



**METROPOLITAN COAL  
CONSTRUCTION MANAGEMENT PLAN**

**SURFACE WORKS ASSESSMENT FORM**

**DEEP GROUNDWATER PIEZOMETER BOREHOLES**

**Amendment – March 2012**

## **Metropolitan Coal**

### **Proposed Installation of Deep Groundwater Piezometer Boreholes**

#### **Background**

In accordance with the Metropolitan Coal Water Management Plan (WMP), deep groundwater levels/pressures are required to be monitored for the future mining area of Longwalls 23-27.

The subject Surface Works Assessment Form seeks endorsement for the installation of boreholes containing nested piezometers to obtain this monitoring data. The data will be downloaded monthly as required by the WMP.

The proposed construction and environmental management works outlined in this Surface Works Assessment Form append the general management measures as outlined in Metropolitan Coal's Construction Management Plan as approved by DP&I on 14 November 2011.

Metropolitan Coal proposes to install piezometer boreholes within the Approved Project Area on land managed by the SCA or Crown Land as listed below.

#### **SCA Land Piezometer sites:**

- 9FGW2
- F6GW4

#### **Crown Land Piezometer sites:**

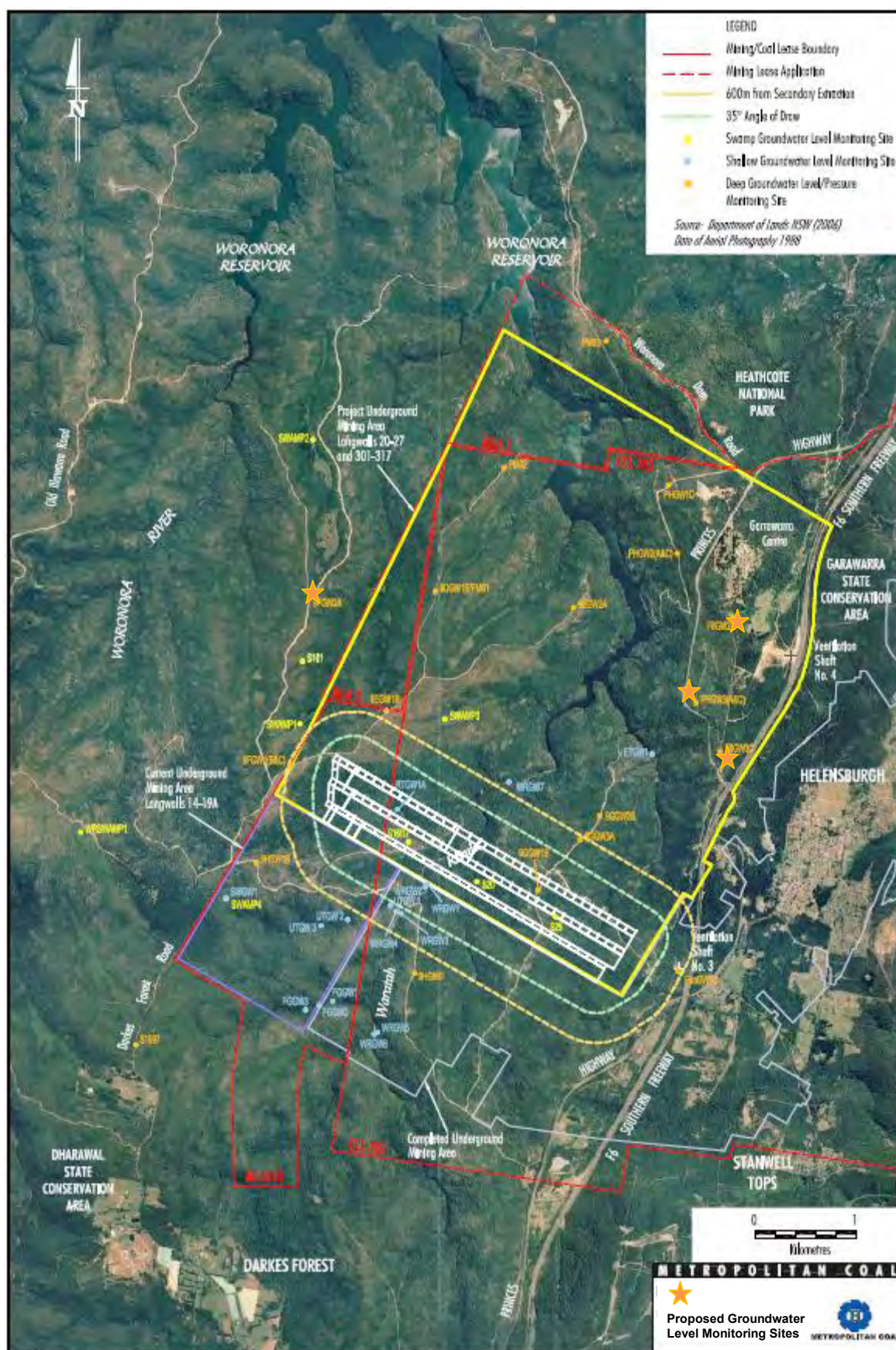
- F6GW2
- F6GW3

The locations of the proposed piezometer sites are depicted in Figure 1, which shows Metropolitan Coal's groundwater level monitoring network in relation to the project underground mining area.

The sites 9FGW2 and F6GW4 are located within the Woronora Special Area in the local government area (LGA) of Wollongong City Council. The Woronora Special Area covers a region of approximately 75 square kilometres (km<sup>2</sup>) and includes the catchment of Woronora Dam. SCA manages the Woronora Special Area and public access is restricted.

The sites F6GW2 and F6GW3 are located on Crown Land to the eastern side of the Old Illawarra Road, south of the Garrawarra Centre.

The proposed activities are situated within the Metropolitan Coal mining lease (Consolidated Coal Lease (CCL) 703). The township of Helensburgh is located approximately 5 km to the east.



## Construction Management Plan Surface Works Assessment Form

**Note, this form must be completed in full  
prior to the commencement of surface disturbance works**

**Date:** 30 March 2012

**Name and position:** Ryan Pascoe, Manager – Environment & Community

**Register number (i.e. Number 1, 2, etc.):** 3

**RMP register number:** 3

**Site name:**

- 9FGW2
- F6GW2
- F6GW3
- F6GW4

**Site type:**

*Environmental monitoring sites consisting of measurement, data logging and transmission equipment. Each site will provide background and ongoing data relating to:*

- Rainfall;
- Pool depth; and
- Groundwater levels.

**Site co-ordinates (easting/northing):**

Site	Land tenure	Easting	Northing
9FGW2	SCA	308726	6217229
F6GW2	Crown	312919	6217024
F6GW3	Crown	312827	6215503
F6GW4	SCA	312542	6216667

**Expected duration of works:** Approximately 20 Weeks

**Works schedule:**

- Describe the activities (including timing) to be conducted during construction works.

*Works on each of the sites will be conducted in succession over a 16 week time period, the detail of which has been provided below. Access and preparation will be followed by Drilling Operation, Equipment Installation and Operation, and then Rehabilitation.*

**1. Access to Monitoring Sites and Site Preparation:**

*Access to the monitoring sites will be from established catchment access roads.*

*The disturbance of soils will be limited to the minimum required for mobilization, placement and operation of the drilling equipment and for maintaining access to equipment.*

*Existing fire trails will be used for siting/delivery of equipment and for access.*

*Vegetation disturbance/clearing will be kept to a minimum and will be limited where possible to the removal of saplings or slashing of vegetation. Where slashing of vegetation is required, soil disturbance will be minimized by cutting the vegetation at ground level and leaving the lower stem and roots in-situ to maximize the potential for natural regrowth. The removal of saplings, slashing of vegetation or lopping of branches will be conducted only where necessary. Lopped branches will be placed in a random pattern to brush matt areas of disturbance.*

## **2. Drilling Method:**

- Boreholes will have a diameter of approximately 100 millimetres (mm) and will be drilled using a semitrailer mounted rig and rod handler.*
- Boreholes would be drilled to depths of up to approximately 440 to 540 m. The bores would be open hole drilled to within 50 m of the Bulli Seam and then cored for the remainder of their depth.*

## **3. Water Management and Cuttings Containment:**

- Drilling will occur during forecast dry weather wherever practicable. Either water and/or compressed air will be used to clear the drill cuttings.*
- Drill cuttings would be deposited into above ground baffled recirculation tubs and transported off-site for disposal. Tubs will be covered during rain periods to prevent the system from overflowing.*
- 2 x 10,000 litre tanks will be situated on site. One to hold freshwater for drilling and the second will be empty to contain any water that might arise from the bores hitting an artesian strata.*
- The following chemicals will be used to prevent swelling clays, assist in the suspension of solids in the borehole, assist in sediment settlement acceleration, assist in water recirculation loss and associated lubricants used in the drilling process. MSDS are attached:*
  - KCl*
  - Lipler EP2*
  - Thread Grease*
  - Super Foam*
  - FS2000*
  - PAC HV*
  - Aust Plug*
  - Gyp Set*
  - CR-650*
- Drill core would be placed in core trays and transported off-site at the completion of drilling.*

## **4. Borehole Casing:**

- *Steel casing would be installed to approximately one tenth of the depth of the bore. Casing would be grouted in place using a cement-based grout.*
- *Steel casing would extend to a height of up to 2 m above the ground level to allow for installation of solar panels associated with data capture.*
- *A steel blowout preventer unit would be bolted onto the steel surface casing and would be removed on completion of drilling.*

#### **5. Installation and Operation of Equipment:**

- *A lockable steel cover would be fitted to the steel surface casing and a lockable steel box would also be installed to enclose the data logger.*
- *Water level pressure sensors would be installed down the borehole and this would be linked to a data logger for water level monitoring. The nested piezometers would be attached to steel tubing placed in the borehole and grouted in place.*
- *For security, the groundwater bores may be enclosed within a wire perimeter fence (e.g. 3 m x 3 m).*
- *Piezometers will be monitored at least monthly via downloading the logger data with a 3G wireless set up. Maintenance of the 3G devices will need to be done routinely.*

#### **6. Site Rehabilitation:**

- *The sites will be rehabilitated at the cessation of their use in accordance with Metropolitan Coal's Rehabilitation Management Plan.*

#### **7. Fuel Management:**

*Large quantities of fuel will not be stored on site. Fuel will be transported in a closed purpose built 400 litre fuel tank secured in a 4 wheel drive vehicle. Re-fuelling will be conducted using a low voltage electric pump and bowser. Care will be taken not to spill fuel. Oil/fuel absorbent materials or other containment materials will be made available at the site to prevent contact with the surrounding environment.*

*Equipment (e.g. drill rigs, pumps) will be regularly inspected for leaks of oil/fuel/coolant. Impervious bunding will be provided with greater than 110% of the capacity of the item being banded. Spill containment/treatment resources (i.e. spill kits) will be provided and personnel will be trained in their use. The spill kits will include: absorbent material 40 L bag of Organic Oil/Fuel absorbent; absorbent pads: 20 of 480 X 430 mm pads; garbage bags; shovel; and a bag of rags.*

*Any spill that occurs will be immediately cleaned up and reported to:*

- *the site supervisor;*
- *the MCPL Environment and Community Manager (Ryan Pascoe 0448 955 883); and*
- *the SCA (via the incident Management Number 1800 061 069).*

*The site supervisor and the MCPL Environment and Community Manager will investigate any spills.*

## 8. Human Waste Water:

A portable toilet serviced by South Cost Liquid Treatment Pty Ltd will be moved to each drill site. The toilet will be serviced fortnightly with a vacuum truck.

### Review of baseline information - site features (refer Section 5 of the ConMP)

Are any of the following features located within the proposed disturbance area or immediate surrounds?

Are there occurrences of the Southern Sydney Sheltered Forest on Transitional Sandstone Soils EEC in the general area? **No**

*All sites were the subject of a flora surveys (attached) carried out by an independent expert, FloraSearch and found to not be within the listed EEC areas. The sites and their relevant vegetation community names and any threatened or rare species found are indicated in the below table.*

Site	Vegetation Community (NPWS 2003)		Rare or Threatened Species
	Map Unit No.	Community Name	
9FGW2	MU33	Silvertop Ash Ironstone Woodland	Nil
F6GW2	MU29	Exposed Sandstone Scribbly Gum Woodland	Nil
F6GW3	MU29 or MU40	Secondary tall heathland derived from Exposed Sandstone Scribbly Gum Woodland or Woronora Tall Mallee Heath.	A Broom-heath ( <i>Monotoca ledifolia</i> ) (ROTAP-listed)
F6GW4	MU29 / MU25	Ecotone between Exposed Sandstone Scribbly Gum Woodland and Sandstone Gully Apple-Peppermint Forest.	Nil

Are there occurrences of the O'Hares Creek Shale Forest EEC in the general area? **No**

Are upland swamps located in the general area? **No**

Are there records of known threatened flora species in the general area? **No**

Are there records of known threatened fauna species in the general area? **No**

Are existing (or proposed) monitoring sites located nearby? **No**

What vegetation type is present?

*See above table (pg 3).*

Are known Aboriginal heritage sites present? **No**

*The locations of the proposed piezometers avoid known items of Aboriginal heritage as identified in the project Environmental Assessment. In addition, a pre-clearance survey/due diligence assessment was carried out for each of the sites by an independent Aboriginal heritage consultant, Kayandel Archaeological Services. The assessment report indicated that no Aboriginal objects were seen during the field inspection and that none were likely to be present.*



Accordingly, it was 'recommended that the proposed works be allowed to proceed without further Aboriginal heritage investigation being required' (Kayandel Archaeological Services, 2011).

**Is this an area in which disturbance is to be avoided and/or limited? (refer Sections 6.1.1 and 6.1.2 of the ConMP)**

**No**

- Southern Sydney Sheltered Forest on Transitional Sandstone Soils EEC
- O'Hares Creek Shale Forest EEC
- Upland swamps
- Environmental monitoring sites

**If the proposed disturbance area is located in an area to be avoided or limited, relocate site where appropriate in accordance with the requirements of the ConMP**

**Threatened flora survey (refer Section 6.1.3 of the ConMP)**

Date of survey for threatened flora.

28 March 2011 / 3 February 2012

Name of suitably qualified ecologist conducting survey:

Colin Bower (FloraSearch)

Have any threatened flora been identified within the proposed disturbance area or immediate surrounds.

**No**

*No threatened flora species were identified however on exposed rocky areas on the margins of site F6GW3 individuals of Monotoca ledifolia, a rare ROTAP-listed Broom-heath species were identified. This species did not occur within the proposed drill site itself. However, in accordance with FloraSearch's recommendations care will be taken to avoid placing equipment on exposed rock surfaces to the east and south east of the drill site, and ancillary equipment will be placed on the margins of the cleared fire trail adjacent to the drill site.*

Scientific names of threatened flora species recorded.

**N/A**

Will works be relocated to avoid or minimise impacts on the threatened flora species

**N/A**

*Works will avoid the rare species as described above.*

If it is not feasible to relocate the works, have the impacts of the proposed works on the population of the threatened flora species been assessed by a suitably qualified and experienced ecologist?

**N/A**

**If No, do not proceed**

Has the assessment concluded that the proposed surface activities are likely to have a significant impact on a population of the threatened flora species?

**No**

**If Yes, the proposed works are to be modified to avoid such an outcome**

[Attach any relevant ecological reports to this assessment form]

**Vegetation clearance and site access (refer Section 6.1.6 of ConMP)**

Is vegetation clearing required for the construction works? If yes, describe extent (e.g. m<sup>2</sup>) and method of clearing (e.g. slashing/lopping branches/removal)?

**Yes**



*Vegetation disturbance will be kept to a minimum - each site will be between 30 and 50m<sup>2</sup> in area. Vegetation disturbance/clearing will be limited where possible to the removal of saplings or slashing of vegetation. Where slashing of vegetation is required, soil disturbance will be minimized by cutting the vegetation at ground level and leaving the lower stem and roots in-situ to maximize the potential for natural regrowth. The removal of saplings, slashing of vegetation or lopping of branches will be conducted only where necessary. Lopped branches will be placed in a random pattern to brush matt areas of disturbance.*

*Vehicles and equipment will be maintained to suitable standards to minimise the risk of the introduction of weeds. All equipment will be inspected before it is relocated and identified soil and vegetation will be removed to prevent the spread of weed. Weed control measures and revegetation of areas disturbed by drilling will be implemented where required.*

Describe the access requirements for the construction site (e.g. vehicle/pedestrian/helicopter) and where the access will be from (e.g. which fire road).

*Existing roads will be used for siting/delivery of equipment and for access to sites as below:*

Site	Access
9FGW2	Vehicle - Fire Road 9F & Darkes Forest Road
F6GW2	Vehicle – Old Illawarra Road
F6GW3	Vehicle – Old Illawarra Road
F6GW4	Vehicle – Old Princes Highway

Is vegetation clearing required for site access? If yes, describe the extent and method of clearing?

**No**

### **Vegetation management measures to be implemented (refer Section 6.1.4 of the ConMP)**

*As detailed above.*

### **Site Layout Plan (refer Section 6.1.5 of ConMP)**

Has a Site Layout Plan been prepared and attached to the Works Assessment Form?

**Yes**

Have the following been indicated on the Site Layout Plan?

**Yes**

- Site location
- Works design
- Management measures (e.g. erosion and sediment controls, spill kits)
- Access track/s (indicate type of access, e.g. pedestrian/vehicle. Also indicate location of nearest fire trail where access will be from)
- Areas of vegetation clearance
- Location of equipment (e.g. pump, generator, fuel storage, portable toilets)
- Equipment storage areas
- Safety equipment (e.g. fire extinguisher and first aid kit)

### **Attach photographs, where appropriate**

*Refer site photos in Appendix (Table 1)*

### **Description of Photographs: See Appendix**

### **Aboriginal heritage pre-clearance survey (refer Section 6.2 of the ConMP)**

Date of pre-clearance survey for Aboriginal heritage sites.

29 July 2011 / 3 February 2012

Name of survey attendees:

*Beth White – Archaeologist (Kayandel Archaeological services)*

*Nicole Castle – Archaeologist (Kayandel Archaeological services)*

*Josh Daniel – Environment & Community Coordinator (Peabody Metropolitan Coal).*

Are any Aboriginal heritage sites identified within the proposed disturbance area or immediate surrounds.

**No**

*The locations of the proposed piezometers avoid known items of Aboriginal heritage as identified in the project Environmental Assessment. In addition, no Aboriginal objects were seen during the pre-clearance survey and it was identified that none were likely to be present.*

*Accordingly, it was 'recommended that the proposed works be allowed to proceed without further Aboriginal heritage investigation being required' (Kayandel Archaeological Services, 2011).*

Description of recorded Aboriginal heritage sites.

**N/A**

Will works be relocated to avoid impacts on the Aboriginal heritage site?

**N/A**

If it is not feasible to relocate the works to avoid impacts to the Aboriginal heritage site, management and/or mitigation measures to be implemented in accordance with the Metropolitan Mine Heritage Management Plan. Describe measures below.

**N/A**

Where avoidance is not practicable, has a comprehensive baseline record been obtained and salvage considered in consultation with Aboriginal stakeholders prior to disturbance.

**N/A**

[Attach any relevant archaeological reports to this assessment form]

#### **Known Aboriginal heritage sites located close to surface disturbance works**

Details of demarcation (e.g. fencing, sign-posting or temporary flagging) implemented to avoid accidental damage to known Aboriginal heritage sites located close to surface disturbance works.

**N/A**

#### **Erosion or sediment control measures required?**

- |   |            |
|---|------------|
| - Is any erosion or sediment control required?  | <b>Yes</b> |
| - If yes, has an Erosion and Sediment Control Plan been prepared and attached to the Surface Works Assessment Form? | <b>Yes</b> |

#### **Fuel and spill management measures required?**

- |  |            |
|--|------------|
| - Are compressors and pumps bunded and with sufficient capacity?           | <b>Yes</b> |
| - Where fuels are used, are spill kits available at the construction site? | <b>Yes</b> |
| - Have personnel been trained in spill clean up procedures?                | <b>Yes</b> |

*As per JSEA.*

### List Hazardous Materials and Storage Requirements

- What hazardous materials are required to be used and how will they be stored on site?

*Diesel, Petrol, Hydraulic Oil – Stored in bunded container on site.*

- Are Materials Safety Data Sheets (MSDS) for hazardous materials located at the construction site?

**Yes**

### Bushfire Preparedness and Management

- Have Metropolitan Coal staff and contractors been provided with fire awareness and fire safety training?

**Yes**

- Has a Hot Work Permit been obtained from the SCA if required?

**Yes**

*Metropolitan Coal's hot work permit has been approved by the SCA.*

## **APPENDIX 1: SITE PLANS**

The proposed monitoring sites are located within the Approved Project Area in the Woronora Special Area and Crown Land in the local government area (LGA) of Wollongong City Council as shown in Figure 1 (Groundwater level monitoring network) and in closer detail in Figure 1A (below).

**Figure 1A: Proposed Piezometer Locations**

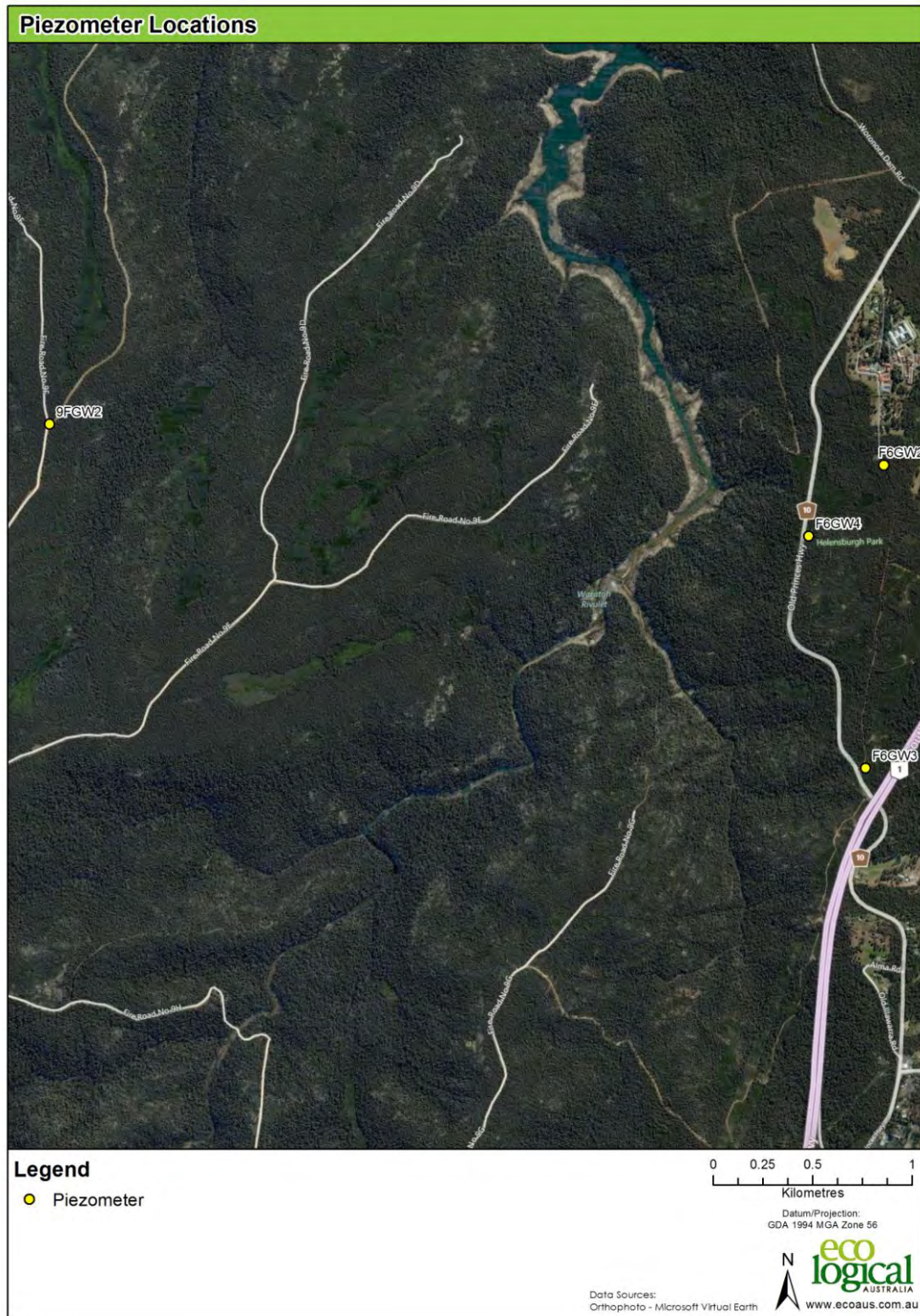




Table 1A (below) shows the proposed site layout plans for the piezometer works.

Table 1A: Site Layout Plans



F6GW2 – Crown Land (Easting: 312919, Northing: 621702)



Photograph of proposed piezometer site facing south.

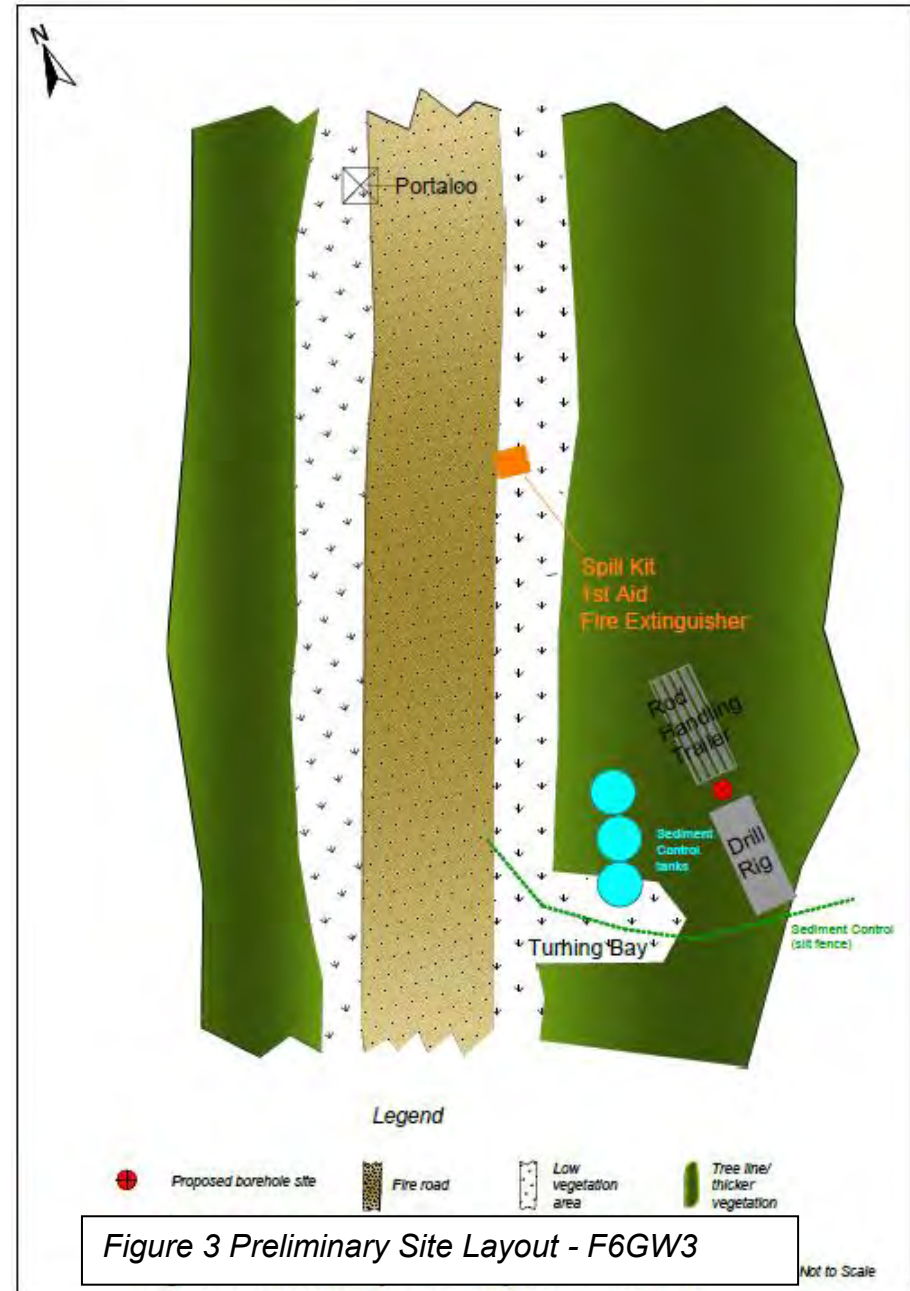




## F6GW3 – Crown Land (Easting: 312827, Northing 6215503)



Photograph of proposed piezometer site facing east.





F6GW4 – SCA Land (Easting: 312542, Northing 6216667)



Photograph of proposed piezometer site facing east.

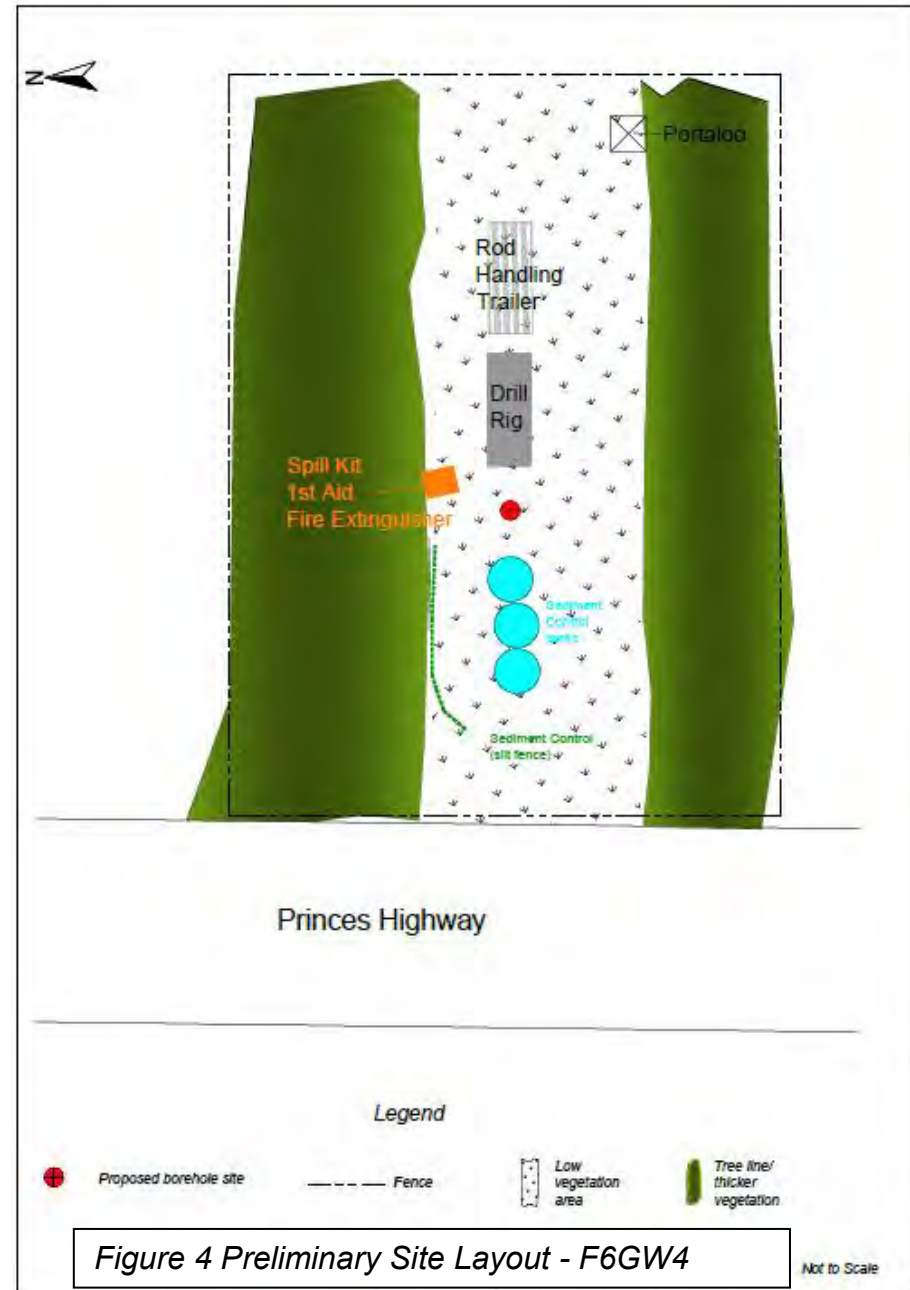


Figure 4 Preliminary Site Layout - F6GW4

Not to Scale

## **APPENDIX 2: EROSION AND SEDIMENT CONTROL PLAN**

Correct location, design of the work site and work practices will minimise the risk of erosion at each of the sites. Effectively managing this issue will be achieved by carrying out the following:

- Minimise the disturbance area of the access trails and work site, this will accordingly reduce the likelihood and severity of erosion needing to be controlled
- Slashing or vegetation disturbance will be conducted following the strategies listed in the vegetation management section above;
- Correct aspect and site location. The sites have been selected in appropriate areas that will minimise the risk of erosion ie flat sites, not on hard rock;
- Sediment control will be managed in accordance with the Blue Book (Volume 1 and Volume 2E), including the installation of sediment fences as per the standard drawing 6-8 of the Blue Book Volume 1;
- Whilst drilling is being conducted, the collar of the drill hole will have a t section installed to allow sediment to be deposited directly into a baffled tank for collection. Water will be pumped into an empty 1000 litre IBC and cuttings shovelled into sandbags for removal;
- All workers will be trained in the appropriate work practices and the drilling operation will be constantly manned whilst in operation.