

Prepared for

NSW Office of Water

Groundwater Monitoring Bore Drilling Project at Merriwa:

Review of Environmental Factors Addendum



Final

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REPORT DETAILS

Title:	Groundwater Monitoring Bore Drilling Project at Merriwa
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Synopsis:	NSW Office of Water proposes to commence construction of piezometers to monitor groundwater levels and groundwater quality in three areas of NSW proposed for coal seam gas and large coal mining development. An assessment of environmental impacts is required under Part 5 of the <i>Environmental Planning and Assessment Act 1979</i> . An assessment has been undertaken for the proposed monitoring bores in Merriwa. This addendum provides site-specific environmental assessment for changes to the drilling rig of the already proposed Merriwa Groundwater Drilling project. It has focused on assessing the environmental factors of the changes to the scope.

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1 Introduction

This addendum to *Groundwater Monitoring Bore Drilling Project at Merriwa: Review of Environmental Factors*, August 2013 (the Project REF) assesses the likely environmental impacts associated with recent changes to scope and should be read in conjunction with the Project REF.

2 Background

The Project REF addressed the potential environmental impacts associated with the NSW Office of Water's (NOW) proposed Merriwa bore drilling program. The Merriwa drilling program consists of four potential sites located around the town of Merriwa, NSW. The program aims to construct monitoring bores in sedimentary rock and Coal Seams, in order to improve the understanding of the hydrogeologic environment. The Project REF stated that a mud rotary drill would be used for the project. However, the sites at Merriwa will only be drilled to a maximum depth of 300m into sedimentary rocks with no coal at this depth, thus reducing the chance of encountering methane gas. As such, an air drill rig would be used instead. This addendum addresses the environmental assessment for this change.

2.1 Additional Materials and Equipment Required

The new drilling rig will be a Mole Pioneer 250 rig. This will replace the Bournedrill 350 THD rig. Air rotary drilling is similar to mud rotary, except that the mud pump is to be replaced by a compressor assembly (which includes a cooling system, air receiver and unloading system). Air is forced through the drilling pipe and into the rotary drill bit. Air drilling is generally used in hard clay or rock formations.

The blow-out protection (BOP) cellar and flare pit will no longer be required. The new drill will require an air compressor and two extra pits, each measuring 25m³. These pits will be lined and will retain the excess water before it is disposed. The site layout also includes a mud tank which will only be used if large quantities of wastewater are encountered.

There will be no change to the overall site footprint.

The amended drill site layout is displayed in Figure 2-1 below.

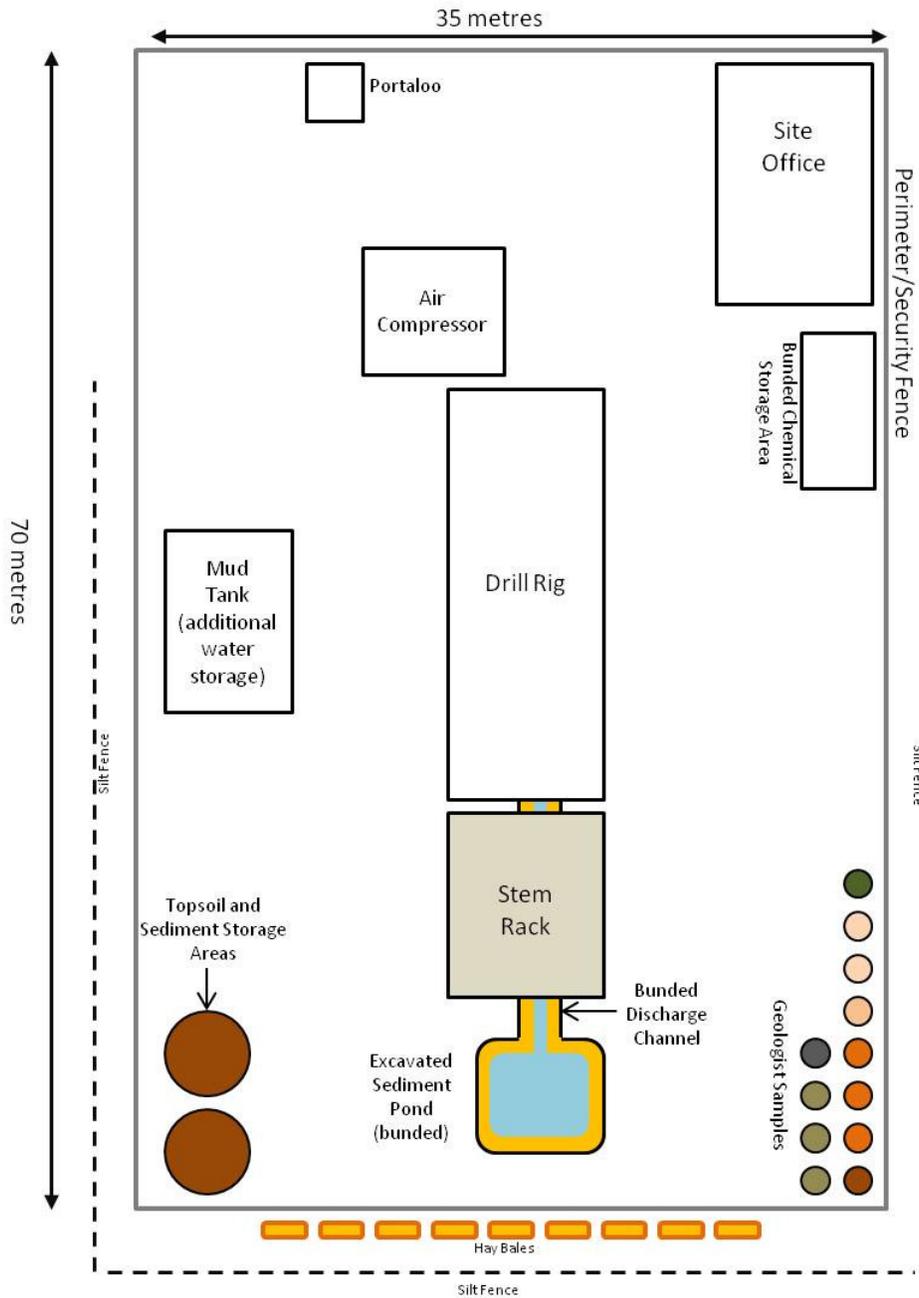


Figure 2-1 Amended Drill Site Layout

Figure 2-2 shows the air rotary drill rig that will be used.



Figure 2-2 Air Rotary Drill Rig

Any overflow water or silt sediment will be caught within the two lined ground pits where the water will be tested for electrical conductivity (EC). If deemed suitable (i.e. water between 0-1600 us/cm) the water will then be released into the environment through sediment fencing. If the water is too brackish (1,600-4,800 us/cm), it will be sent off-site to a licensed facility for disposal.

Prior to the drill's arrival onsite, the site will undergo minimal levelling and vegetation slashing.

2.2 Traffic

The numbers of vehicles required onsite is dependent on the volume of water encountered and the need to dispose of water off-site. At this stage, it is expected that excess water can be managed onsite and as such there will be fewer truck movements at the site than detailed in the Project REF.

2.3 Workforce and Timeframe

No changes to workforce or timeframe are expected.

3 Potential Impacts and Mitigation Measures

Only additional impacts and safeguards relevant to the proposed work described in this addendum are outlined in Table 3-1. Safeguards identified in the Project REF will be adopted for the works along with the additional safeguards identified within this document. The contractor will prepare a Construction Environmental Management Plan, which must address the safeguards in the Project REF and this REF Addendum.

Table 3-1 Impacts and Additional Mitigation Measures

Environmental Aspect	Potential Impacts	Additional Safeguards Required
Topography, Geology and Soils	The new drill will require the construction of two sediment pits of 25m ³ each . The excavated sediment from these pits will be stockpiled onsite and re-used upon site rehabilitation.	The sediment pits are to be lined with plastic or similar material, to help prevent water infiltrating into the ground and allow settlement of the majority of the suspended sediment load.
		Sediment and erosion control measures are to be placed around the sediment pits to direct water around the site in case of rain.
		Erosion control measures will be placed around the sediment stockpiles to minimise transfer of sediment around the site.
		Sediment stockpiles will be covered in the event of rain.
Surface Water	If groundwater is considered of fresh quality, it will be pumped from the sediment pits onto the ground.	Prior to its release onto the ground, all water is to be released through sediment fencing.
		Water is to be tested for EC prior to its release across the ground. If the water has a low EC reading it would be disposed of through a v-notch weir through a silt fence onto the surrounding land (below 1600 us/cm). Otherwise if water is brackish it will be contained and disposed of offsite at a licensed facility (over 1600 us/cm).

Groundwater	The drill will result in extra groundwater brought to the surface. This water will be collected in an excavated pit, tested for EC and then, if safe, released onto the ground.	EC Monitoring to occur as per the following: <1 L/s every 4 hours; 1-5 L/s ever 2 hours; > 10L/s hourly Stop work at >25L/s and re assess water control at site. If EC is more than 1600 us/cm of groundwater the groundwater will be stored within storage(mud) tanks kept onsite and disposed of offsite at a licenced facility.
Flora and Fauna	Some vegetation slashing will be required within the drill footprint prior to setting up the drill rig. There will be no changes to the drilling footprint and as such no further impact on vegetation is expected.	No additional mitigation measures are required.
Heritage	There will be no changes to the drilling footprint and as such no further impact on heritage is expected.	No additional mitigation measures are required.
Noise and Vibration	Whilst it is expected that the new drill rig will be slightly louder, this is not expected to be a significant increase of noise.	Noise monitoring is to take place at commencement of drilling to determine if noise levels are within recommended guidelines or if further noise mitigation measures are required.
Air Quality	The air drilling rig may result in excess dust produced as a result of drilling. However, the level of dust emitted is not expected to be significant	Water will be used for dust suppression where necessary.
Traffic and Access	As the excess groundwater will be released onto the ground and not disposed of off-site, there is expected to be a reduction in vehicle traffic. As site M1b is located within a road reserve, approval has been obtained from Roads and Maritime Services (RMS).	A traffic management plan will be developed for the site at M1b as it is in the road reserve managed by Roads and Maritime Services (RMS). The plan is to be in accordance with current RMS Guidelines "Traffic Control at Work Sites". Consent from RMS to undertake works at site M1b is only valid for 5 years from 24 December 2013. If this work is completed after the five years, additional approval from RMS will need to be sought.

		<p>The traffic flow along Merriwa-Scone Road must not be interrupted or disturbed without the written consent of Upper Hunter Shire Council.</p> <p>The works must be carried out in accordance with requirements of NSW WorkCover Authority, Department of Industrial Relations & Employment and the Police Services of NSW.</p> <p>A minimum of 48 hours' notice is to be provided to Upper Hunter Shire Council prior to working along Merriwa-Scone Road, and the council is to be notified as soon as the work is completed.</p> <p>Prior to construction work at site M1b, all services are to be clearly located and identified by contacting Dial Before you Dig.</p> <p>Any restrictive covenants affecting the property are complied with during construction.</p>
Waste	The new drill rig is expected to release excess spoil. This spoil will be stockpiled onsite..	Erosion and sediment control devices will be placed around the stockpiles to reduce off-site migration of sediment.
Social and Visual Assessment	The drill rig will be at the same height as the previous rig. No further impacts are expected	No additional mitigation measures are required.
Cumulative Impacts	No cumulative impacts are expected	No additional mitigation measures are required.

4 Conclusion

This report has provided site-specific environmental assessment for changes to the drilling rig of the already proposed Merriwa Groundwater Drilling project. It has focused on assessing the environmental factors of the changes to the scope.

The proposed works would result in minimal changes to the drilling process and equipment required onsite. These changes can be managed effectively with the mitigation measures listed above as well as those outlined in the Project REF. Provided all these measures are implemented, the project is unlikely to significantly affect the environment.

As per the original Project REF, a CEMP will be developed prior to works commencing, and must incorporate the requirements of the original REF and those of this REF addendum.