater based on existing conditions, potential impact during construction of the project and potential impact during operation (post construction). Groundwater impacts are distinguished through the resultant groundwater table levels with high potential impact indicating that the project will intersect the water table (Class A), medium potential impact due to

water tables within 2 - 3 metres of the surface Class B), low potential impact within 5 metres (Class C) and minimal potential impact greater than 5 metres below ground level (Class D).

A risk assessment has been completed to identify areas where water table will be penetrated and a categorisation of the cut type, presence of acid sulphate soils or threatened ecological communities and finally if monitoring and mitigation is required. The Environmental Impact Statement contains an overview of the management strategy covering pre-works investigations, assessment, monitoring and mitigation.

Risks to water supply quantity can also arise where thick infill causes compaction of the surface sediments and hence reduction in permeability and impedance to flow, or where structures are put in place to divert groundwater flow away from works or deep cut areas. With respect to water quality, if left unmitigated, polluted runoff, spillages and leakages from the highway could flow with surface water and infiltrate into the shallow groundwater sources polluting the groundwater source. Water quality structures would need to be designed to capture and divert road runoff so that seepage into sensitive groundwater sources does not occur

One such sensitive area is the Rous Water Woodburn Sands borefield. The new highway will bisect the Rous Water Woodburn Sands borefield which has groundwater levels that are close to the surface. Construction works will mainly involve placement of fill for the new pavement. As such, construction of the project is stated to have little or no impact on water levels, and hence no impact on water supply in this area. However, Rous Water has indicated that they regard the Woodburn Sands borefield as an important water resource which should be protected from the potential impacts of the project.

Assessment of specific stock and domestic bore impacts is stated as being beyond the scope of this assessment, but any bores located within potential high impact areas should be assessed during the detailed design phase with the aim of avoiding impacts on supplies, or identifying bores where a compensatory water supply or other arrangement may be required.

Groundwater Monitoring and Mitigation

A monitoring program has been put in place in areas where there is a high potential for impact. The sites are being evaluated through ground surveys and monitoring before, during and following construction, to determine the potential impact on groundwater supplies. The monitoring program includes the installation of wells, automatic water level loggers, groundwater sampling (salinity, soluble solids and metals) and hydrocarbons. Mitigation options are engineering solutions to divert water around or along the desired path. Sedimentation basins are to be lined where the water table is identified as being within 2m of the base of the basin.

Licensing and Water Sharing Plans

Currently, there are “Plans Commenced” and “Plans under exhibition”. Commenced groundwater water sharing plans covering areas either in or adjacent to the project boundary are as follows:

- Alstonville Plateau
- Richmond River Area Alluvial
- Coffs Harbour Area Alluvial
- Bellinger River Alluvial

ATTACHMENT B

NSW Office of Water Recommended Conditions of Approval

Response to Submissions – Pacific Highway Upgrade – Woolgoolga to Ballina

Water Licencing

1. Any temporary or permanent diversions to watercourses should be carried out in accordance with a management plan that is developed in consultation with the NSW Office of Water.

Groundwater

2. All sediment basins must be constructed above the water table or lined with impermeable material.
3. The Groundwater Monitoring Program is submitted to the Office of Water for review and comment prior to project commencement.
4. Any groundwater works where water is extracted, or supplementary groundwater collected, and is subsequently used for the purpose of water supply for the development shall be licenced under the *Water Act 1912,* or in accordance with the appropriate Water Sharing Plan under the *Water Management Act 2000*.

Monitoring Network

5. A monitoring program must be implemented to monitor impacts of the development on surface water resources, groundwater resources and wetlands.

Riparian Works

6. All works within 40 m of a watercourse are undertaken in accordance with industry best practice in order to maintain and conserve the geomorphic integrity of the watercourse and natural hydrological flow regimes.
7. Works within 40 m of a watercourse must be undertaken in accordance with the requirements outlined in the NSW Office of Water 'Guidelines for Controlled Activities (2012)'.
8. All management plans developed for works within 40 m of a watercourse shall be submitted to the NSW Office of Water for review.