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New Acland Stage 3 Project  
Bore Baseline Assessment Program

Report Number 620.11279.0001

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New Hope Group  
3/22 Magnolia Drive  
Brookwater QLD 4300

Version: V5

# New Acland Stage 3 Project

## Bore Baseline Assessment Program

### PREPARED BY:

SLR Consulting Australia Pty Ltd  
ABN 29 001 584 612  
Level 2, 15 Astor Terrace  
Spring Hill QLD 4000 Australia  
(PO Box 26 Spring Hill QLD 4004)  
T: +61 7 3858 4800 F: +61 7 3858 4801  
brisbane@slrconsulting.com www.slrconsulting.com

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### DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
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## 1 INTRODUCTION

### 1.1 Background

The New Hope Group (NHG) received the Coordinator-General's assessment report on 19 December 2014 for the New Acland Coal Mine Stage 3 Project (Project). Accompanying the assessment report, the Coordinator-General has recommended a number of conditions be imposed in certain approvals required for the Project, with several of these conditions targeting water security for authorised groundwater users under the *Water Act 2000* (Qld) (the Water Act). Specifically, these 'Make Good' conditions include:

#### **Appendix 3, Schedule 3. Approvals under the Water Act 2000** **Condition 1. Water security**

- (a) *In accordance with relevant conditions of the Environmental Authority, the proponent must collect data that identifies natural groundwater level trends for identification of water level impact to authorised water users from the mining operation on authorised water users.*
- (b) *Within 2 years following the granting of the mining lease/s for the New Acland Coal Mine Stage 3 project, the proponent must provide a report to each potentially unduly affected authorised water user and the administering authority. The report must include a summary of the collected baseline information and address potential impacts to the groundwater supplies of those users.*
- (c) *In the report required by condition (b), the proponent must:*
  - (i) *Identify operational bores for each potentially affected authorised water user*
  - (ii) *For each operational bore:*
    - (A). *Identify natural groundwater levels and water quality;*
    - (B). *Identify the condition and supply capacity of the bore;*
    - (C). *Identify the operational requirements and current use of the bore;*
    - (D). *Clearly outline the predicted decrease in water level at the bore due to proposed mining operations;*
    - (E). *Provide an initial assessment of the likely water supply impacts to the affected authorised water users, and timing of those impacts, during and following the project activity;*
    - (F). *Outline of the potential future actions (make good measures) which would ensure the potentially affected authorised water users will have access to a reasonable quantity and quality of water for the authorised use and purpose of the bore/s.*
- (d) *The proponent must enter into agreement with all potentially 'unduly affected' water users (as defined in conditions of the water licence or relevant legislation at the time) about the make good measures outlined in condition (c), or other negotiated arrangement.*

- (e) *If, after advice from the parties that agreement pursuant to condition (d) cannot be reached, and in the opinion of the responsible Chief Executive all reasonable attempts have been made to achieve agreement, then the relevant administering authority may, in consultation with the licensee and the unduly affected water user, determine the make good measures to be taken pursuant to the relevant legislative instrument at the time.*
- (f) *The agreement must be entered into, at least 3 years prior to the time an 'unduly affected' water user is predicted to become 'unduly affected' due to dewatering operations (based on the latest version of the Acland Coal project numerical groundwater model at the time).*

The NHG appreciates that water security is of critical importance for landowners and surrounding communities and therefore intends to progress a program of works required to meet conditions (a) through to (d).

Further, it is now likely that an alternative regime, under the Water Act, to the Conditions set out in the Coordinator General's report will become applicable to the NHG before a mining lease for Stage 3 mining is granted.

The Water Reform and Other Legislation Amendment Act 2014 (Water Reform Act), which was passed on 26 November 2014, includes a number of amendments to the Mineral Resources Act 1989 (MRA) and the Water Act. At the date of publication, some of the amendments had not yet commenced. Among the amendments are amendments to:

- the MRA that give mining lease holders the right to take or interfere with underground water in the area of the lease without obtaining a separate water licence if the taking or interfering happens during the course of or results from the carrying out of an authorised activity for the lease. These rights are referred to in the Act as "underground water rights"; and
- Chapter 3 of the Water Act that provides a regulatory framework to:
  - require mining lease holders to monitor and assess the impact of the exercise of underground water rights and enter into make good agreements with bore owners;
  - require mining lease holders to prepare underground water impact reports that establish underground water obligations, including obligations to monitor and manage impacts on aquifers and springs.

In effect, the amendments to Chapter 3 of the Water Act provide for the regulatory regime in respect of underground water obligations, which currently applies to petroleum tenure holders only, to apply to both mining tenure holders and petroleum tenure holders.

The amendments to Chapter 3 of the Water Act are due to commence on a date to be determined. The Queensland Government has publicly advised that all provisions of the Water Reform Act that have not yet commenced (including those above) are consistent with government policy but cannot start until the Water Legislation Amendment Bill 2015, which was introduced into Parliament in November 2015, has also been passed. That Bill amends the Water Reform Act, however those amendments are not relevant for the purposes of this plan.

NHG expects the Water Reform Act to have commenced prior to any grant of a mining lease and in any event that Condition 1 of the Coordinator-General's assessment report (referred to above) will be superseded and therefore no longer applicable, as such this plan has been prepared to comply with both the Condition 1 and NHG's underground water obligations under the Water Act (as amended by the Water Reform Act).

## 1.2 Preparation of a Baseline Assessment Program (BAP)

The Water Act as amended by the Water Reform Act (Amended Water Act) requires a responsible entity, eg a mining lease holder, to prepare an underground water impact report for the mining lease.<sup>1</sup> An underground water impact report must, among other things, include a water monitoring strategy.<sup>2</sup> If a water monitoring strategy is prepared for an underground water impact report, the strategy must also include a program to undertake a baseline assessment for each water bore that is outside of the area of the mining lease but is in the area of the aquifer where the water level is predicted to decline by more than the bore trigger threshold at any time (this area is referred to as a long-term affected area).<sup>3</sup> The bore trigger threshold is a decline in the water level in the aquifer that is, for an aquifer consisting predominantly of consolidated sediment - 5 metres, or otherwise 2 metres (unless prescribed by regulation). In summary, the NHG will be required to undertake baseline assessments of all water bores outside the area of the mining lease but in the area of the aquifer where the water level is predicted to decline by more than the bore trigger threshold (in accordance with the water monitoring strategy, which forms part of the underground water impact report).

This BAP is intended to be the program for undertaking a baseline assessment required under s 378 (forming part of the water monitoring strategy required by s 376(f) and the underground water impact report required under s 370).

The Amended Water Act also requires mining lease holders to:

- for a bore in an immediately affected area (ie a bore in a long-term affected area that will be affected within 3 years of publication of the underground water impact report), undertake a bore assessment of the water bore to establish whether the bore has an impaired capacity or is likely to start having an impaired capacity; and
- enter into make good agreements with bore owners regarding the make good obligations for the bore.

For each bore in an immediately affected area (not already the subject of a make good agreement), the Amended Water Act, requires the mining lease holder to undertake a bore assessment of the bore within 60 days of the underground water impact report being approved (or amended).<sup>4</sup>

The NHG intends to undertake field-based 'baseline assessments' of each potentially impacted authorised water bore or each bore within the long-term affected area, in order to collect the required information outlined in Conditions 1(a), 1(b) and 1(c)(ii) and satisfy the requirements in Chapter 3 of the Water Act to undertake the baseline assessments required by the water monitoring strategy.

In undertaking a baseline assessment of a water bore and a bore assessment under the Amended Water Act, a mining lease holder must comply with guidelines made by the chief executive or if there are no guidelines—best practice industry standards for carrying out work similar in nature to undertaking a baseline assessment.<sup>5</sup> At the present time, there are no published guidelines related to undertaking such assessments as they relate to mining tenure holders. However, under the Water Act as it currently stands, petroleum tenure holders have substantially similar obligations to those applicable to mining lease holders under the Amended Water Act to undertake baseline assessments of water bores and bore assessments are required to be undertaken, and the Queensland Department of Environment and Heritage Protection (EHP) has developed guidelines intended to assist petroleum tenure holders in the conduct of baseline assessments and bore assessments

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<sup>1</sup> s 370(1).

<sup>2</sup> s 376(1).

<sup>3</sup> s 378(3).

<sup>4</sup> s 417(2).

<sup>5</sup> ss 396(1), 414(1).

within the framework provided by the Water Act. The NHG considers that in the absence of specific guidance for mining tenure holders, the EHP's Baseline Assessment Guideline and Bore Assessment Guideline for petroleum tenure holders presents best practice industry standards for carrying out work similar in nature to undertaking a baseline assessment and suitable guidelines to follow when seeking to obtain the information required in the Coordinator Generals' recommended conditions for water security for the Project.

The EHP's Bore Assessment Guideline states that the groundwater impact predictions of the underground water impact report, and the information collected during a baseline assessment may provide enough information to determine that a bore has or will have impaired capacity for the purposes of a bore assessment and entry into a make good agreement. As such, the baseline assessments undertaken on bores outside of the mining lease area referred to in this BAP are intended to satisfy Step 1 of the Bore Assessment Guideline (Preliminary assessment) in respect of the requirement under s 417(2) to undertake bore assessments of immediately affected bores within 60 days of approval of an underground water impact report.

Under the Amended Water Act, the minimum requirements for inclusion in the baseline assessment for a bore are the following:

- the level and quality of water in the bore;
- how the bore is constructed;
- the type of infrastructure used to pump water from the bore.<sup>6</sup>

In contrast, a bore assessment should establish:

- whether the bore has an impaired capacity; or
- whether the bore is likely to start having an impaired capacity.

An existing water bore (ie a water bore in existence before approval of the first underground water impact report) has an impaired capacity if:

- there is a decline in the water level of the aquifer at the location of the bore because of the exercise of underground water rights; and
- because of the decline, the bore can no longer provide a reasonable quantity or quality of water for its authorised use or purpose.<sup>7</sup>

A new water bore has an impaired capacity if:

- there is a decline in the water level of the aquifer at the location of the bore because of the exercise of underground water rights; and
- the decline is more than the decline predicted at the location of the bore in the approved underground water impact report; and
- because of the decline, the bore can no longer provide a reasonable quantity or quality of water for its authorised use or purpose.<sup>8</sup>

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<sup>6</sup> s 394.

<sup>7</sup> s 412(1).

<sup>8</sup> s 412(2).



This program, as it will form part of the first underground water impact report, will only deal with existing bores.

The EHP's Baseline Assessment Guideline outlines the requirement to prepare a baseline assessment plan under the Water Act. The Baseline Assessment Guideline restates the requirements set out in the Water Act. In addition, the Baseline Assessment Guideline also states, among other things, that a baseline assessment plan should:

- Identify priority areas for undertaking baseline assessments. This requirement equates to Condition 1(c)(i) of the Coordinator General's assessment report to identify operational bores for each potentially affected authorised water user.<sup>B</sup>
- Provide a timetable for undertaking baseline assessments of water bores, such that the timing of potential impacts on authorised water users is appropriately considered (for example, baseline assessments are undertaken prior to commencing any operations), and provide a rationale for the timetable.
- Require and provide a description of a robust data collection process for the collection of accurate, appropriate and defensible data, including the referencing of appropriate industry standards.
- Require and outline the minimum qualification requirements for persons conducting the baseline assessments.
- Describe and require use of a formal quality assurance program consistent with the principles of AS/NZ 9000 and QA/QC requirements of AS5667 and the DERM Monitoring and Sampling Manual.<sup>B</sup>
- Require completion or certification by an independent third party.

The provisions of the Amended Water Act that set out the requirements for baseline assessment plans apply to priority areas only and not to a "program for undertaking a baseline assessment" under s 378, however the NHG considers that such requirements provide suitable guidance in preparing a program to undertake a baseline assessment for each water bore outside the area of the mining leases but within a long-term affected area, as required by s 378. This BAP has been prepared on that basis.

Following the implementation of this BAP, the outcomes of that implementation should:

- Provide a measure of security for both bore owners and tenure holders, through understanding what the current condition and pumping capacity is for each water supply bore potentially affected.
- Provide a reference point to assist in the negotiation of Make Good Agreements.
- Assist in resolution of any future disputes that may arise between bore owners and tenure holders following a bore assessment or in the negotiation of a Make Good agreement.

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<sup>A</sup> The terms "potentially unduly affected authorised water user" and "potentially affected authorised water user" are used, seemingly, interchangeably throughout the CG's report, but not further defined. For the purposes of this plan, no distinction is made between these terms and a further description is provided in Section 2 below.

<sup>B</sup> The last 4 items are not expressly required under the Water Act for a baseline assessment plan, however NHG considers these to be good practice having regard to the EHP's Baseline Assessment Guideline and Bore Assessment Guideline.

## 2 IDENTIFICATION OF POTENTIALLY UNDULY AFFECTED AUTHORISED WATER USERS

### 2.1 Definitions

For the purposes of this BAP, the NHG identifies a *potentially unduly affected authorised water user* as being the owner of land upon which an authorised water bore is located that is deemed to be "potentially unduly affected", as outlined in **Table 1**.

**Table 1 Definitions**

Term	Definition	Justification
Potentially unduly affected	A water bore located within the median (most likely) predicted 2 m drawdown contour for any aquifer predicted by the numerical groundwater model presented in the Project's AEIS (Jacobs SKM, 2014).	2 m is the lesser of the two 'bore trigger thresholds' defined in the Water Act and EHP's Baseline Assessment Guidelines. The lesser of the two triggers has been adopted as a conservative approach to impact assessment.  EHP state that the defined trigger threshold is intended to <i>reflect a water level decline in an aquifer that would have significant risk of causing a noticeable decline in the amount of water that can be pumped from a water bore tapping the aquifer.</i>  In this BAP, the definition of 'potentially unduly affected' in relation to an area of land therefore includes immediately affected areas and long-term affected areas as defined in the Water Act.
Authorised water user	The owner of a property containing one or more authorised water bores - being a water for which the taking of, or interfering with, water is authorised under the Water Act, and if required, a development approval has been granted under the <i>Sustainable Planning Act 2009</i> (or was granted under the repealed <i>Integrated Planning Act 1997</i> ). This includes water bores from which the taking or interference with water is authorised without the requirement for a water entitlement under Section 20 of the Water Act.	Consistent with the definition of 'authorised water bore' provided in the EHP's Baseline Assessment Guideline.  (Note: All properties within the area of the Project's MLs, and all water bores on those properties, are owned by the NHG.)

Condition 1(b) refers to '*unduly affected authorised water user*', Condition 1(c) refers to '*potentially affected authorised water user*' and Condition 1(d) refers to "potentially 'unduly affected' water users (as defined in conditions of the water licence or relevant legislation at the time)". As at the date of this BAP, these terms are not expressly defined in any such sources relevant to the Project. Should such definitions be implemented in the future, the definition of *potentially unduly affected authorised water user* for the purposes of this BAP will be reviewed.

Alternatively, the Water Act uses the following terms:

- bore trigger threshold: a decline in the water level in an aquifer that is, for an aquifer consisting predominantly of consolidated sediment - 5 meters, or otherwise 2 meters (unless prescribed by regulation);

- immediately affected areas: In relation to a baselines assessment in an underground water impact report, for each aquifer affected, or likely to be affected, by the exercise of underground water rights - the area of the aquifer where the water level is predicted to decline, because of the taking of the quantities of water, by more than the bore trigger threshold within 3 years after publication of an underground water impact report; and
- long-term affected areas: In relation to a baselines assessment in an underground water impact report, for each aquifer affected, or likely to be affected, by the exercise of underground water rights - the area of the aquifer where the water level is predicted to decline, because of the exercise of underground water rights by more than the bore trigger threshold at any time.

## 2.2 Model Predictions

The development of the Project's numerical groundwater model and its predictions of groundwater impacts is outlined in the Project's AEIS (Jacobs SKM, 2014).

### 2.2.1 Timing of Potential Impacts

The model's predictions have been explored to provide an assessment of the likely drawdown impacts to landholder properties and bores therein, as well as provide information regarding the timing of those impacts. Specifically, the most likely (median case) drawdown predictions have been explored for each of the four major aquifers (Quaternary Alluvium, Tertiary Basalt, Upper Walloon Coal Measures, and Marburg Sandstone) for the end of the following years: 2017, 2021, 2024, 2027, and 2029, assuming Stage 3 mining commencement in early 2017. Post-mining predictions are not provided since they are lesser in drawdown magnitude than the 2029 (end of mining) predictions. These predictions are presented in **Appendix A**.

As explained above, the 2 m predicted drawdown contour will be used to define the extent of potential undue impacts in this BAP. **Figure 1** through **Figure 5** present the extent of predicted 2 m drawdowns for all aquifers (median case) for the end of following years: 2017, 2021, 2024, 2027, and 2029, assuming Stage 3 mining commences during the first quarter of 2017.

Presenting the predictions at these intervals allows classification of the timing of potential impacts into 5 classes in order to facilitate scheduling of field assessments under this BAP.

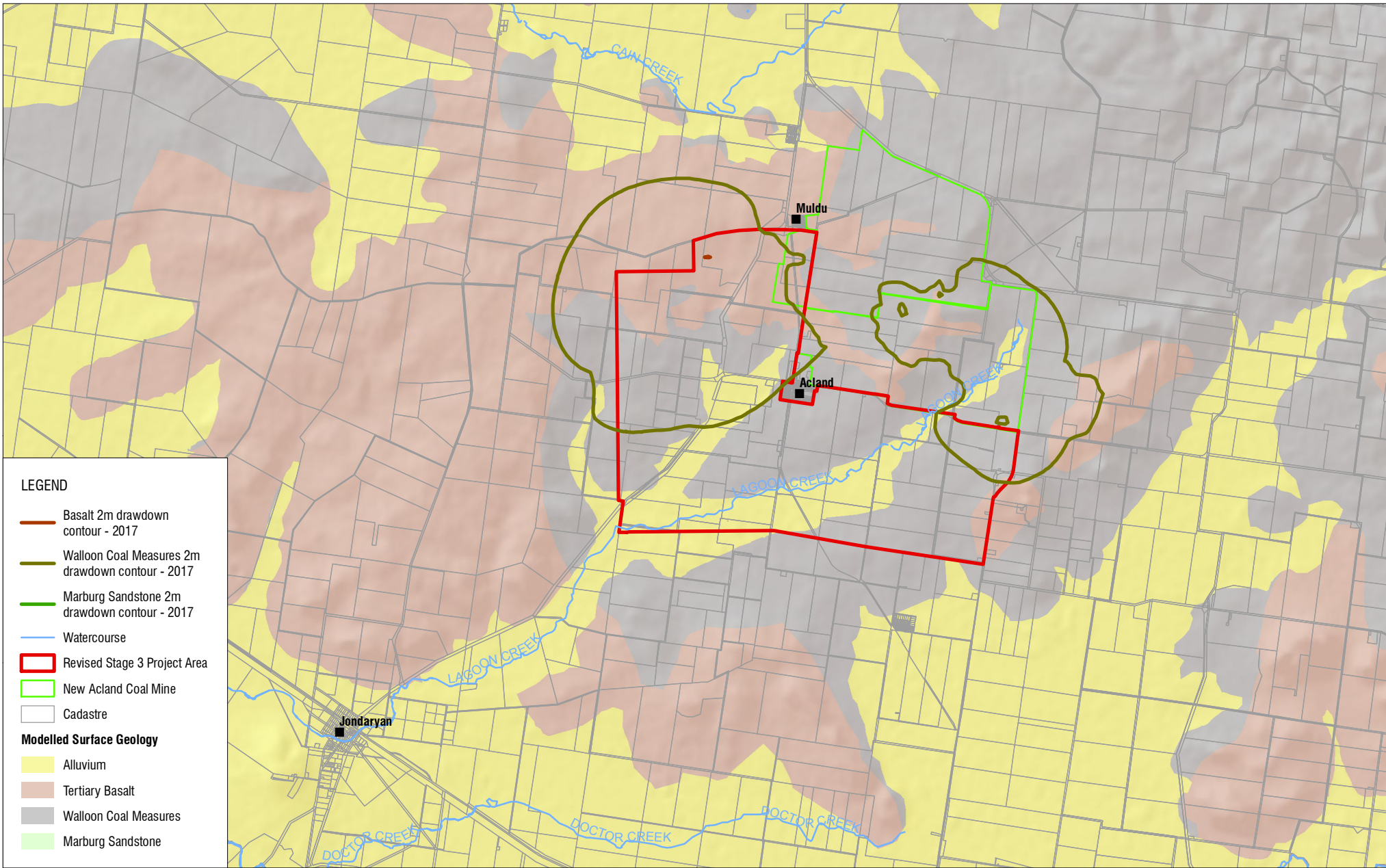
### 2.2.2 Review of Model Predictions

The NHG is committed to regularly reviewing and updating the Project's numerical groundwater model during the operation of the Project, as further understanding of the interactions between the regional groundwater system and the Project is gained through routine monitoring, resource drilling, etc.












Furthermore:

- under the Amended Water Act, the NHG will be required to give an underground water impact report (containing a water monitoring strategy) within 10 business days after each third anniversary of the day the first underground water impact report took effect; and
- the Coordinator General has placed imposed conditions on the Project approvals that require the routine updating of the numerical model. As detailed in the EIS, the NHG has committed to undertaking the first model review following the completion of the GMIMP groundwater drilling program; at this time, it is expected that this model review will occur in the first half of 2016.

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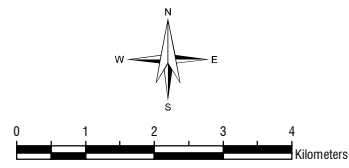
-  Basalt 2m drawdown contour - 2017
  -  Walloon Coal Measures 2m drawdown contour - 2017
  -  Marburg Sandstone 2m drawdown contour - 2017
  -  Watercourse
  -  Revised Stage 3 Project Area
  -  New Acland Coal Mine
  -  Cadastre
- Modelled Surface Geology**
-  Alluvium
  -  Tertiary Basalt
  -  Walloon Coal Measures
  -  Marburg Sandstone



LEVEL 2, 15 ASTOR TCE  
SPRING HILL  
QUEENSLAND 4000  
T: +61 (0)7 3858 4800  
F: +61 (0)7 3858 4801  
www.slrconsulting.com

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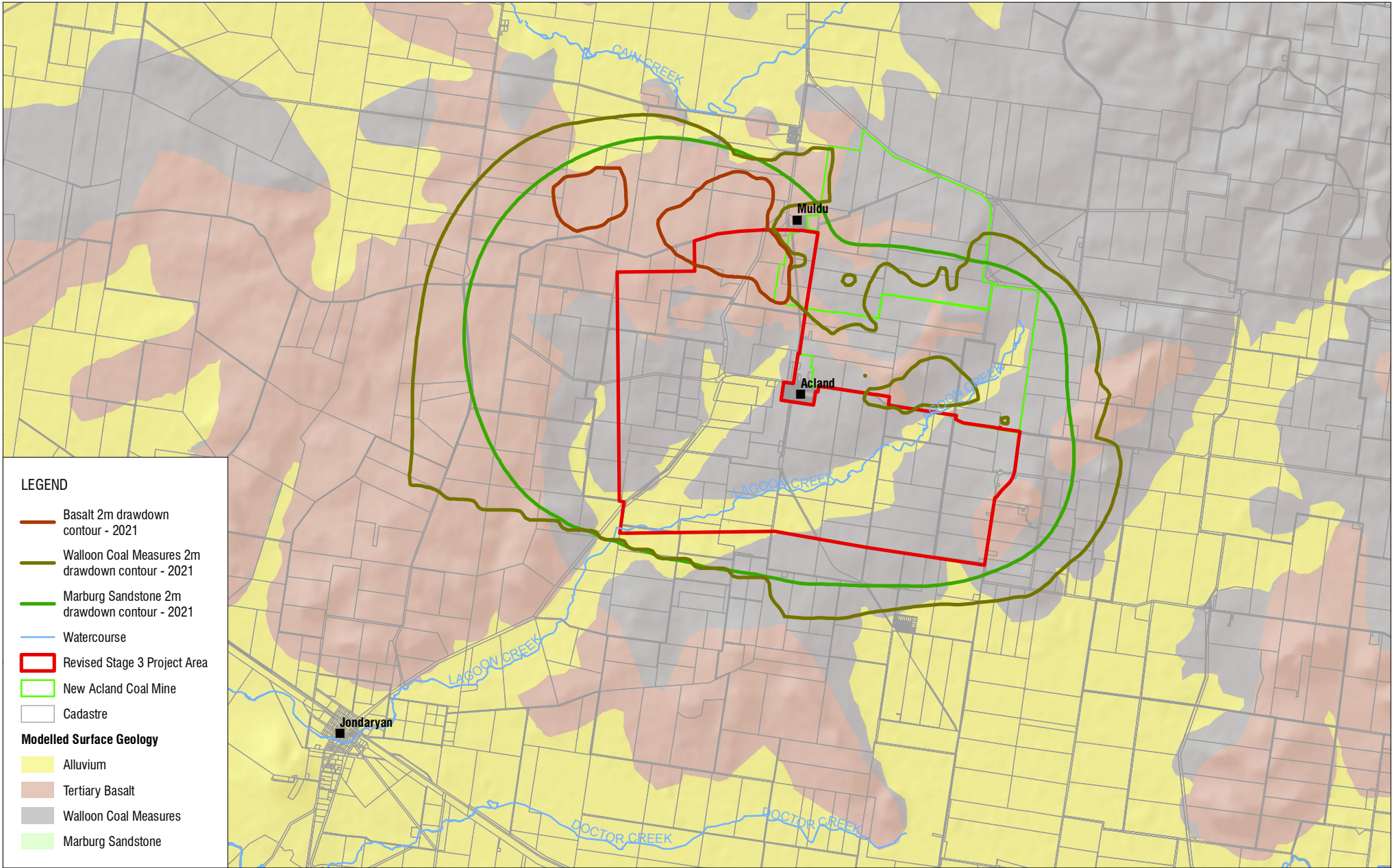
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**BASELINE ASSESSMENT PROGRAM**

**2m DRAWDOWN EXTENT  
2017**

FIGURE 1

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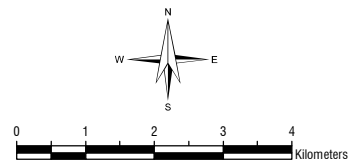
- LEGEND**
- Basalt 2m drawdown contour - 2021
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**SLR**

LEVEL 2, 15 ASTOR TCE  
SPRING HILL  
QUEENSLAND 4000  
T: +61 (0)7 3858 4800  
F: +61 (0)7 3858 4801  
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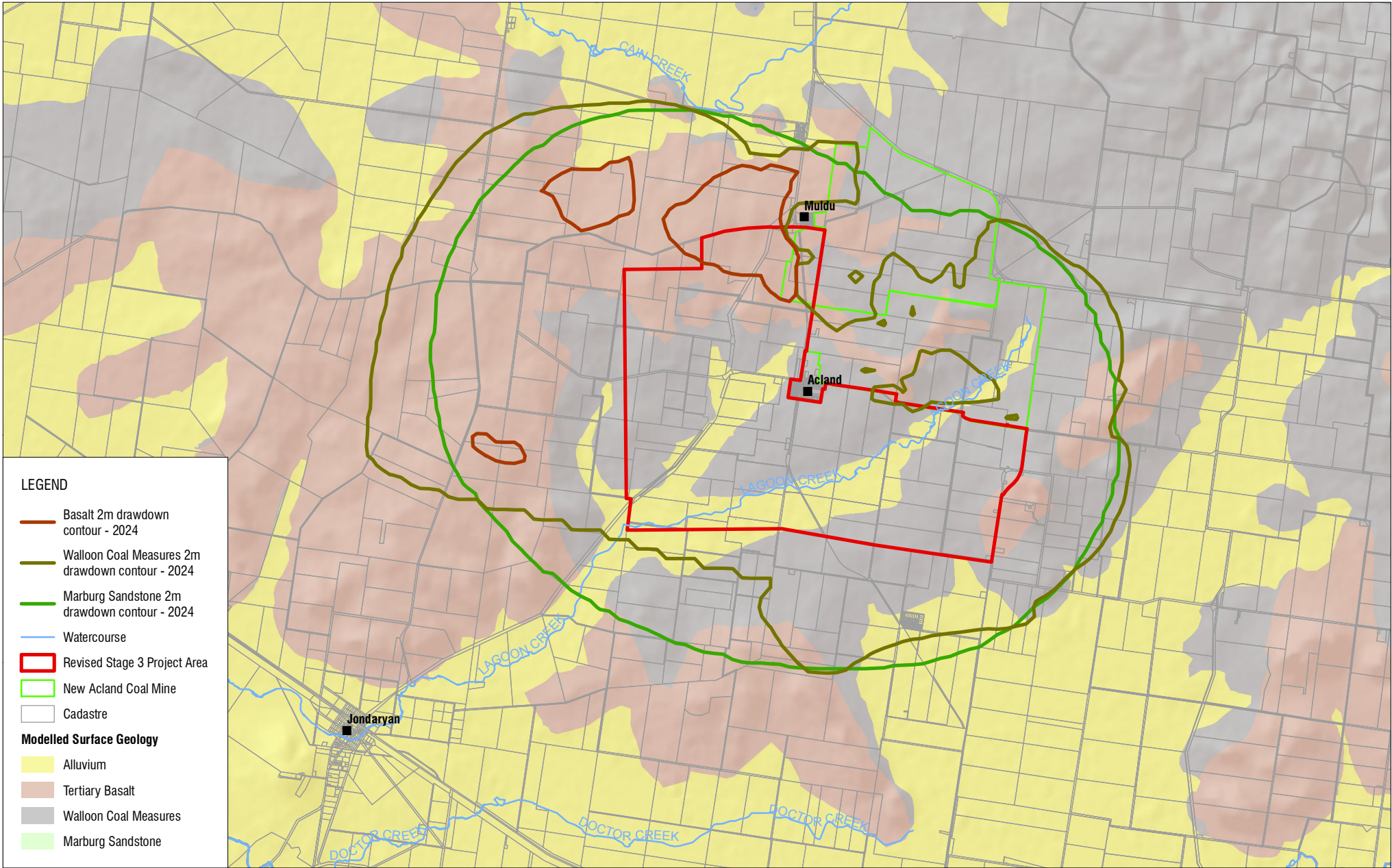
NEW ACLAND STAGE 3 PROJECT

**BASELINE ASSESSMENT PROGRAM**












**2m DRAWDOWN EXTENT  
2021**


FIGURE 2

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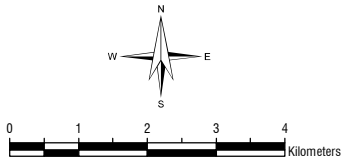
-  Basalt 2m drawdown contour - 2024
  -  Walloon Coal Measures 2m drawdown contour - 2024
  -  Marburg Sandstone 2m drawdown contour - 2024
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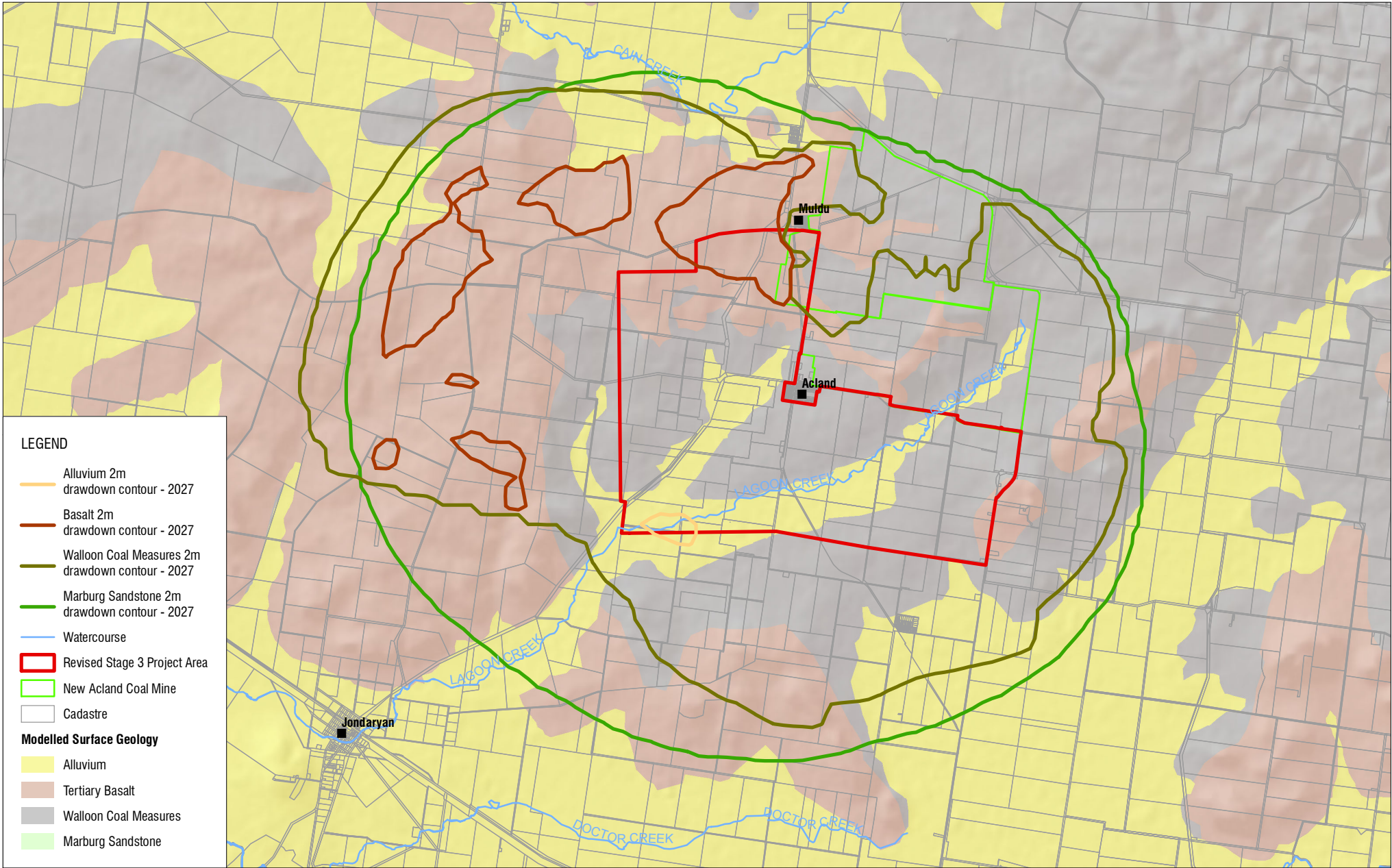
NEW ACLAND STAGE 3 PROJECT

**BASELINE ASSESSMENT PROGRAM**

**2m DRAWDOWN EXTENT  
2024**

FIGURE 3

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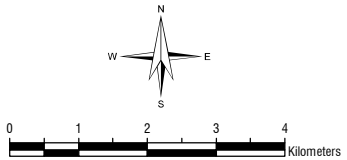
- Alluvium 2m drawdown contour - 2027
  - Basalt 2m drawdown contour - 2027
  - Walloon Coal Measures 2m drawdown contour - 2027
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  - Tertiary Basalt
  - Walloon Coal Measures
  - Marburg Sandstone

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LEVEL 2, 15 ASTOR TCE  
SPRING HILL  
QUEENSLAND 4000  
T: +61 (0)7 3858 4800  
F: +61 (0)7 3858 4801  
www.slrconsulting.com

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NEW ACLAND STAGE 3 PROJECT

**BASELINE ASSESSMENT PROGRAM**

**2m DRAWDOWN EXTENT  
2027**

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FIGURE 4





The model's predictions of groundwater drawdown are therefore subject to revision over the life of the Project. These future revisions in the model predictions may result in the requirement to update this BAP, should those revised predictions result in changes in the identification of potentially unduly affected authorised water users as outlined in the following sections. The NHG considers that, although it is unlikely that such revisions would result in significant changes to the predictions of potentially unduly affected authorised water users close to the Project's boundaries, such revisions in model predictions may result in changes to the identification of potentially unduly affected authorised water users close to the 2 m drawdown contour for any aquifer, where the model's predictions are considered to be somewhat more uncertain.

## 2.3 Bore and Property Identification

### 2.3.1 Registered Bores (GWDB)

In Queensland's groundwater database (GWDB) maintained by DNRM, each water bore is given a registration number (the Bore RN). However, EHP notes in the Baseline Assessment Guidelines that *there may be other authorised bores which may not be recorded in the groundwater database and may not have a registration number*. Examples of such bores may be those that were drilled prior to any legal requirement to register the bore. As such, the GWDB cannot be considered to hold a complete listing of all authorised water bores. This is supported by the NHG's experience during the EIS and subsequent post-EIS works, where more bores than are listed in the GWDB have been identified by visiting individual landholder properties.

In addition, many bores listed in the DNRM GWDB do not have a known source aquifer listed, which further complicates assessment of whether or not any particular listed bore may be potentially unduly affected.

**Table 2** outlines those registered groundwater bores listed in the DNRM GWDB that are subject to median (most likely) predicted drawdowns of greater than 2 m at any time, where the source aquifer is known. Bores on properties owned by the NHG through its subsidiary Acland Pastoral Co. (APC) have been excluded from this list.

**Table 2 Registered bores with greater than 2 m median predicted drawdown (known source aquifer)**

Bore RN	Recorded Source Aquifer	Maximum Predicted Drawdown (m)
94285	Tertiary Basalt	10.4
94801	Tertiary Basalt	8.1
71247	Tertiary Basalt	5.4
94722	Tertiary Basalt	3.5
42231620	Tertiary Basalt	3.2
83426	Tertiary Basalt	3.1
48209	Tertiary Basalt	2.5
119022	Tertiary Basalt	2.5
42231618	Tertiary Basalt	2.4
83287	Tertiary Basalt	2.3
42231617	Tertiary Basalt	2.2
147526	Tertiary Basalt	2.1
17490	Walloon Coal Measures	21.0
17125	Walloon Coal Measures	16.5
87958	Walloon Coal Measures	9.8
87948	Walloon Coal Measures	9.3

87927	Walloon Coal Measures	5.8
55224	Walloon Coal Measures	5.8
9583	Walloon Coal Measures	3.9
87741	Walloon Coal Measures	3.7
48164	Walloon Coal Measures	3.4
42231622	Walloon Coal Measures	2.9
107882	Walloon Coal Measures	2.8
83742	Walloon Coal Measures	2.7
119581	Walloon Coal Measures	2.7
83238	Walloon Coal Measures	2.6
61545	Walloon Coal Measures	2.5
55126	Walloon Coal Measures	2.4
87646	Walloon Coal Measures	2.3
64254	Walloon Coal Measures	2.2
87379	Walloon Coal Measures	2.0
87941	Marburg Sandstone	5.2
64280	Marburg Sandstone	5.0
66782	Marburg Sandstone	4.1
9564	Marburg Sandstone	3.8
17180	Marburg Sandstone	3.3
64185	Marburg Sandstone	3.3
94997	Marburg Sandstone	2.3
52872	Marburg Sandstone	2.2
107386	Marburg Sandstone	2.1

The bores identified in **Table 2** above are also shown in **Figure 6**.

A number of registered groundwater bores are listed in the DNRM GWDB where the source aquifer is unknown, where the bore's location is subject to median (most likely) predicted drawdowns of greater than 2 m for any aquifer at any time. A total of 137 of these bores have been identified as shown in **Figure 6**. Again, this excludes bores on properties owned by the NHG through its subsidiary APC.

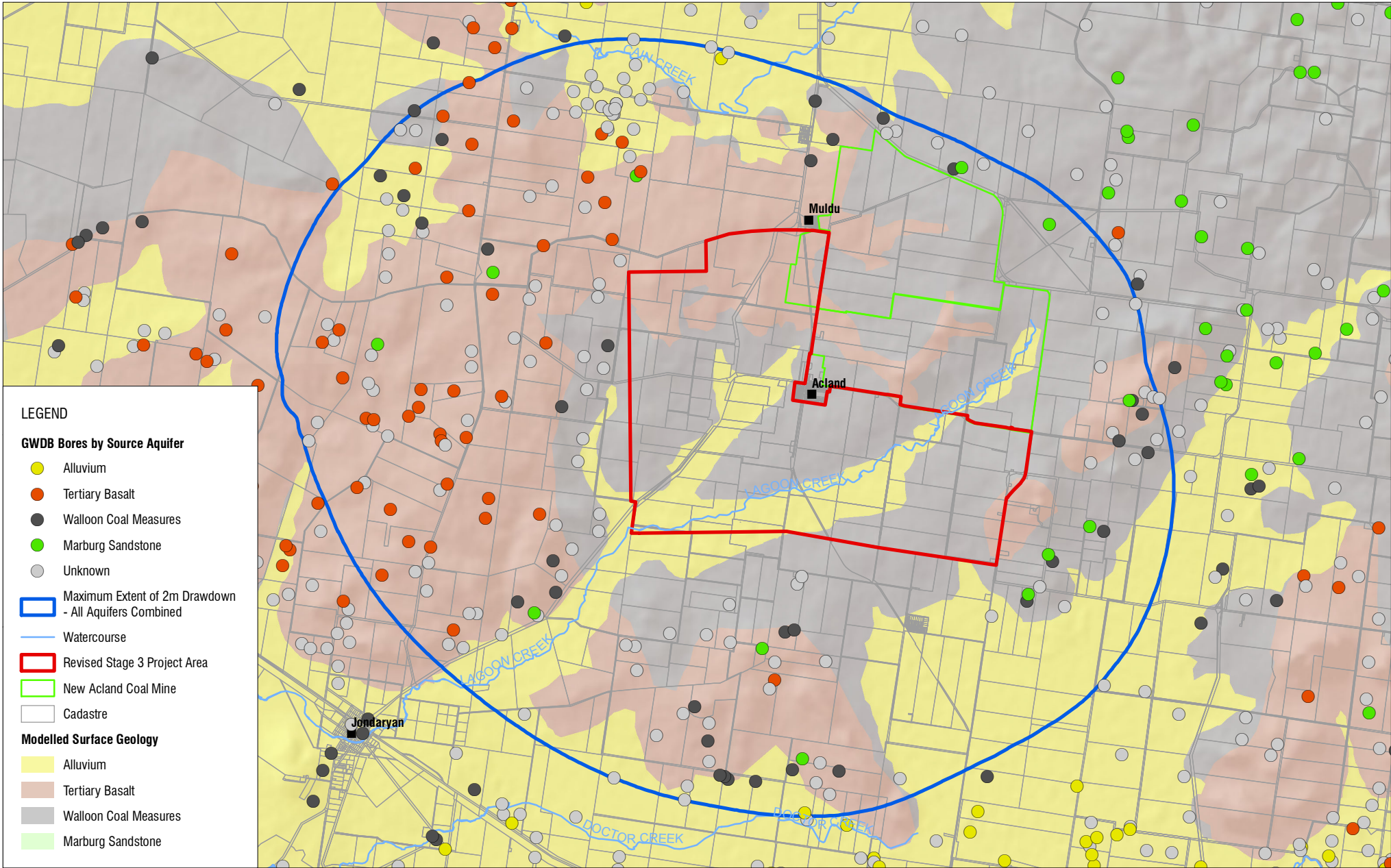
In total, there are 40 bores in the GWDB with known source aquifer subject to median predicted drawdowns of greater than 2 m, and a further 137 bores in the GWDB with no aquifer information that lie within the 2 m predicted drawdown zone for any aquifer. At this stage the NHG is unable to determine whether any of these 137 bores with unknown source aquifer may be unduly affected by the Project.

### 2.3.2 Approach for the Baseline Assessment Program

As detailed above, it has become apparent through EIS landholder bore assessments, subsequent landholder discussions and development of this BAP that:

- The locations of registered bores listed in the GWDB, including on which properties they lie, are not necessarily spatially correct.
- Many bores listed in the GWDB do not have a source aquifer listed.

H:\Projects\SLR\620-8NE\620-8NE\620-11279 New Acland SA Project - Groundwater\GIS Mapping\MXD\Report\Fig6\APSLR62011279\_FIG6\_RegionalBoreList.mxd



**LEGEND**

**GWDB Bores by Source Aquifer**

- Alluvium
- Tertiary Basalt
- Walloon Coal Measures
- Marburg Sandstone
- Unknown

  Maximum Extent of 2m Drawdown - All Aquifers Combined

— Watercourse

  Revised Stage 3 Project Area

  New Acland Coal Mine

  Cadastre

**Modelled Surface Geology**

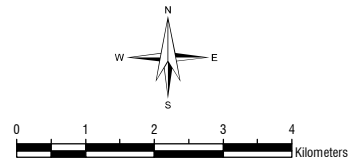
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**SLR**

LEVEL 2, 15 ASTOR TCE  
SPRING HILL  
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NEW ACLAND STAGE 3 PROJECT

BASELINE ASSESSMENT PROGRAM

DNRM GWDB LISTED BORES

---

FIGURE 6

- There are many authorised bores in existence that are not listed in the GWDB.

As a result, the NHG is unable to base this BAP on only the information held within the GWDB. Instead, the approach adopted by the NHG in this BAP is to consider that all properties located within the 2 m drawdown extent for any aquifer at any time should be considered to potentially contain a water bore that is required to be assessed. This approach is considered to be consistent with that outlined in EHP’s Baseline Assessment Guideline and the Amended Water Act requirements to identify immediately affected areas and long-term affected areas.

### 2.3.3 Property Identification

Based on the information presented in in Section 2.2.1 above, and **Figure 1** through **Figure 5**, **Appendix B** identifies the cadastral parcels that are subject to a predicted drawdown of greater than 2 m for any aquifer at any time as a result of the Project. The year that a cadastral parcel is first subject to a predicted drawdown of 2 m or greater is also provided. A total of 198 individual cadastral parcels are identified, although the number of landholders is significantly less than this as many landholders own multiple cadastral parcels and any one ‘property’ may comprise multiple cadastral parcels.

### 2.3.4 Properties already subject to Baseline Assessments in the EIS

During the EIS and AEIS, a number of properties were subject to baseline bore assessments to provide a snapshot of private bore information in the vicinity of the Project and to inform the groundwater studies being undertaken at the time. A total of 30 non-APC cadastral parcels were visited, and 39 bores on those properties were assessed (**Figure 7**). The results of these surveys have been reassessed in light of the Coordinator-General’s conditions (refer **Section 1.1**) to determine if sufficient information has been collected (water level and water quality at a minimum) to satisfy the conditions and not require a re-visit to the property as part of this BAP.

The results of this assessment are provided in **Table 3** below, and show that only 4 of the 30 cadastral parcels do not require revisiting in this BAP. The remainder of parcels contain bores for which either water level or water quality information was not collected at the time of the previous field assessment.

**Table 3 Bore surveys undertaken in the EIS on non-APC property**

Lot / Plan	Number of surveyed bores	Revisit required
3446/A341747	1	Yes
6/RP25503	1	Yes
105/A342484	2	Yes
4/RP27422	3	Yes
87/AG105	1	Yes
1708/A34828	2	Yes
17/RP36468	1	Yes
18/RP36468	2	Yes
19/RP36468	1	Yes
20/RP36468	1	Yes
22/RP36468	1	Yes
67/AG3198	1	Yes
10/RP36467	1	<b>No</b>
2/RP40478	2	Yes
2/RP36455	1	Yes

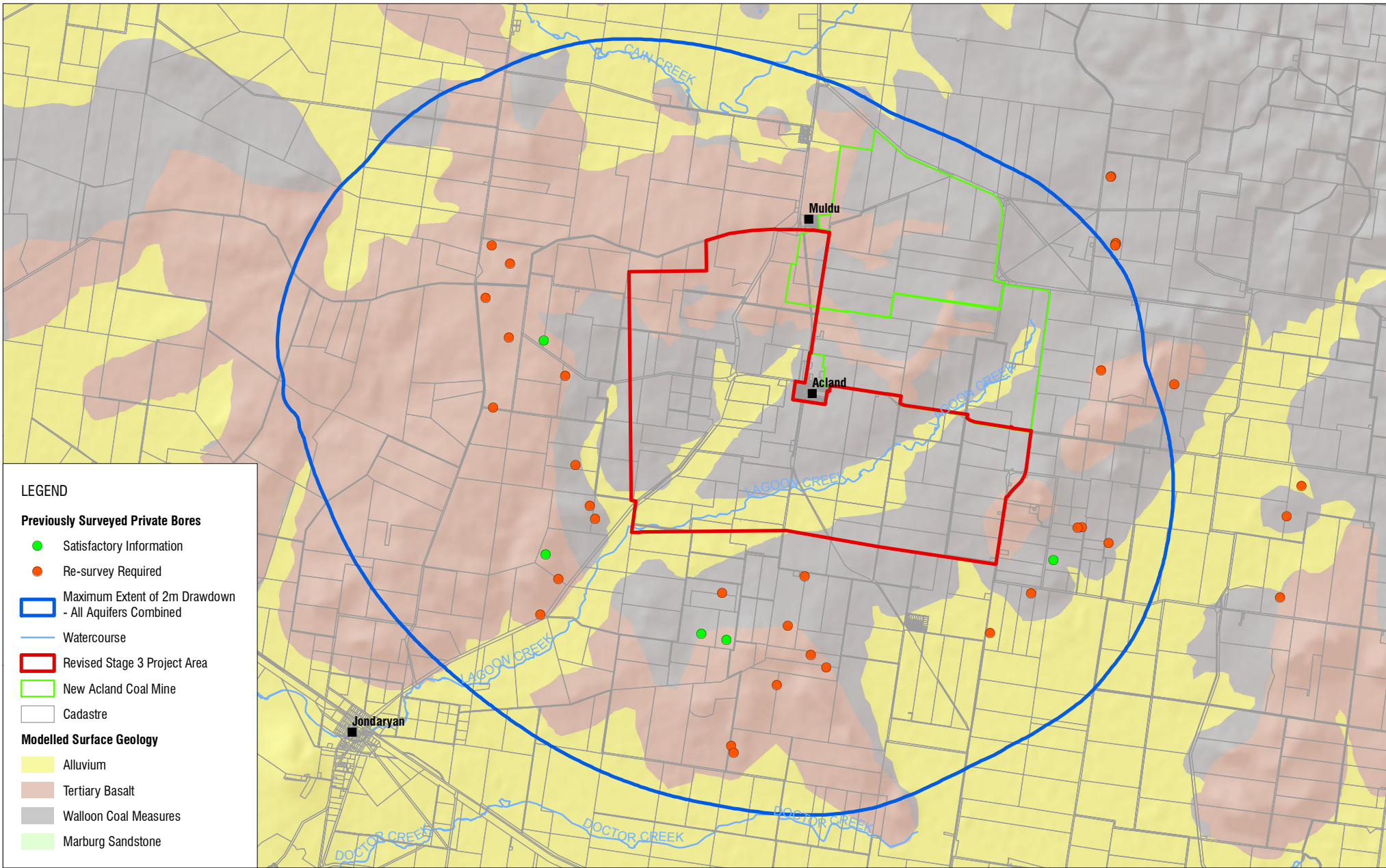
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1/RP36455	1	Yes
2/RP40478	2	Yes
2517/A341144	1	<b>No</b>
3315/A341636	1	Yes
23/D361484	2	Yes
1/RP27422	2	Yes
1/RP25518	1	Yes
3398/A341700	1	<b>No</b>
116/AG3153	3	Yes
8/RP25526	1	<b>No</b>
2/RP25510	1	Yes
4/RP25529	1	Yes
6/RP25526	1	Yes
3/RP25495	1	Yes
5/RP25495	1	Yes

### 2.3.5 Additional Properties outside of the 2 m Predicted Drawdown Area

The NHG remains committed to ensuring that all landholder concerns are addressed, and legally binding Make Good Agreements are in place prior to the occurrence any undue effects to groundwater supply bores arising from the Project. This includes landholders with properties that lie outside of the predicted extent of undue effects on groundwater bores. Where such landholders request a baseline assessment of its bores, provided the property is located within a reasonable distance of the 2 m predicted drawdown contour for any aquifer, the NHG will enter into negotiations with that landholder to undertake a baseline assessment of any water bores on the property consistent with the methodology outlined in **Section 5** of the BAP. If the results of that assessment determine that landholder should be considered a "potentially unduly affected authorised water user" for the purposes of this BAP, this will then be followed by entering into negotiations for a Make Good Agreement with the landholder.

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**LEGEND**

**Previously Surveyed Private Bores**

- Satisfactory Information
- Re-survey Required

  Maximum Extent of 2m Drawdown - All Aquifers Combined

Watercourse

  Revised Stage 3 Project Area

  New Acland Coal Mine

Cadastre

**Modelled Surface Geology**

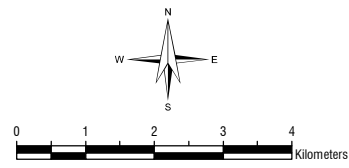
- Alluvium
- Tertiary Basalt
- Walloon Coal Measures
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**SLR**

LEVEL 2, 15 ASTOR TCE  
SPRING HILL  
QUEENSLAND 4000  
T: +61 (0)7 3858 4800  
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NEW ACLAND STAGE 3 PROJECT  
**BASELINE ASSESSMENT PROGRAM**

**PRIVATE BORES  
SURVEYED IN THE EIS**

FIGURE 7

### 3 GROUPING OF BASELINE ASSESSMENTS

#### 3.1 Survey Groups

Due to the nature of the timing of the numerical groundwater model's impact predictions (**Section 2.2.1**), properties targeted for bore/baseline assessments in this BAP have been grouped into five groups corresponding to when potential impacts are expected to occur. For the purposes of the Amended Water Act, each of those areas is a "long-term affected area (and potentially an immediately affected area)".

As described in **Section 2.3.3**, many individual cadastral parcels often fall within one landholder's 'property' and for the purposes of this BAP, in such cases the individual parcels have been combined and assigned a single grouping that represents the earliest potential undue impact assigned to any of the individual cadastral parcels that make up that 'property'. Additionally, several landholders properties have been combined for the purposes of this BAP where relevant, for example if the landholders are members of the same family, and properties with a single landholder have been separated in the grouping if they are not adjoining such that their separation distance leads to quite different expected timing of potential impacts.

**Appendix C** outlines the final survey groupings by property and **Figure 8** presents a graphical representation of the groupings.

The NHG will attempt to undertake the baseline assessment process consistent with this grouping. This approach is consistent with the EHP's Baseline Assessment Guidelines and the Water Act as it allows the NHG to coordinate the baseline assessments such that those properties potentially affected earlier in the life of the Project are among the first to be subject to Make Good Agreements.

#### 3.2 Timing

##### 3.2.1 Completion of baseline assessments and reports

The Coordinator General's conditions (**Section 1.1**) stipulate that the reporting of a summary of the collected baseline information and potential impacts to groundwater supplies must be concluded within 2 years of the grant of the Project's mining lease/s. The NHG currently (at July 2015) anticipates that the mining lease may be granted by August 2016; if this is the case, the baseline assessment process, including reporting of the results, will need to be completed by August 2018.

The Amended Water Act is silent as to when baseline assessments for water bores in long-term affected areas must be undertaken - it is only the program for undertaking such baseline assessments (ie this BAP) that is required prior to the exercise of underground water rights. Bore assessments for bores in immediately affected areas however must be completed within 60 days of approval (or amendment) of the underground water impact report (to which this BAP forms a part) and mining lease holders are not permitted to exercise any underground water rights until after they have given the DEHP the first underground water impact report.<sup>9</sup>

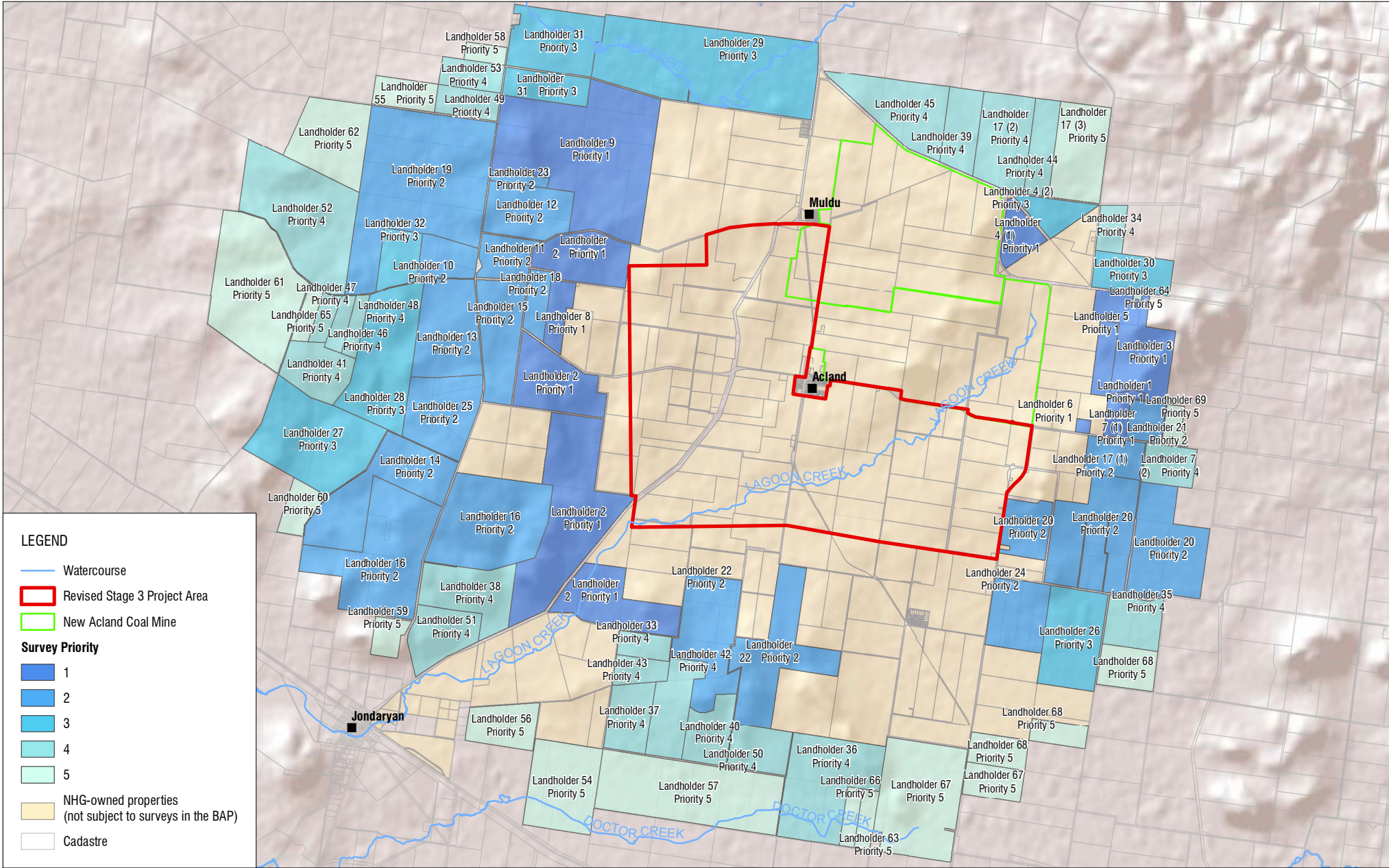
Under sections 405(1) and 419(1) of the Amended Water Act a mining lease holder must notify the Office of Groundwater Impact Assessment and the bore owner (in the approved form) of the outcome of a baseline assessment and bore assessment (respectively) of a water bore within:

- if the assessment was undertaken before the commencement of the relevant section—30 business days after the commencement; or
- otherwise—30 business days after undertaking the assessment.

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<sup>9</sup> s 417(2).

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**LEGEND**

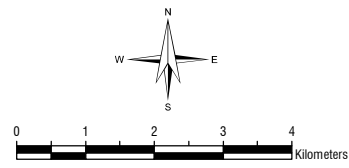
- Watercourse
- Revised Stage 3 Project Area
- New Acland Coal Mine
- Survey Priority**
- 1
- 2
- 3
- 4
- 5
- NHG-owned properties  
(not subject to surveys in the BAP)
- Cadastre

**SLR**

LEVEL 2, 15 ASTOR TCE  
SPRING HILL  
QUEENSLAND 4000  
T: +61 (0)7 3858 4800  
F: +61 (0)7 3858 4801  
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**NEW ACLAND STAGE 3 PROJECT**  
**BASELINE ASSESSMENT PROGRAM**

**PRIORITISATION  
OF SURVEYS**

FIGURE 8



### 3.2.2 Make Good Agreements

In addition, the conditions of the Coordinator General's report require the Project's proponent to enter into agreements with all potentially unduly affected authorised water users about the relevant Make Good measures (or other negotiated arrangement) at least 3 years prior to the time the water user is predicted to become "unduly affected" due to dewatering operations (based on the latest version of the Project's numerical groundwater model at the time). The NHG will attempt to meet these requirements with best endeavours, although it should be noted that the current model predictions indicate potential undue impacts to a number of properties by the end of 2017 (**Appendix B**). The NHG will have further discussions with the regulators regarding the terms of any approval conditions under the Water Act regarding these requirements.

Alternatively, as noted above the Amended Water Act requires mining lease holders to:

- for a bore in an immediately affected area, undertake a bore assessment of the water bore to establish whether the bore has an impaired capacity or is likely to start having an impaired capacity; and
- where a bore assessment has been undertaken, enter into make good agreements with bore owners regarding the make good obligations for the bore.
- In addition, during the period from the mining lease holder's first exercise of its underground water rights until an underground water impact report is approved for the mining lease, for each water bore the mining lease holder reasonably believes has an impaired capacity, the mining lease holder has an obligation to use reasonable endeavours to negotiate and enter into an agreement with a bore owner.<sup>10</sup>

Once an approved underground water impact report is in place the Amended Water Act requires the holder to use best endeavours to enter into a make good agreement for the bore with the bore owner within 40 business days after the bore assessment is undertaken.

### 3.2.3 Program

The NHG will commence the bore/baseline assessment process under this BAP by the fourth quarter of 2015. The indicative timing schedule for field assessments is outlined in **Table 4** below.

**Table 4 Indicative baseline assessment timing**

Survey Group/Round	Timing for Field Assessments
1	Q4 2015
2	Q1-Q2 2016
3	Q2-Q3 2016
4	Q3-Q4 2016
5	Q4 2016

<sup>10</sup> s 406(1).

### **3.3 Additional Properties outside of the 2 m Predicted Drawdown Area**

As outlined in **Section 2.3.5**, the NHG will undertake baseline assessments of water bores located on properties that fall outside the predicted 2 m drawdown extent, provided that landholder specifically requests that an assessment occur and provided that the property is located in reasonable proximity to the predicted 2 m drawdown extent. Due to these properties lying outside of the predicted extent of potential undue effects, the NHG will defer undertaking the field assessments of water bores to those properties that are located within one of the five survey groups, to ensure no delays to reaching agreements with those landholders who are inside the predicted extent of potential undue effects. Baseline assessments for the additional properties located outside the predicted 2 m drawdown extent will occur when the timing of such assessments does not delay the assessments of any properties within predicted 2 m drawdown extent.

## **4 LANDHOLDER APPROVAL FOR BASELINE ASSESSMENTS**

The NHG is currently undertaking initial consultations with landholders that are considered potentially unduly affected authorised water users in order to explain the Make Good process and seek willingness to participate in the baseline assessments, and will continue to progress these discussions. However, in order to demonstrate “best endeavours” in cases where landholders are unwilling to participate in the baseline assessment process, a formal process will be established under this BAP as outlined below.

In addition, under the Amended Water Act, mining lease holders have the right to ask an owner of land for information about the location of any water bores on the owner's land and any other information the holder reasonably requires to undertake a baseline assessment or bore assessment of any such bores. The owner of the land must comply with any such reasonable request.<sup>11</sup>

### **4.1 Initial Written Request**

Following verbal discussions between the NHG and each landholder, the NHG will formally request to access the landholder's property in writing. The initial formal request will confirm the previous verbal discussion (where relevant) and outline proposed dates for the baseline assessments. The timing of these written requests will occur according to the scheduling of property surveys as outlined in **Section 2.3.5**. The NHG will establish a database to record each formal baseline assessment request.

### **4.2 Landholder Response**

Landholders will be requested to respond in writing to the initial written request. The NHG will establish a database to record each landholder response, regardless of the response being accepting of a baseline assessment or not.

In cases where a landholder refuses a baseline assessment, the NHG will respond in writing confirming with that landholder that refusal. The NHG will establish a database to record each response back to the landholder.

In cases where no response is received from a landholder to the written request, the NHG will attempt to establish verbal communication to confirm that the landholder has received, and chosen not to respond to, the written request. The NHG will then respond in writing confirming that the landholder has refused to have a baseline assessment conducted. Again, the NHG will establish a database to record each final response back to the landholder.

In circumstances where the landholder has refused the baseline assessments, the NHG will not be in a position to agree a Make Good agreement with that landholder as contemplated in condition 1(d). In that event, the NHG will advise the administering authority pursuant to condition 1(e) that such agreement cannot be reached, and it will then be at the authority's discretion whether to determine (in consultation with the NHG and landholder) Make Good measures to be taken pursuant to the relevant legislative instrument at the time.

---

<sup>11</sup> ss 404, 416.

## 5 BASELINE ASSESSMENT METHODOLOGY

### 5.1 Minimum personnel qualifications

Consistent with the EHP's Baseline Assessment Guideline and Bore Assessment Guideline, the minimum requirements for persons conducting the field assessments under this BAP are:

- a minimum of two years prior experience in the following fields:
  - underground water level monitoring programs, including monitoring of water levels in bores equipped with pumping infrastructure
  - the conduct of underground water quality sampling programs
  - underground water hydrology and/or engineering
- a practical knowledge of water bore construction and infrastructure.

### 5.2 Relevant Guidelines and Procedures

Consistent with the EHP's Baseline Assessment Guideline and Bore Assessment Guideline, the following guidelines and procedures will be incorporated into the field measurements undertaken under this BAP:

- Monitoring and Sampling Manual 2009, Version 2 (DERM,2010)  
[http://www.ehp.qld.gov.au/water/monitoring/monitoring\\_and\\_sampling\\_manual.html](http://www.ehp.qld.gov.au/water/monitoring/monitoring_and_sampling_manual.html)
- EPA Guidelines: Regulatory Monitoring and Testing, Underground Water Sampling (South Australia Environment Protection Authority, 2007)
- Groundwater Sampling and Analysis—A Field Guide (Geoscience Australia, 2009)
- <[https://www.ga.gov.au/products/servlet/controller?event=GEOCAT\\_DETAILS&catno=68901](https://www.ga.gov.au/products/servlet/controller?event=GEOCAT_DETAILS&catno=68901)>
- DERM - Water Monitoring Data Collection Standards—March 2007
- AS/NZS 5667.11:1998 Water Quality—Sampling—Guidance on Sampling of Groundwaters.

### 5.3 Recording of Field Data

A baseline assessment Field Form (**Appendix D**) has been developed and will be used during all baseline assessments undertaken under this BAP. All information collected during the baseline assessments will be recorded onto this form in the field.

#### 5.3.1 Bore Identification and General Site Information

Each bore assessed will be given a unique identifier consistent with the nomenclature adopted in the EIS. Adopting the EIS's nomenclature removes the need to re-name any bores that have been previously assessed prior to this BAP. Each bore's unique identifier will be based on the surname of the bore (property) owner and a number corresponding to the order of bores assessed on properties owned by that landholder. For example, the first bore assessed on Mr Smith's property will be known as Smith\_01, the second bore Smith\_02, etc. Under this system, the two bores Smith\_01 and Smith\_02 may cover multiple cadastral lot/plan boundaries. Where there are different bore owners with the same surname, the initial of the first name will be included, eg J\_Smith\_01.

The bore owner may have a bore registration number for their water bore. This information will be recorded when available as it will assist in identifying the correct bore in any future bore assessments. In many cases, it may be difficult to be confident that the bore registration number matches the bore site; in these cases commentary around the confidence level or accuracy will be recorded for the purposes of identifying the bore in future.

If the bore owner has a local name for the bore this will also be recorded, as it will assist in identifying the correct bore in any future bore assessments.

The bore location will be recorded using a hand-held GPS referenced to AGD84 (the datum used by the NHG at the New Acland Mine).

### **5.3.2 Bore Construction**

The name of the aquifer/geological formation that is the source of supply for the bore will be recorded where available. This information may be available on any drilling logs that are available for the bore. In many cases, it may be difficult to be confident that the bore is accessing a certain geological formation. Therefore, any commentary on the confidence level of the source aquifer (e.g. how confident is the assessor that the bore is in fact accessing a particular aquifer) will to be recorded. Other information recorded will include (where available):

- Date of construction
- Type of casing
- Name of drilling contractor
- Casing strings and diameters
- Perforated intervals and / or screens that have been installed in the bore
- Details of any seals and cement grouting installed in the bore annulus
- Bore strata log

### **5.3.3 Bore Equipment and Condition**

Information about the pumping equipment in the water bore including whether the bore is metered, the pump type and make and whether the bore is in operating condition or has been decommissioned will be recorded. Additional information on the power source for the bore, and details on the riser and headworks will also be recorded. This information will assist both the NHG and the bore owner at the time of undertaking a future bore assessment and determining whether the bore has an impaired capacity.

Photographs of the bore and the bore equipment will be taken, to accurately capture the condition of the bore and equipment at the time of conducting the baseline assessment. The pictures will be representative of the bore and detail each site individually, including a shot of the site and a shot of the headworks.

The pump setting depth at the time of baseline assessment will be established as part of the baseline assessment where at all possible. This information will be useful in future bore assessment. If the bore is determined to have an impaired capacity - one possible mitigation measure may be to lower the pump where possible.

Any details that the bore owner has about any repairs or maintenance that has previously been undertaken on the bore will be recorded. These records will be useful background information to support any future bore assessment and determination of whether the bore has an impaired capacity.

#### **5.3.4 Bore Supply**

The purpose of the bore will be established with the bore owner. Understanding the purpose of the bore at the time of baseline assessment is an important component of the assessment and any subsequent make-good agreements. Additional commentary as to how often the bore is utilised (hours pumped/day) will be recorded where available. This information will support any future bore assessment and determination of whether the bore has an impaired capacity.

Where known, the operating capacity of the bore and any associated commentary on the operating capacity of the bore that the bore owner can supply, including any seasonal variation in use will be recorded. The bore owner should supply any historical water use records that are available for the bore. These records will be valuable background information for the tenure holder and will assist both the tenure holder and the OGIA in understanding regional groundwater trends.

Peak usage information for the bore (including maximum volumes extracted and period of peak extraction) is to be obtained wherever available.

The NHG will not undertake testing of bore yields during baseline assessments. The NHG considers that the recording of bore yields do not form a reliable means of assessing any future impairment to a bore, as bore pumping yields are a function of many bore-specific parameters and subject to many temporal influences such as pump condition, power supply, degree of bore screen clogging, precipitation of deposits in rising mains and pipelines, etc. Instead, the measurement of Standing Water Level and Water Quality will form the basis of any future assessment of impairment.

#### **5.3.5 Standing Water Level**

The Coordinator-General recommended conditions include that baseline water levels are established at each and every operational bore. In addition, the Amended Water Act requires baseline assessments to include the level of water in the bore.<sup>12</sup> This is particularly complicated due to the presence of installed infrastructure at many bores that prohibits the direct measurement of water level using conventional 'e-tape' monitoring equipment.

##### **5.3.5.1 Methodology**

Where possible, the measurement of water levels will be undertaken using an e-tape (conventional water level "dipper") without interfering with any installed infrastructure.

The datum point of the measurement will be carefully recorded to ensure that any future measurements taken in the water bore will be referenced back to the same point. This will be achieved by photographing the bore head with the datum point clearly marked. The height of the datum above ground level is also to be measured and recorded, allowing the measurement of the water level from the datum point to be converted to a water level below ground level.

The use of air-lines will be avoided as they are not considered accurate or reliable enough to meet the Coordinator-General's conditions, and they require knowledge of the exact depth of the base of the airline in order to calculate a water level.

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<sup>12</sup> s 394(a).

### 5.3.5.2 Temporary removal of pumping infrastructure

Where it is not possible to measure water levels using an e-tape due to installed infrastructure, the NHG will liaise with the landholder to seek acceptance to temporarily alter or remove the infrastructure to allow direct measurement, at the NHG's cost. To undertake this temporary modification, the NHG will only use a contractor approved by the landholder prior to the works being undertaken. In these cases, NHG will return to the property to conduct the works as soon as practical after the initial baseline assessment visit. The NHG will be responsible for rectifying all reasonable accidental damage that may occur during the temporary removal of pumping infrastructure for the BAP.

### 5.3.6 Water Quality

The Coordinator-General's recommended conditions include that baseline water quality parameters are established at each and every operational bore. In addition, the Amended Water Act requires baseline assessments to include the quality of water in the bore.<sup>13</sup> It should be noted that in the EHP Baseline Assessment Guideline, it is stated that *only changes in water quality caused by a decline in water level which results from the exercise of underground water rights, form part of the make good framework*. That is, changes in water quality will only be considered in the Make Good framework where they occur in conjunction with changes in water levels resulting from mining activities.

#### 5.3.6.1 Selection of Sampling Location

Where fitted with pumping infrastructure, sampling locations will be chosen as close to the bore head as possible and where possible, before any other pipework joins the bore discharge pipework. No manipulation of the headworks will be undertaken to secure a sample. Potential sources of contamination will be identified and avoided wherever practicable and disturbance to the existing infrastructure will be minimised. The location of the sampling point will be documented and where the sampling point is not within 15 m of the bore, it will be photographed. Its position will also be recorded using a handheld GPS. Samples of bore water will not be collected from storages such as water tanks, troughs or dams as they are subject to temporal influences that may alter the water chemistry.

Where not fitted with pumping infrastructure, the NHG will obtain a bore water sample through the use of a temporarily installed groundwater sampling pump installed by its contractor.

#### 5.3.6.2 Purging

Prior to sampling a bore, wherever practicable, the volume of stagnant water within the bore casing and discharge piping (upstream of the sampling point) will be calculated. Water quality samples will only be collected:

- after three times the volume of stagnant water in the bore casing and the discharge piping (including a sufficient additional volume to account for any error in volume calculations) have been discharged, and
- when the field water quality parameters have stabilised.

Stabilisation of the water quality parameters indicates the bore is producing formation water.

Where extraction bores have been operating in the recent past prior to the assessment, purging a full three bore volumes may not be considered warranted. In these cases, sampling will be undertaken when the field water quality parameters have stabilised during purging.

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<sup>13</sup> s 394(a).

### 5.3.6.3 Field Parameters

**Table 5** presents the field parameter list which has been developed to be consistent with the EHP Baseline Assessment Guideline.

**Table 5 Water quality field parameters**

Category	Parameters
Physical Parameters	pH
	Temperature
	Electrical conductivity
Alkalinity	Alakinity – total as CaCO <sub>3</sub>

Field parameters will be recorded following the completion of the bore purging procedure using an electronic water quality meter (physical parameters) and a digital titration unit for alkalinity.

### 5.3.6.4 Laboratory Parameters

All laboratory water samples for baseline assessments are to be analysed at National Association of Testing Authorities (NATA) accredited laboratories. The limit of detection will be sufficient for assessment against current and relevant guidelines, including but not limited to:

- ANZECC & ARMCANZ, 2000. Australian and New Zealand Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy Paper No. 4, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra.
- NHMRC & NRMCC 2004, Australian Drinking Water Guidelines, National Water Quality Management Strategy Paper No. 6, National Health and Medical Research Council and Natural Resource Management Ministerial Council.

**Table 6** presents the laboratory parameter list which has been developed to be consistent with the EHP Baseline Assessment Guideline.

**Table 6 Water quality laboratory parameters**

Category	Parameters
Physical Parameters	pH
	Electrical conductivity
	Total dissolved solids
Major Ions	Calcium
	Chloride
	Fluoride
Metals (dissolved and total)	Aluminium
	Arsenic
	Barium
	Beryllium
	Boron
	Cadmium
	Chromium
	Potassium
	Sodium
Sulphate	
Lead	
Magnesium	
Manganese	
Mercury	
Molybdenum	
Nickel	
Selenium	



	Cobalt	Uranium
	Copper	Vanadium
	Iron	Zinc
Alkalinity and Hardness	Alkalinity – bicarbonate, hydroxide and total as CaCO <sub>3</sub>	
	Total hardness as CaCO <sub>3</sub>	

## Procedure

Sample collection will occur in a controlled manner that avoids disturbance to the sample by contamination from physical, chemical or biological processes.

Sample identification, preservation and transport will adhere to best practice industry standards including:

- Samples will have a unique identification ID that can be cross-referenced to the monitoring location and time of sampling.
- Sample preservation measures are to be documented and will comply with the laboratories requirements and relevant standards (e.g. AS/NZS 5667.1:1998).
- Sample integrity will be maintained through the use of chain of custody procedures and documentation.
- Samples will be delivered to the analysing laboratory within the required sample holding times.

## 5.4 QA/QC

### 5.4.1 Laboratory QA/QC

Consistent with AS/NZS9000 series (as required by the the EHP's Baseline Assessment Guideline and Bore Assessment Guideline) QA/QC protocols for water quality samples will be established as outlined in **Table 7** below.

**Table 7 Water quality QA/QC**

Method	Frequency	Description
Blind Duplicate	1 per landholder	Duplicate samples will be collected in the same manner as the primary sample. Used to assess the precision/repeatability of the sampling procedure and laboratory analysis.
Equipment blank	1 per day of sampling	Rinsate blank collected in the field under identical conditions to primary samples. Used to verify appropriate decontamination of field equipment between different bores.
Field blank	1 per day of sampling	Clean purified water sample collected in the field under identical conditions to primary samples. Used to verify a high standard of sampling procedure and identify if any contamination is occurring during sampling.

#### 5.4.2 Third Party Certification

Consistent with the EHP Baseline Assessment Guidelines and Bore Assessment Guideline, all baseline assessments will be completed by an independent third party engaged by the NHG. All baseline assessments will also be certified by an independent third party through signoff on the approved field form (**Appendix C**). It should be noted that:

- independent certification does not require an independent person being present in the field for all baseline assessments
- the entity employing the persons conducting the baseline assessments may also provide suitable persons to undertake the certification

The certification program will include the field verification of a minimum of 10% of the baseline assessments being certified including:

- that quality assurance and quality control procedures are being implemented, inclusive of compliance with the relevant standards and manuals referenced above
- that all aspects of the baseline assessments are undertaken in compliance with this guideline  
Independent third parties conducting baseline assessments or providing certification will:
- not be an employee of, nor have a financial interest or any involvement which would lead to a conflict of interest with the NHG whose baseline assessments are being certified
- have a degree in a relevant science or engineering discipline
- have a minimum of five years prior experience in the following fields:
  - underground water level monitoring programs, including monitoring of water level in bores equipped with pumping infrastructure
  - the conduct of underground water quality sampling programs
  - underground water hydrology and/or engineering
- have a practical knowledge of water bore construction and infrastructure

---

## 6 REFERENCES

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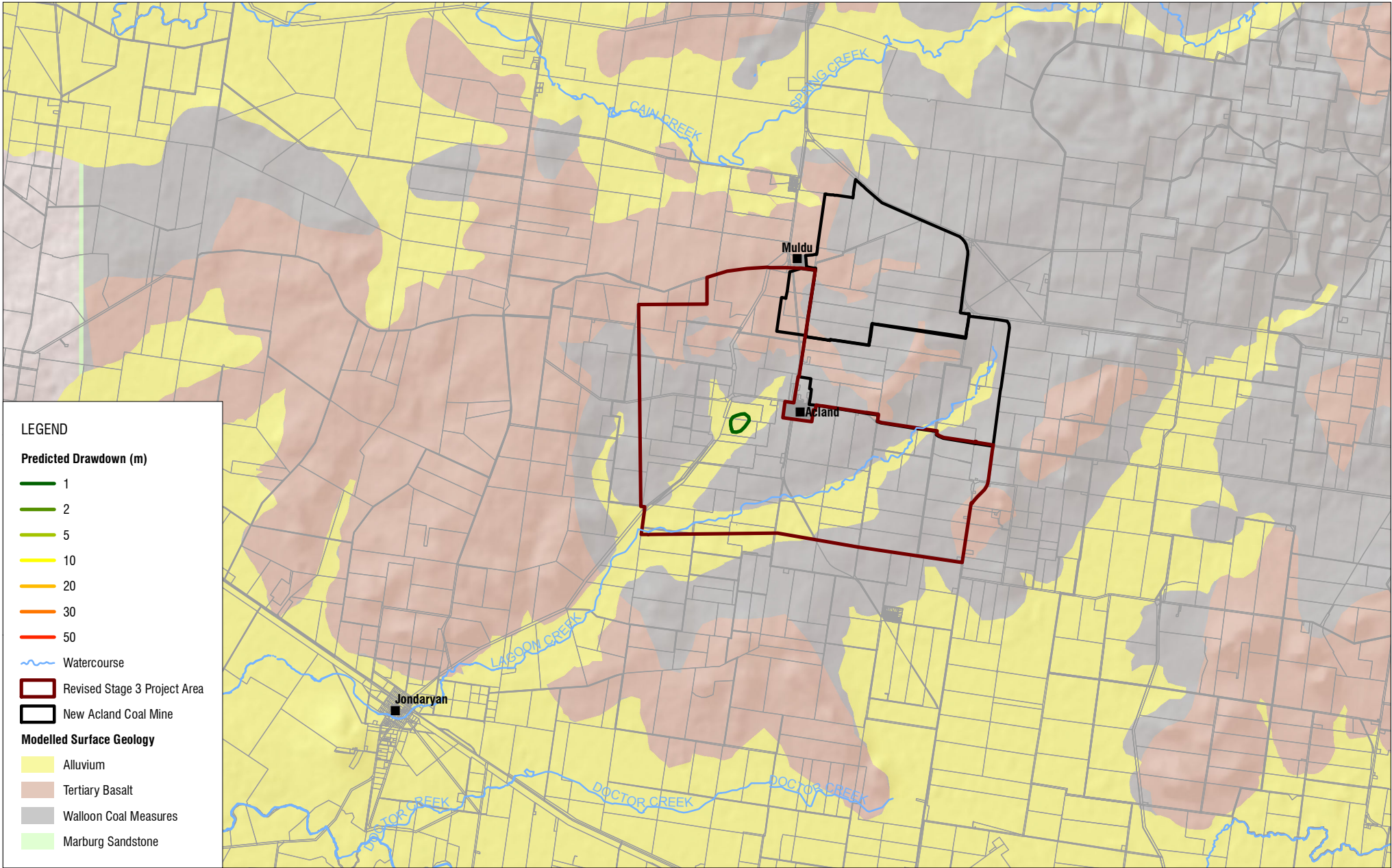
**Appendix A**

Report Number 620.11279.0001

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GROUNDWATER MODEL PREDICTIONS

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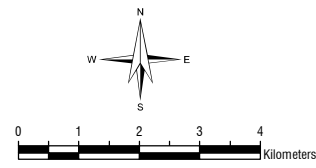


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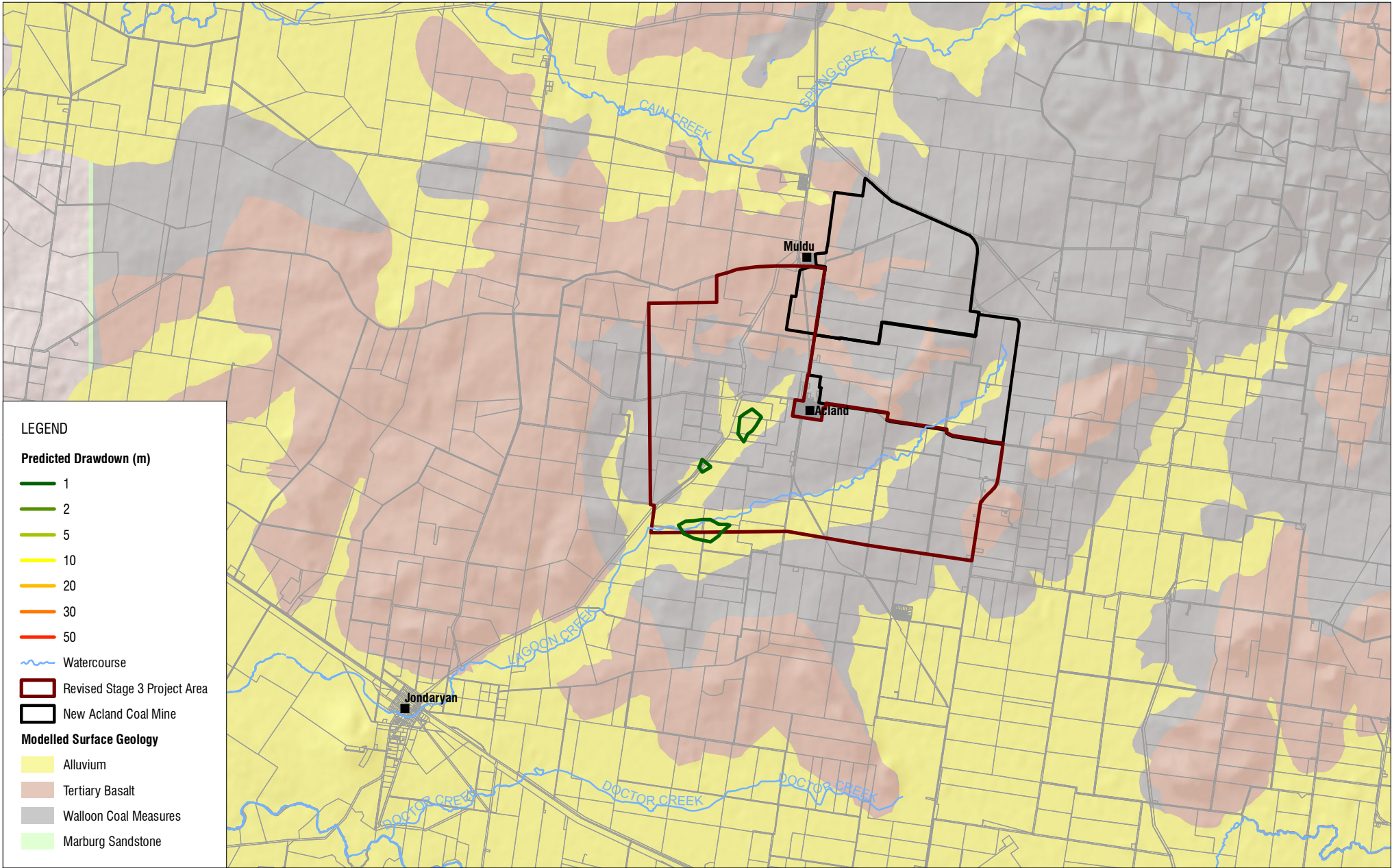
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FIGURE A1

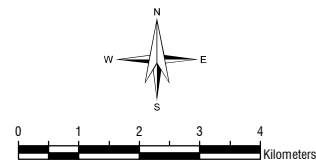
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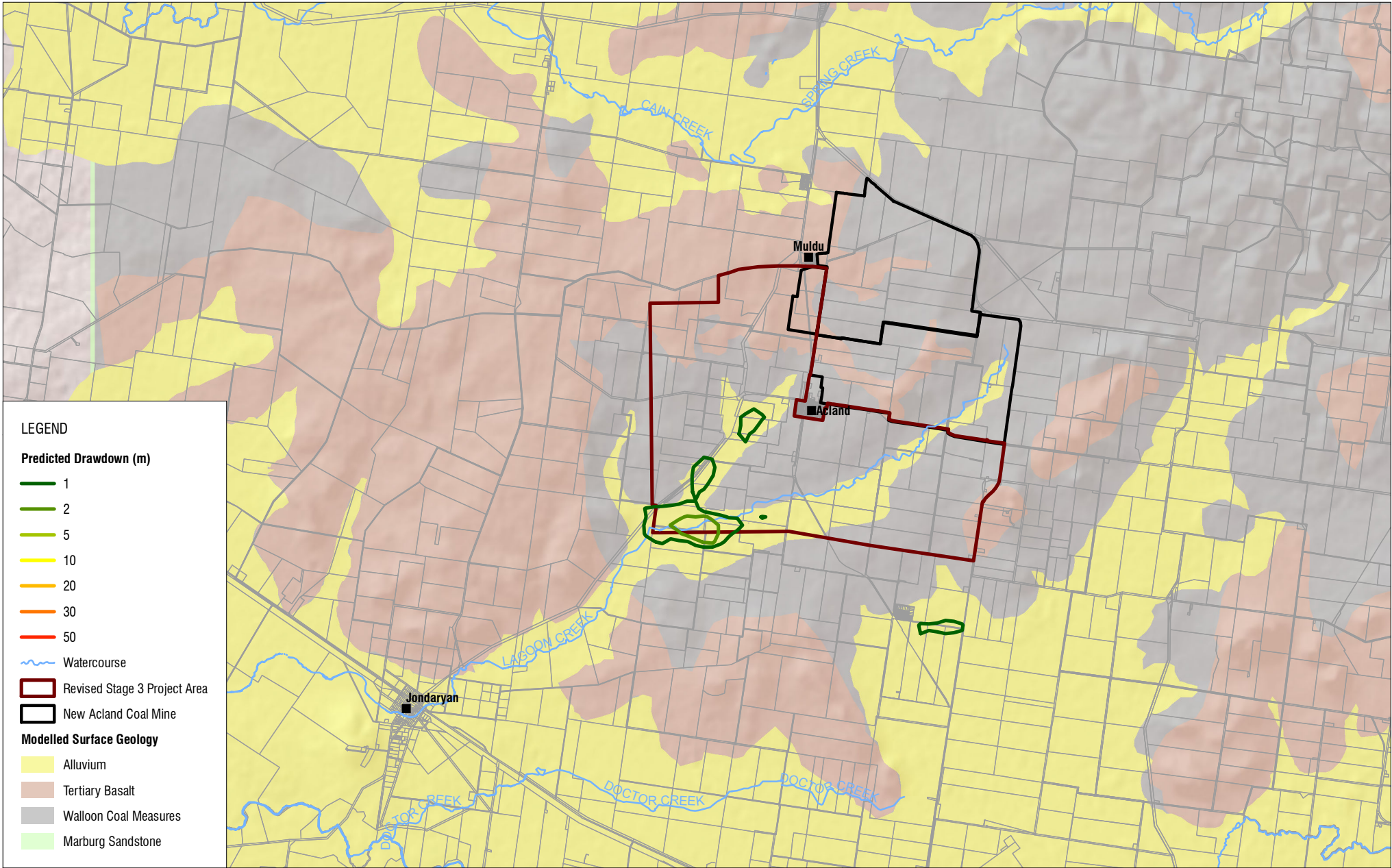
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FIGURE A2

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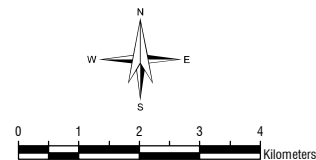


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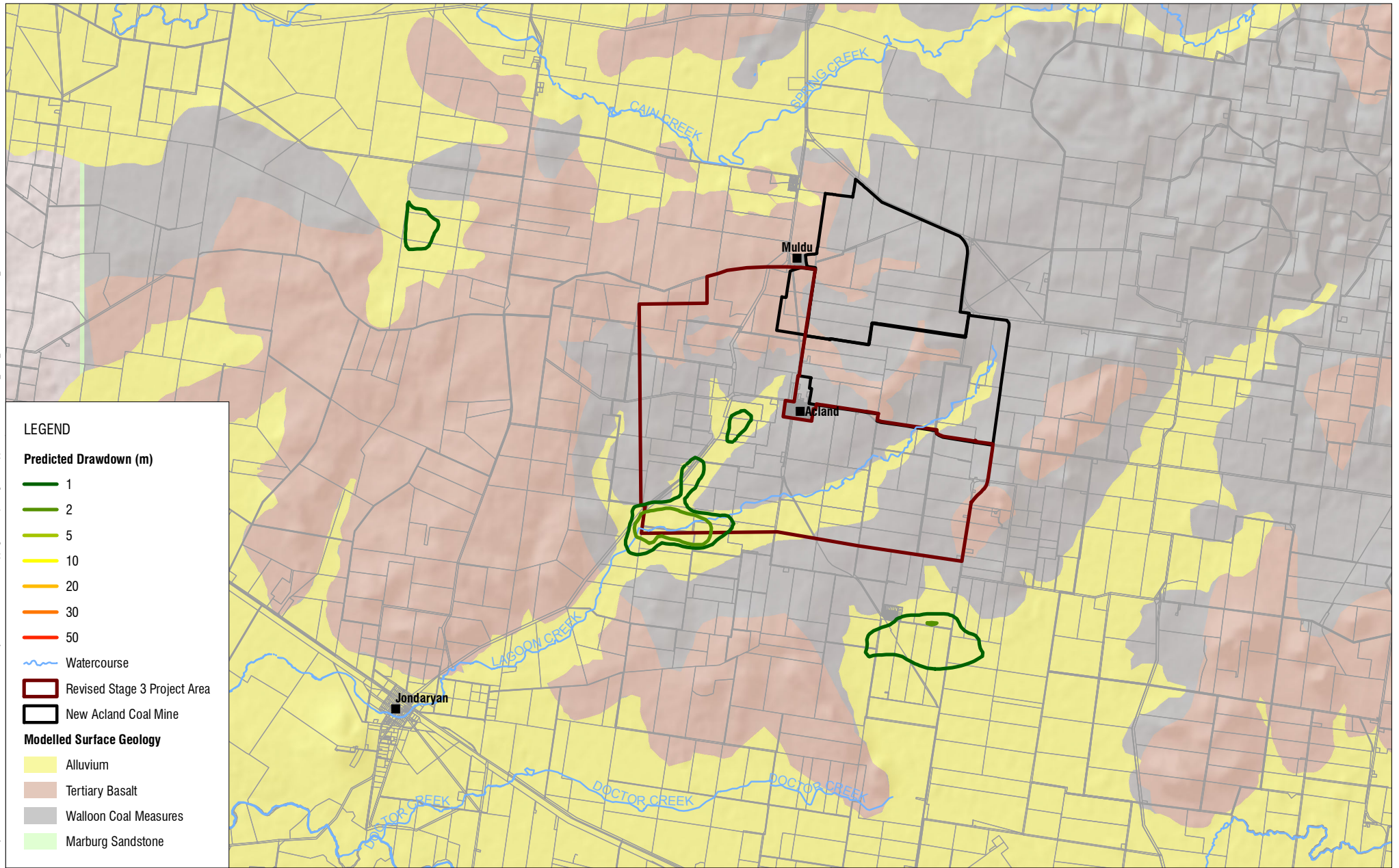
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FIGURE A3

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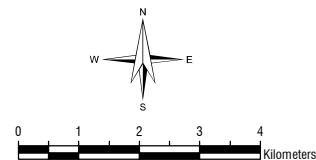


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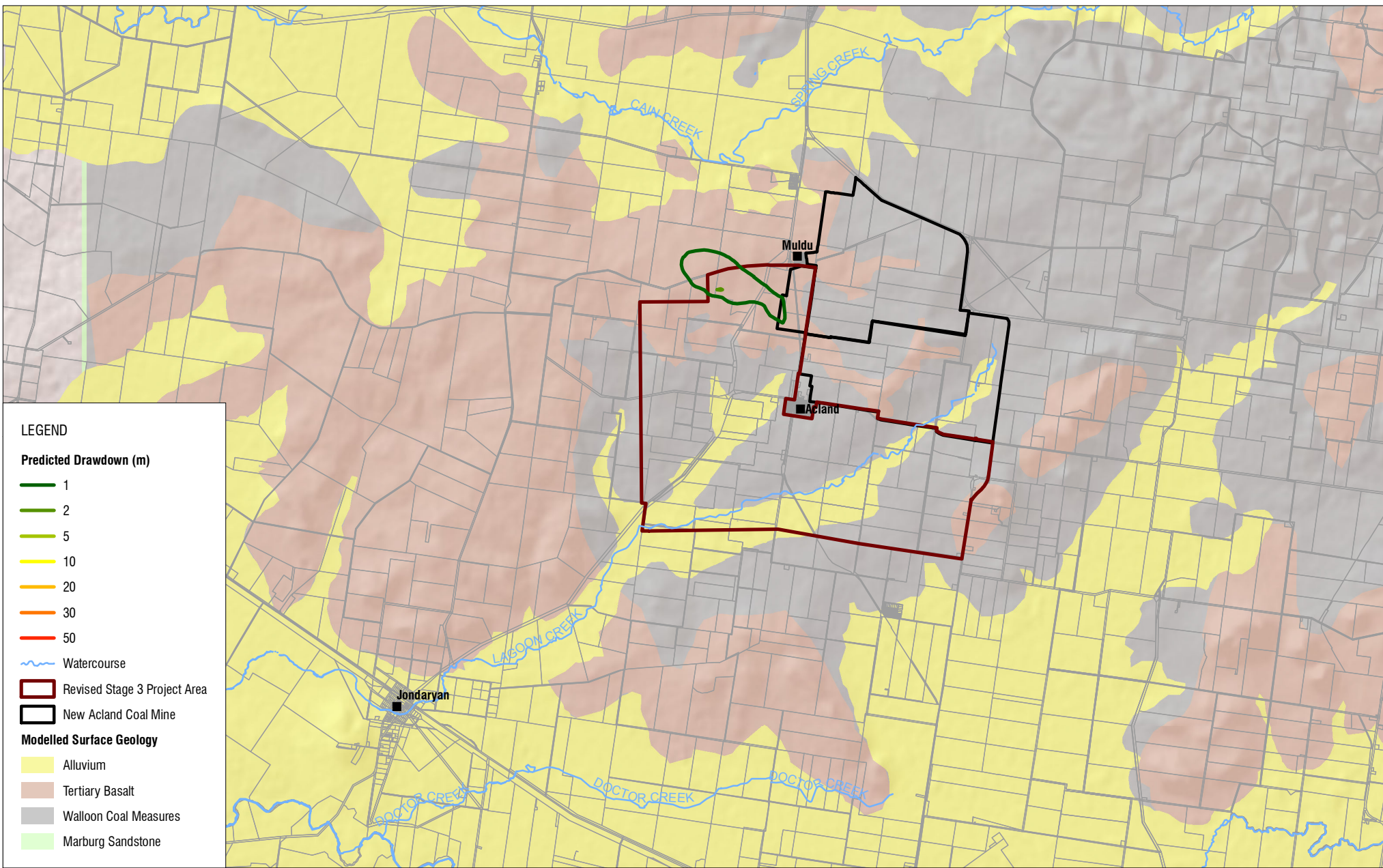
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FIGURE A4



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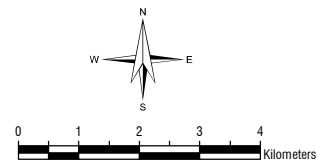


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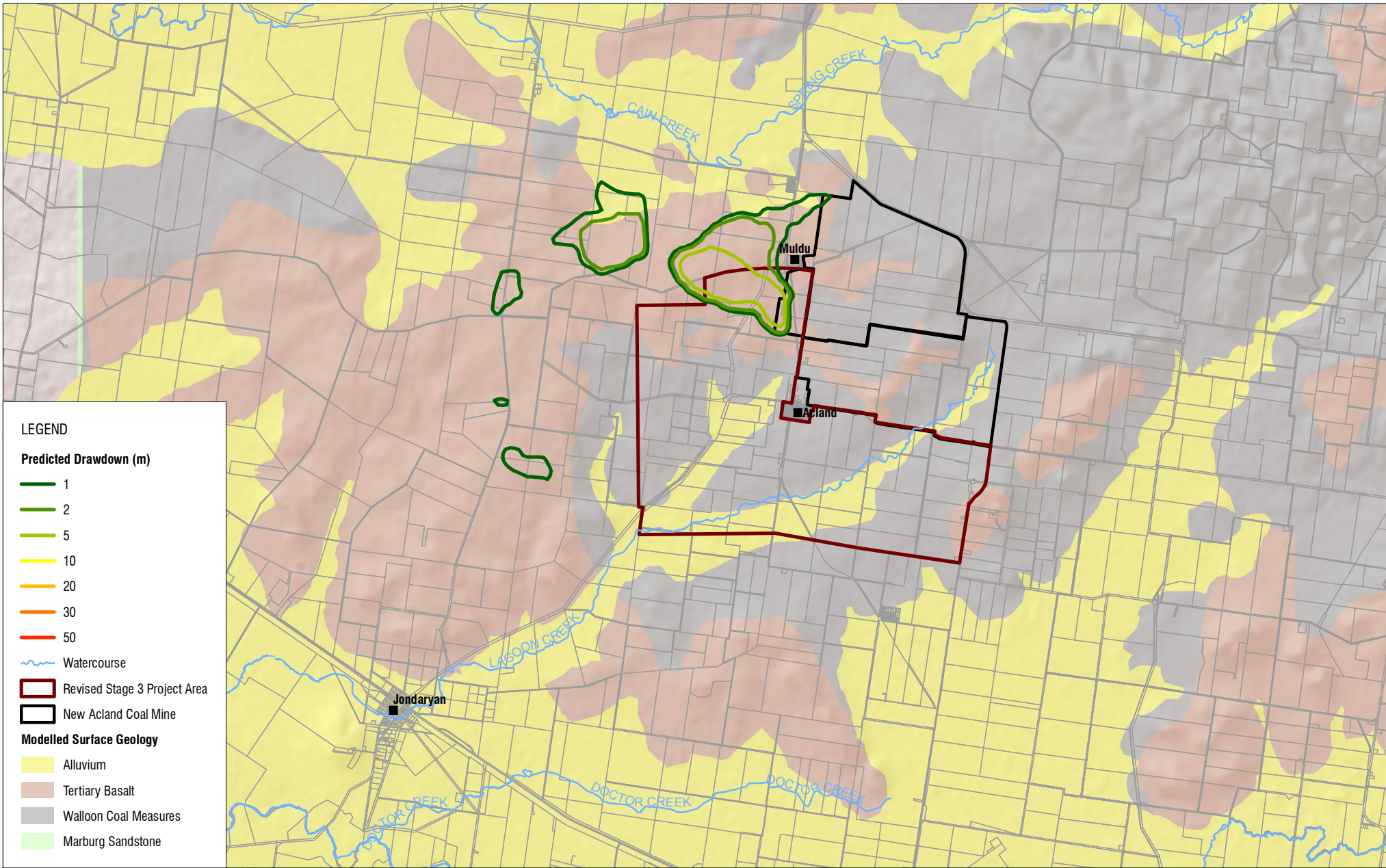
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FIGURE A5

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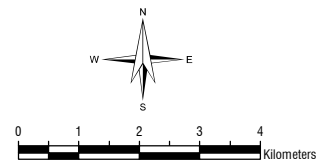


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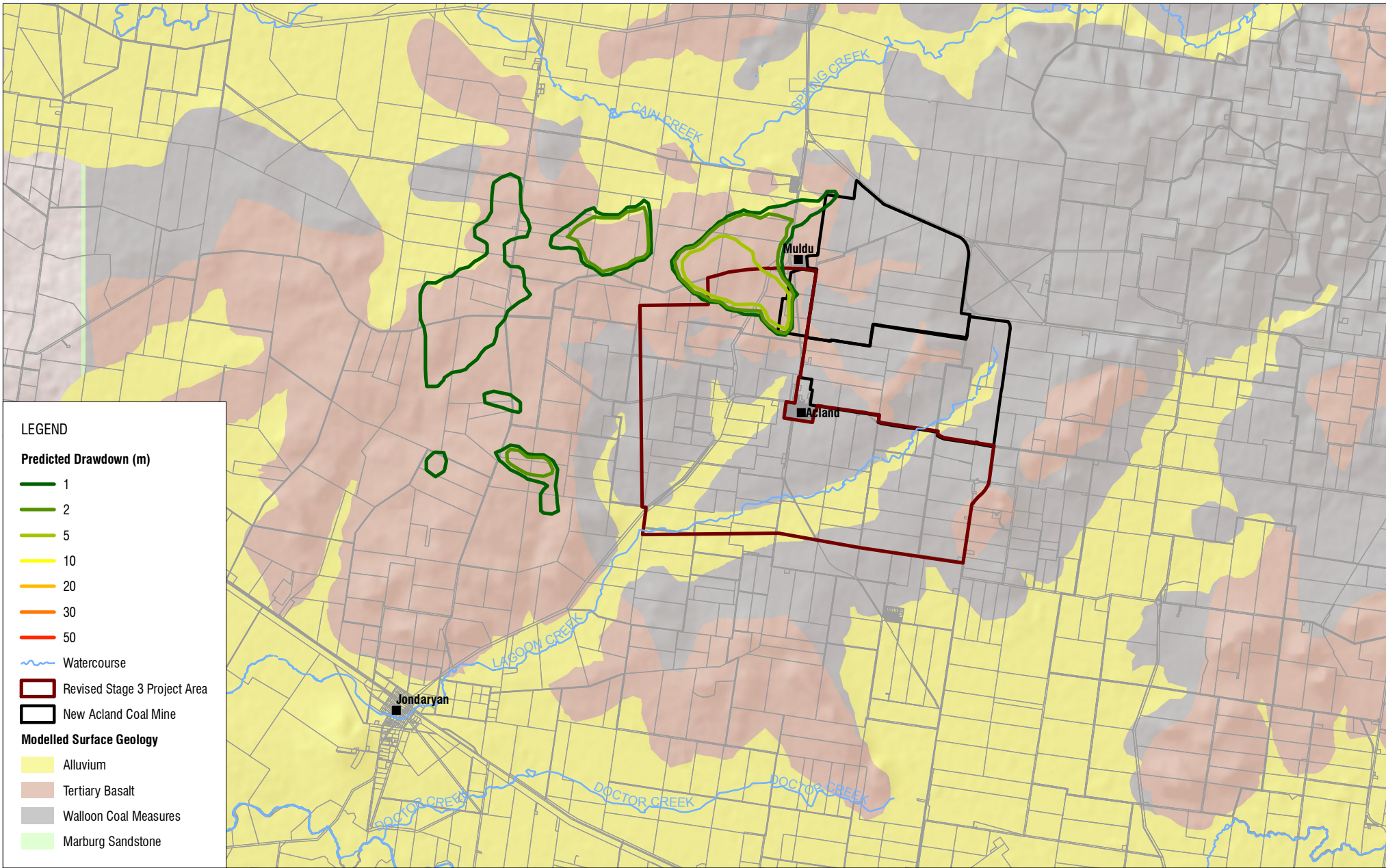
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FIGURE A6

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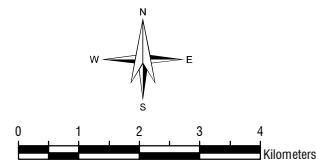


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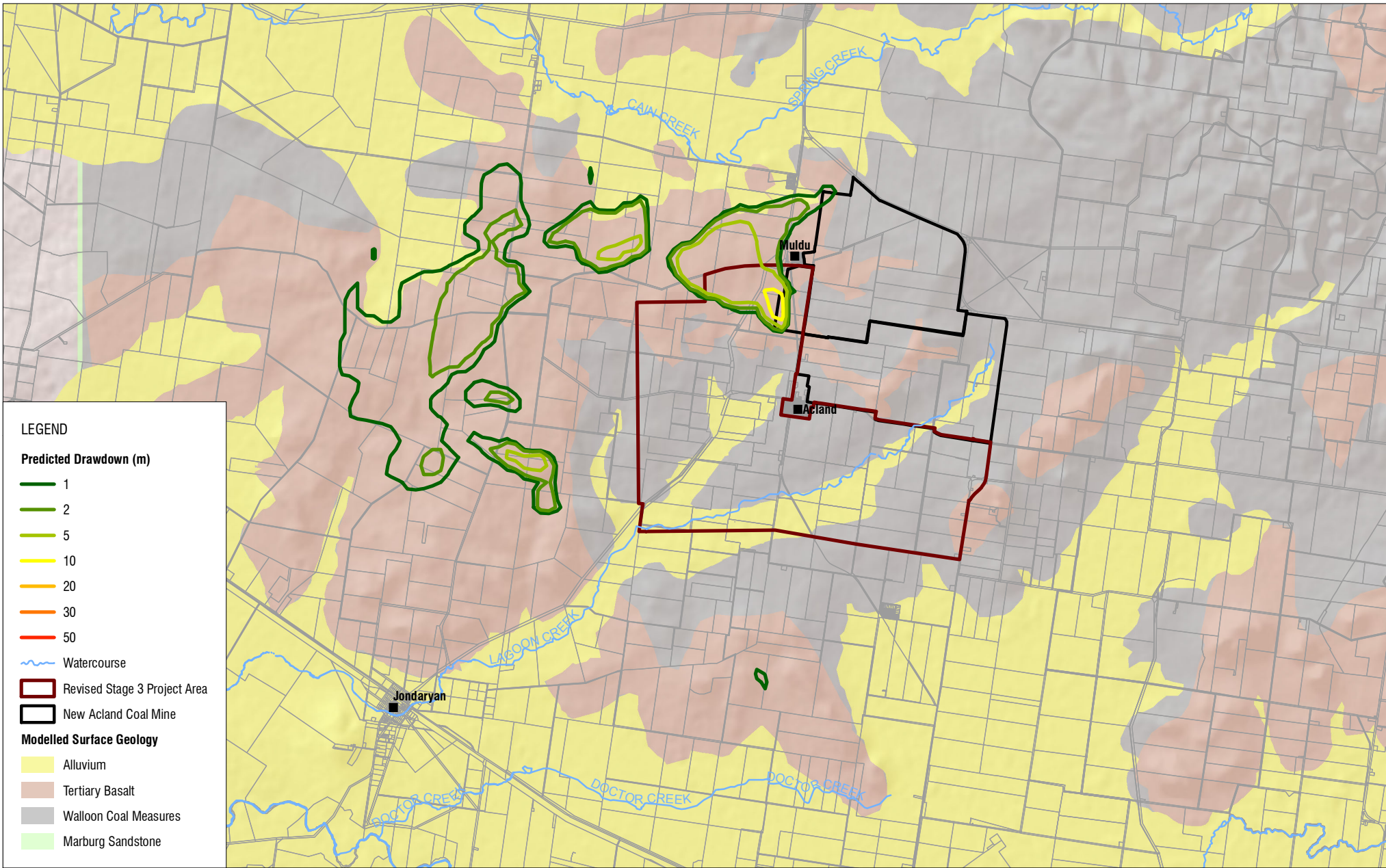
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FIGURE A7

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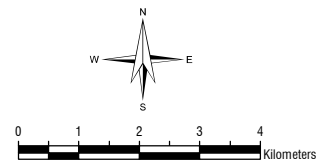


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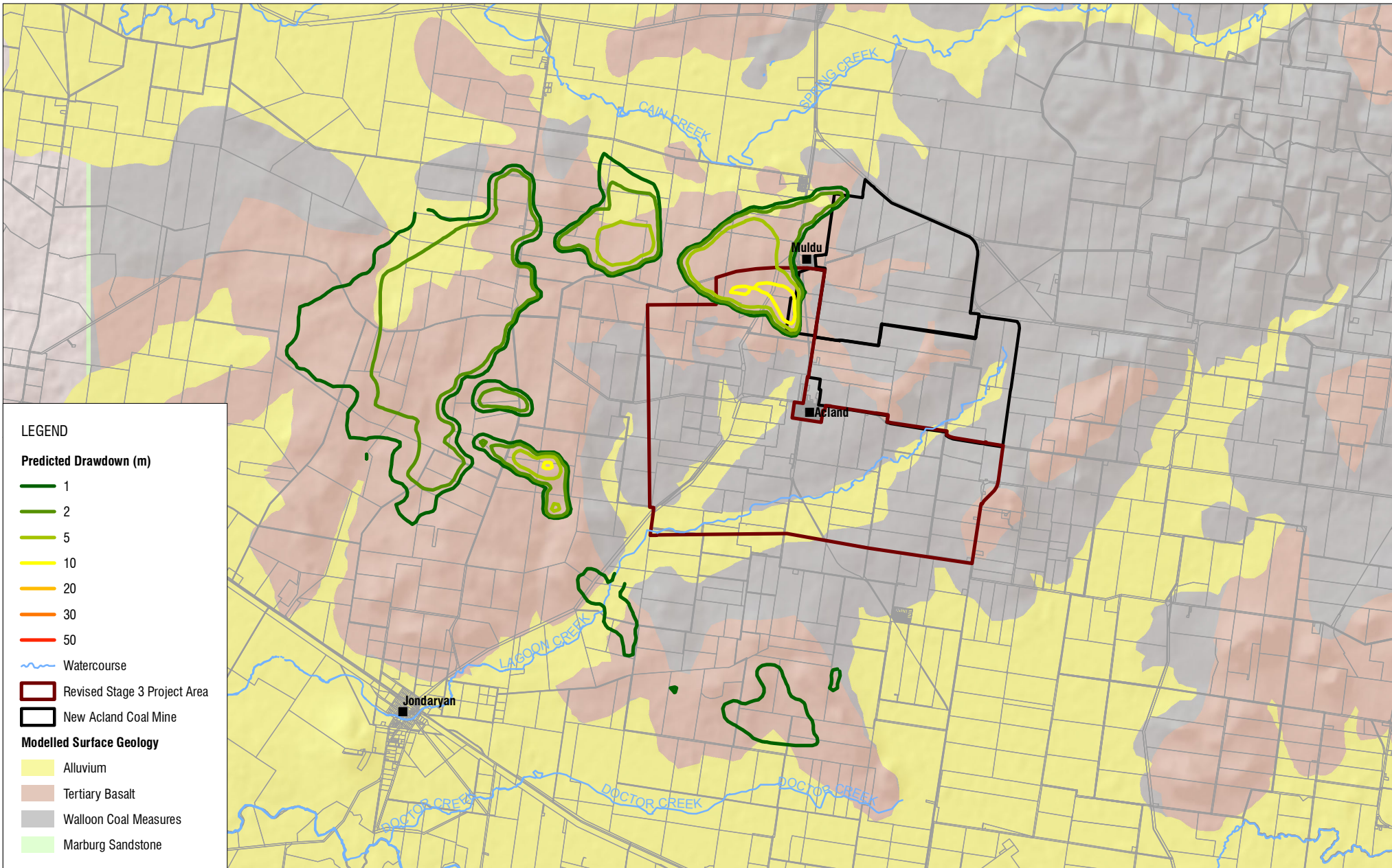
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FIGURE A8

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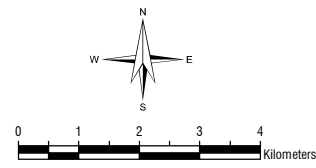


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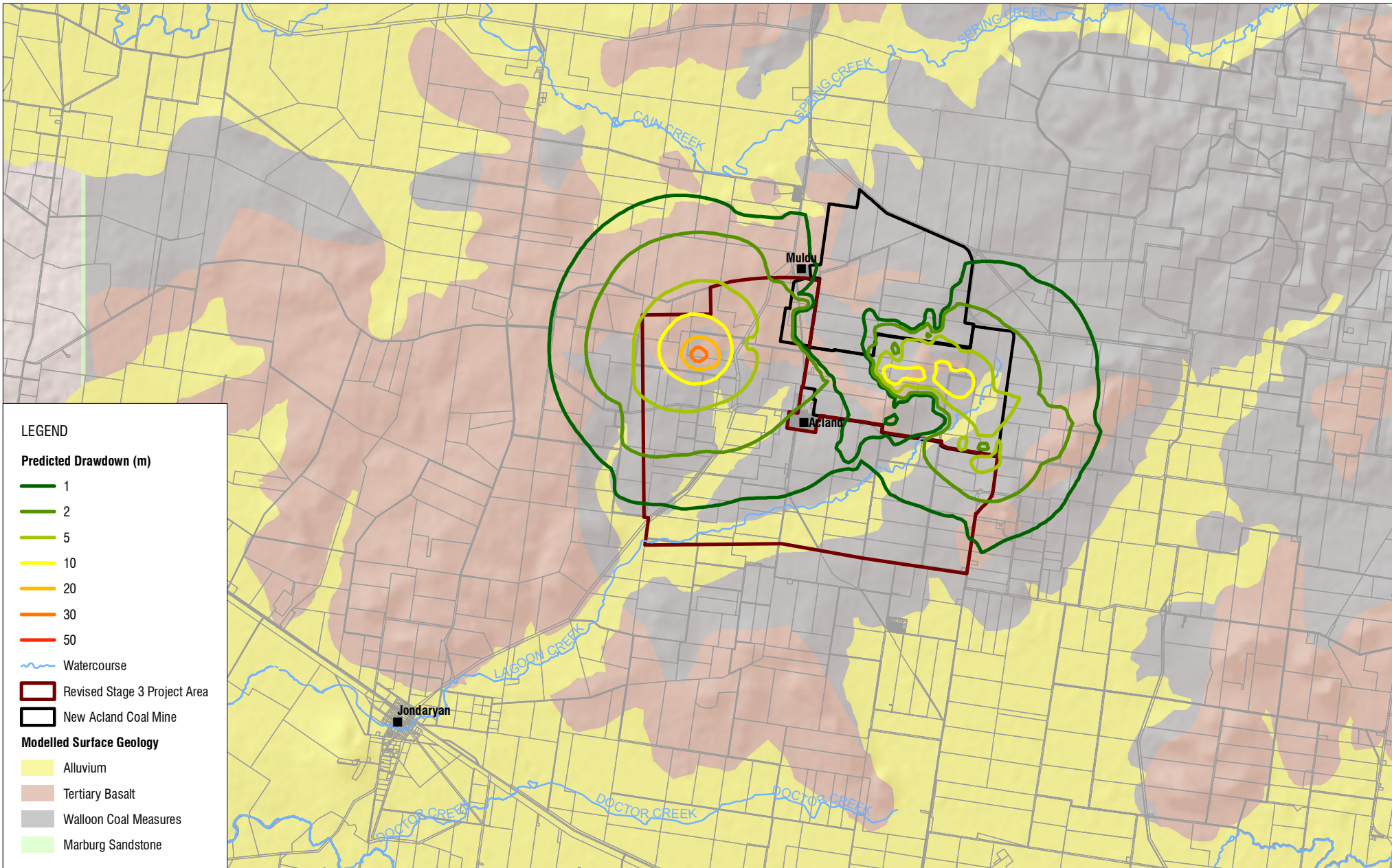
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FIGURE A9

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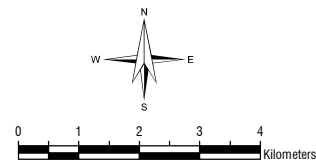


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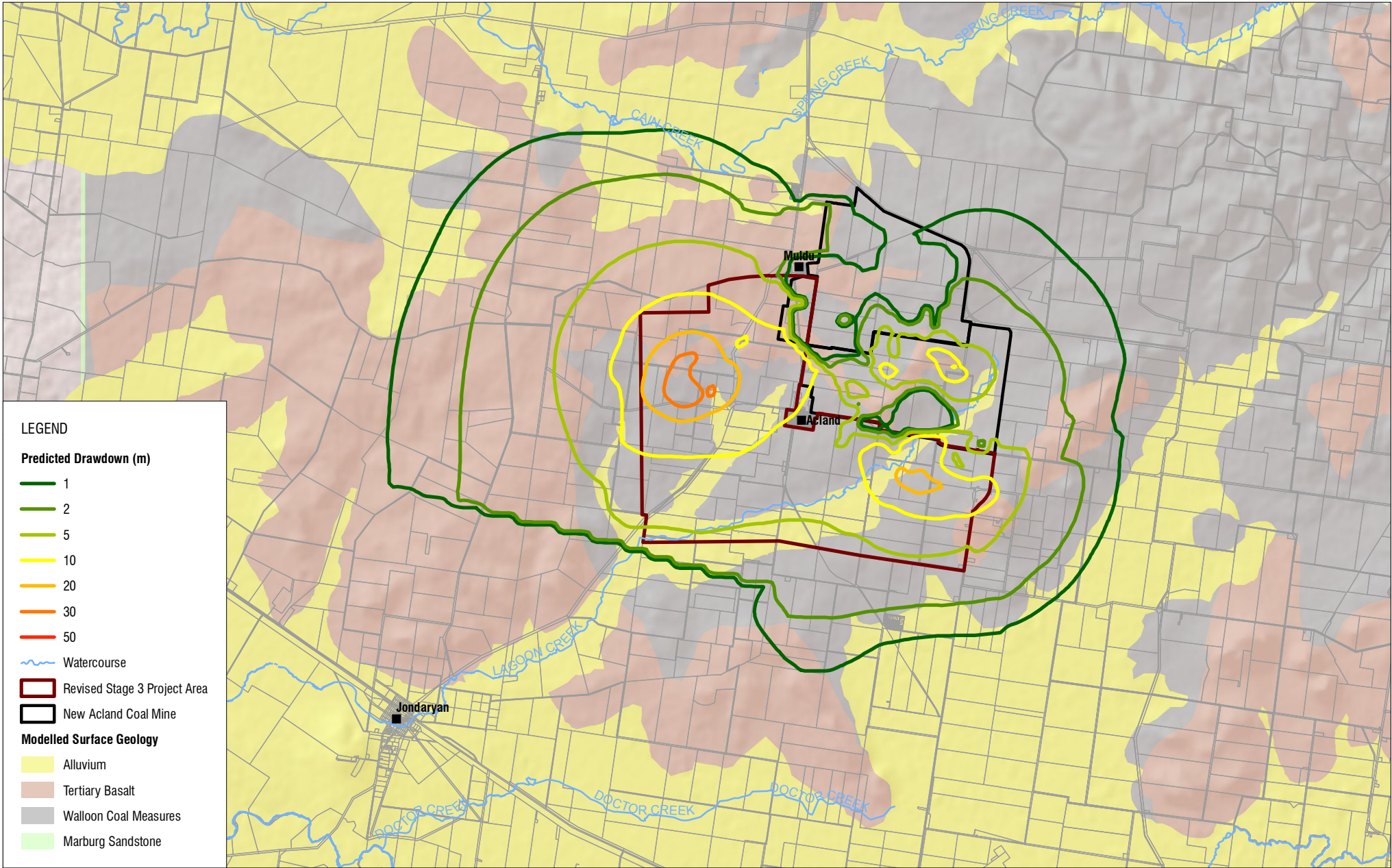
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**PREDICTED DRAWDOWN  
 WALLOON COAL MEASURES  
 - 2017**

FIGURE A10

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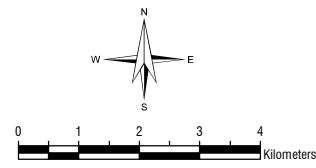


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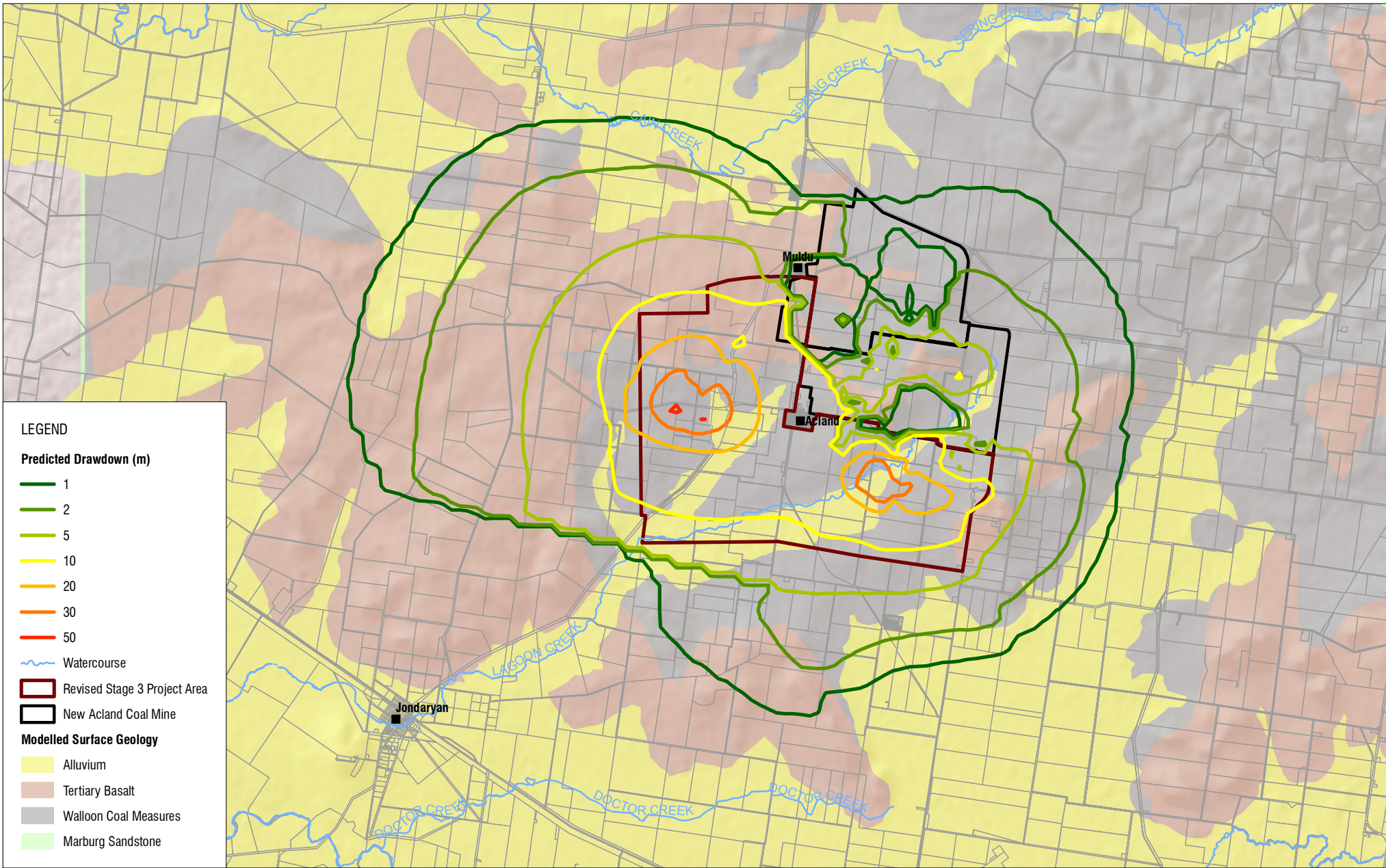
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 WALLOON COAL MEASURES  
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FIGURE A11

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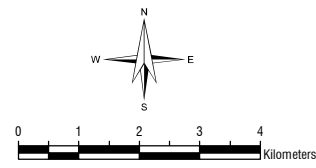


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Projection:	AGD 1984 AMG Zone 56



NEW ACLAND STAGE 3 PROJECT

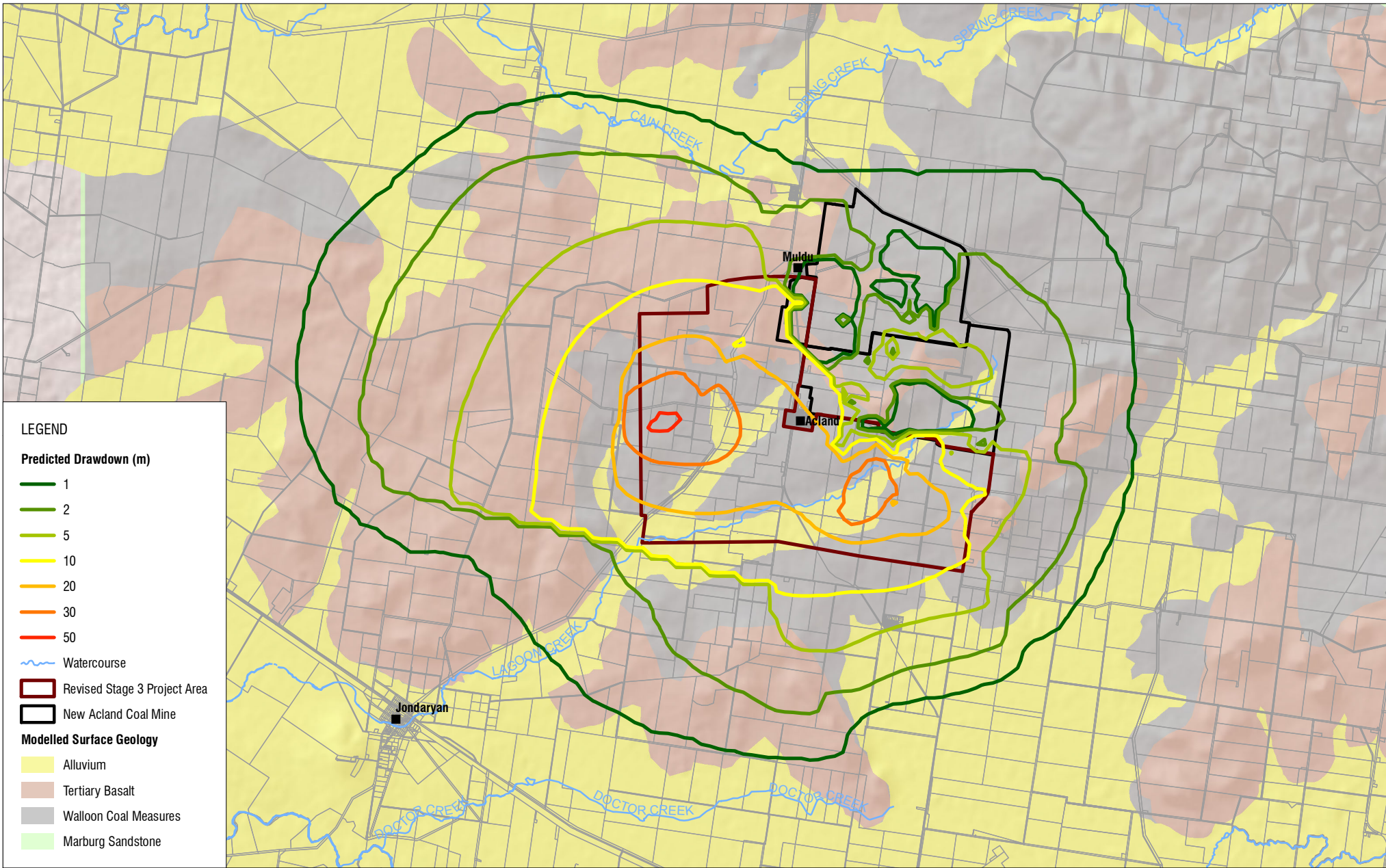
**BASELINE ASSESSMENT PROGRAM**

**PREDICTED DRAWDOWN  
 WALLOON COAL MEASURES  
 - 2024**

FIGURE A12



H:\Projects\SLR\620-BNE\620-BNE\620-11279 New Acland S3 Project - Groundwater\GIS Mapping\MXD\Report\Fig\B\A\Appendix\ASL\620\11279\_FA13\_Drawob\w\validation\2027\_02.mxd



**LEGEND**

**Predicted Drawdown (m)**

- 1
- 2
- 5
- 10
- 20
- 30
- 50

— Watercourse

Revised Stage 3 Project Area

New Acland Coal Mine

**Modelled Surface Geology**

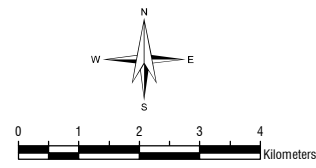
- Alluvium
- Tertiary Basalt
- Walloon Coal Measures
- Marburg Sandstone

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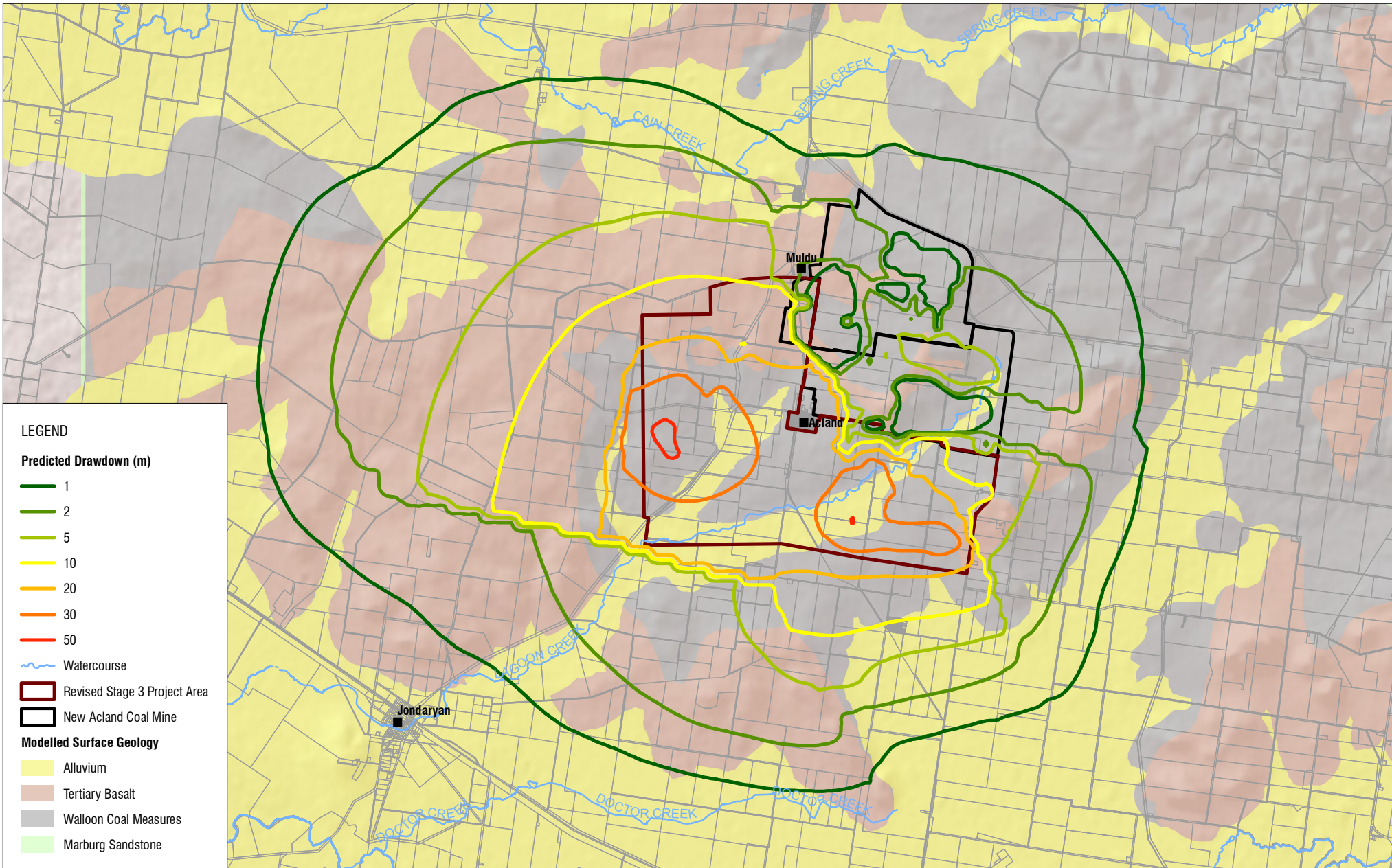
NEW ACLAND STAGE 3 PROJECT

**BASELINE ASSESSMENT PROGRAM**

**PREDICTED DRAWDOWN  
WALLOON COAL MEASURES  
- 2027**

FIGURE A13

H:\Projects\SLR\620-BNE\620-BNE\620-11279 New Acland S3 Project - Groundwater\GIS Mapping\MXD\Report\Fig\B\A\Appendix\_ASL\620\11279\_FA\_14\_DrawdownValidation\_2029\_02.mxd

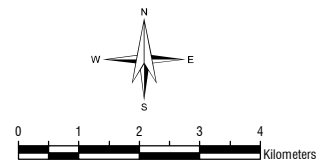


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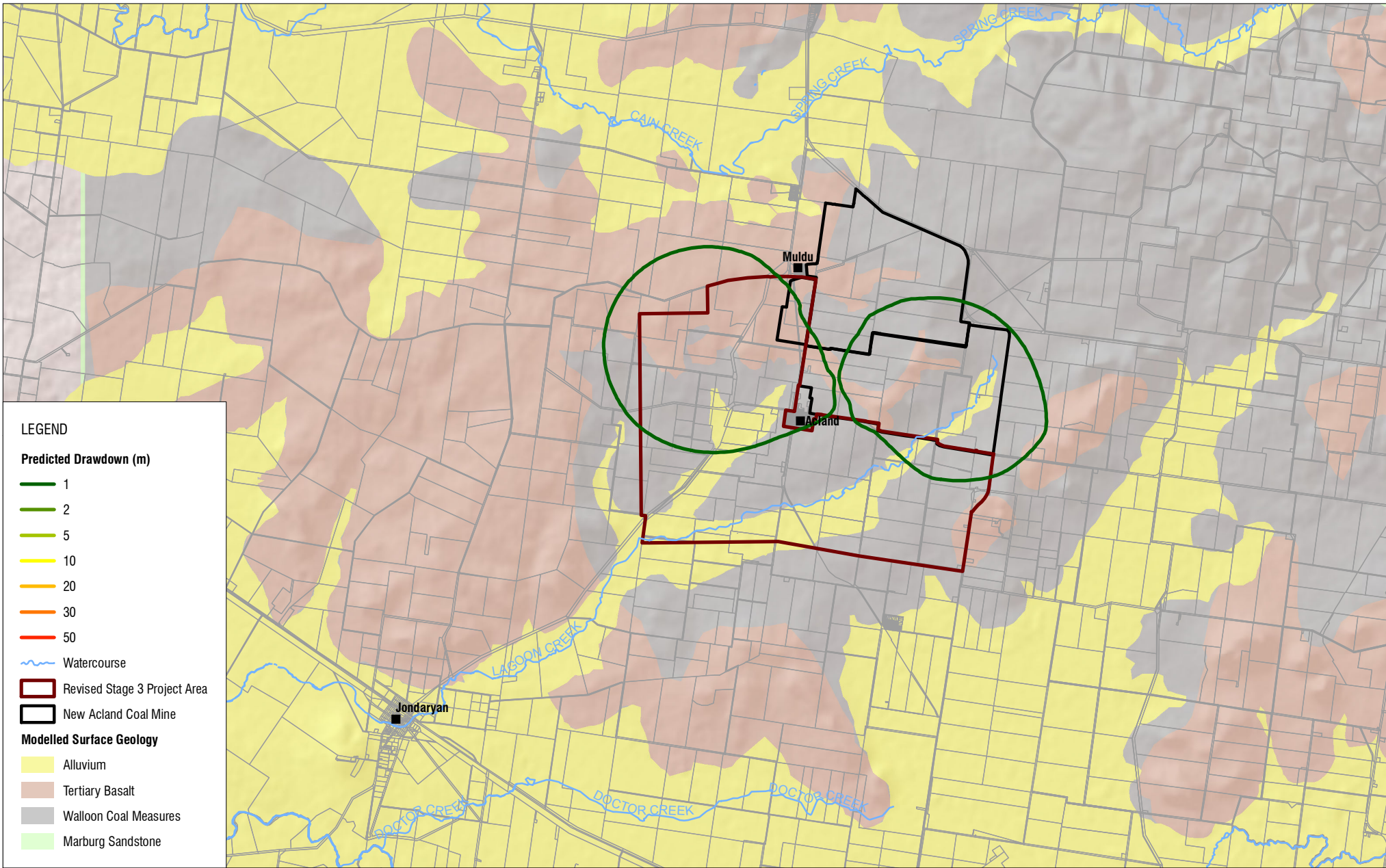
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**BASELINE ASSESSMENT PROGRAM**

**PREDICTED DRAWDOWN  
 WALLOON COAL MEASURES  
 - 2029**

FIGURE A14

H:\Projects\SLR\620-BNE\620-BNE\620-11279 New Acland S3 Project - Groundwater\GIS Mapping\MXD\Report\Fig\A15\DrawdownMarburg2017\_02.mxd

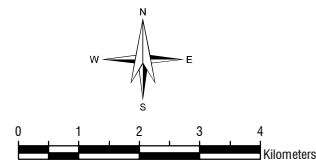


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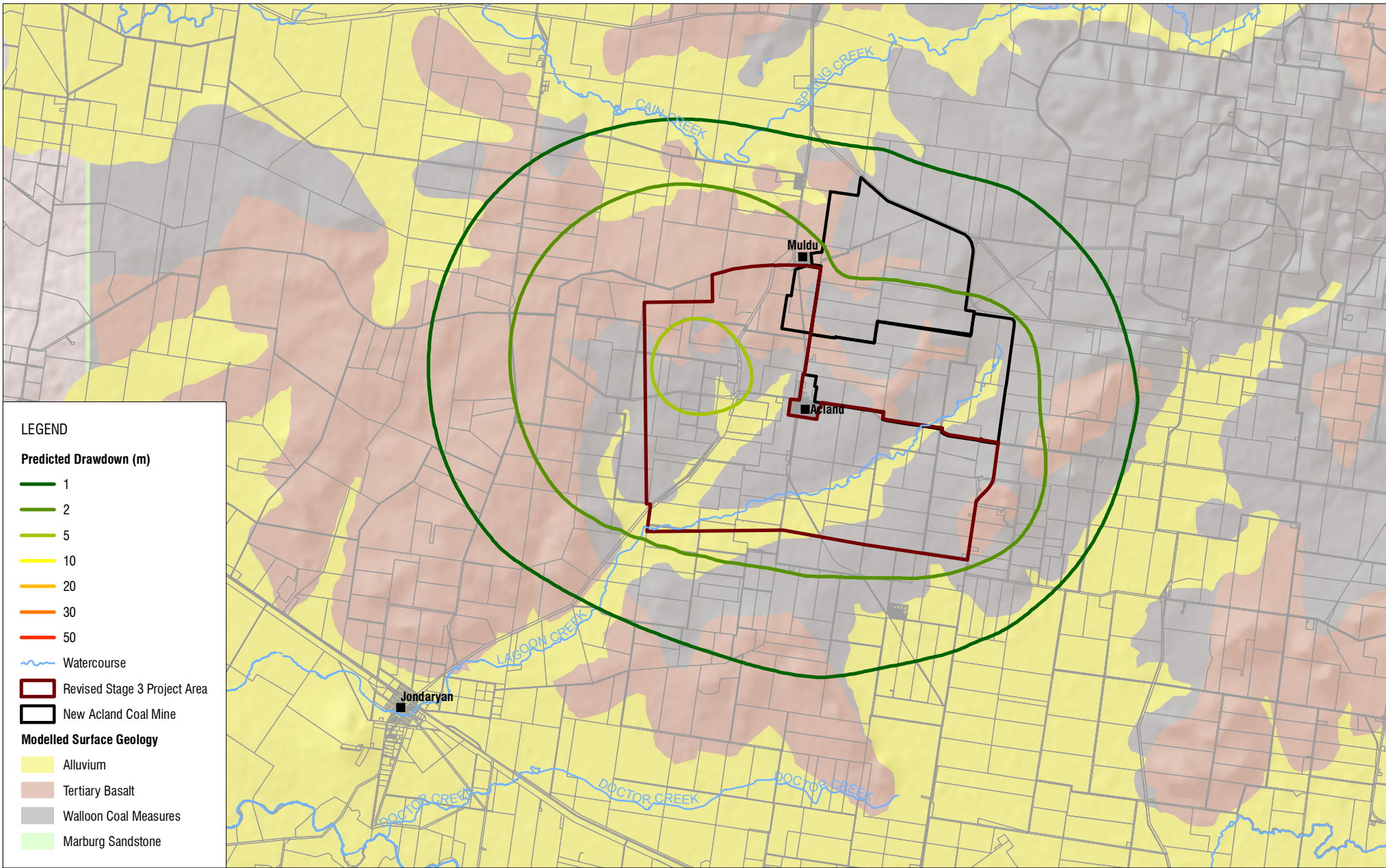


NEW ACLAND STAGE 3 PROJECT  
**BASELINE ASSESSMENT PROGRAM**

**PREDICTED DRAWDOWN  
 MARBURG SANDSTONE - 2017**

FIGURE A15

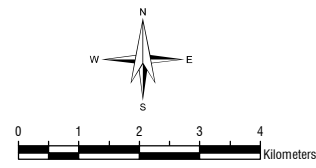
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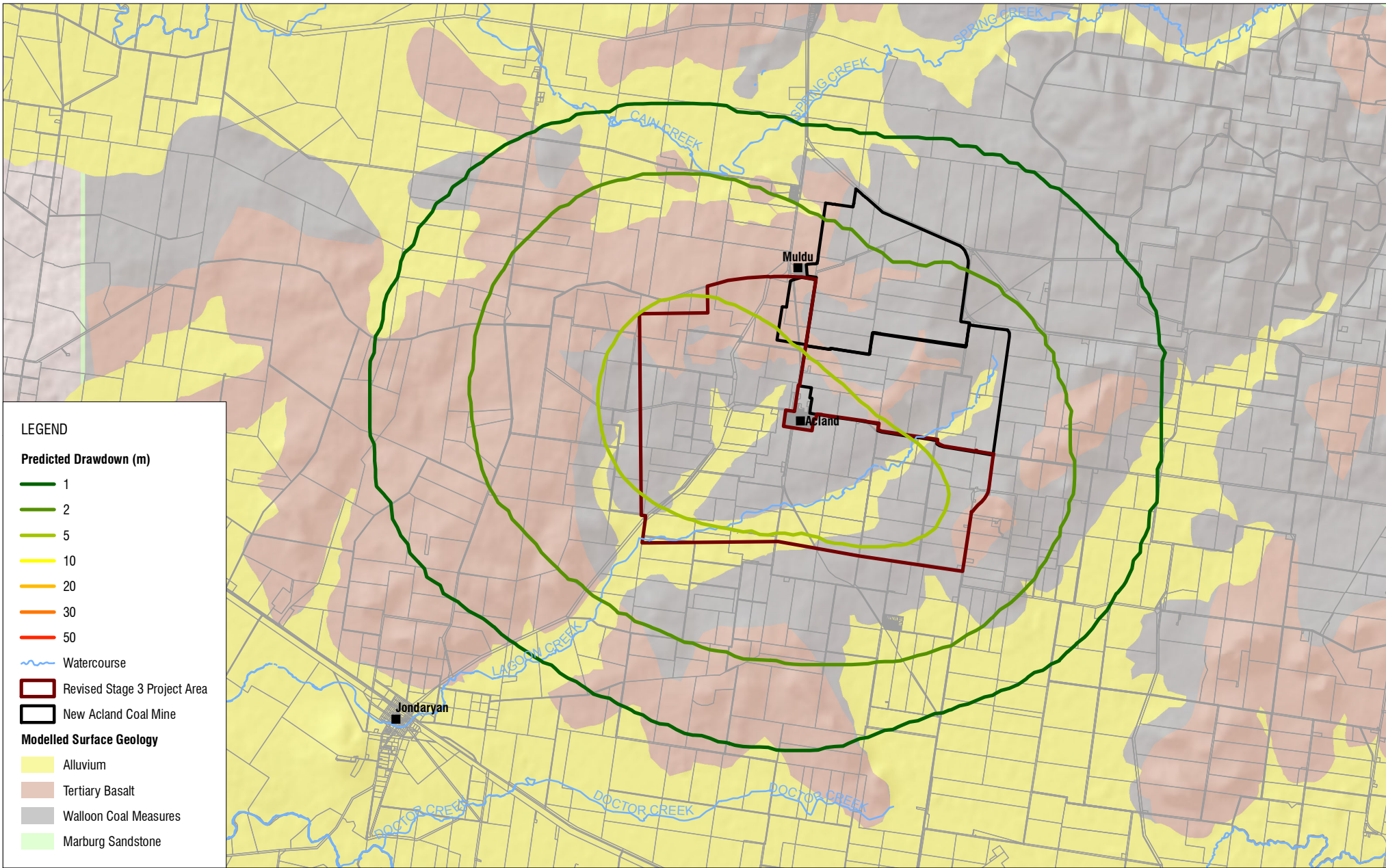
NEW ACLAND STAGE 3 PROJECT

**BASELINE ASSESSMENT PROGRAM**

**PREDICTED DRAWDOWN  
 MARBURG SANDSTONE - 2021**

FIGURE A16

H:\Projects\SLR\620-BNE\620-BNE\620-11279 New Acland S3 Project - Groundwater\GIS Mapping\MXD\Report\Fig\BAPA\pendix\_ASL\62011279\_FAT\_Drawing\Marburg2024\_02.mxd

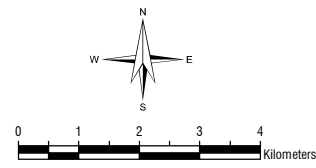


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Scale:	1:125,000
Sheet Size:	A4
Projection:	AGD 1984 AMG Zone 56



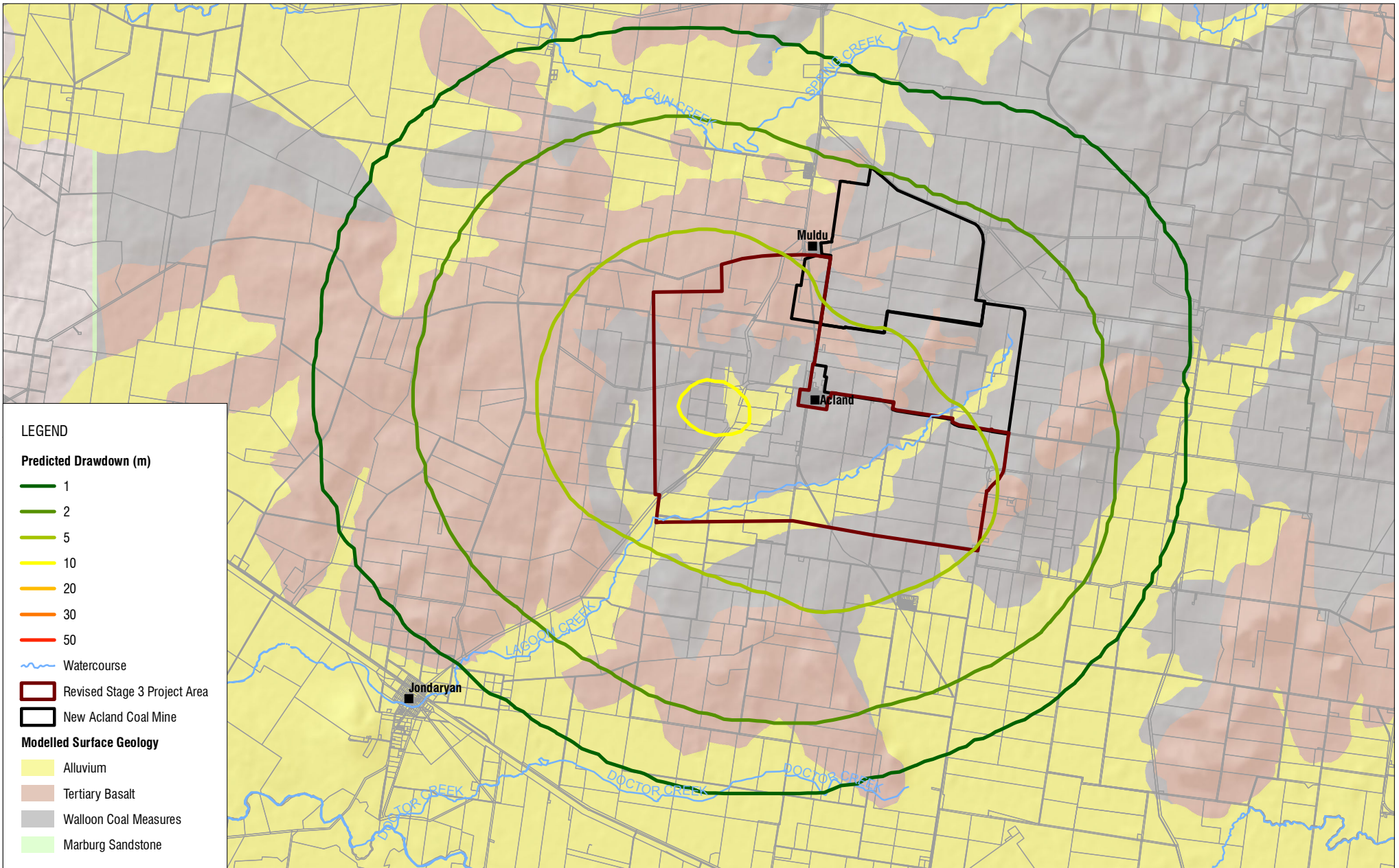
NEW ACLAND STAGE 3 PROJECT

**BASELINE ASSESSMENT PROGRAM**

**PREDICTED DRAWDOWN  
 MARBURG SANDSTONE - 2024**

FIGURE A17

H:\Projects-SLR\620-8NE\620-8NE\620-11279 New Acland S3 Project - Groundwater\GIS Mapping\MXD\Report\Fig\B\APA\appendx\_ASL\62011279\_FA18\_DrawdownMarburg2027\_02.mxd

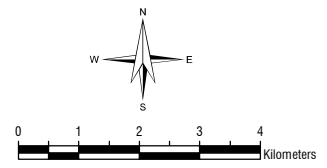


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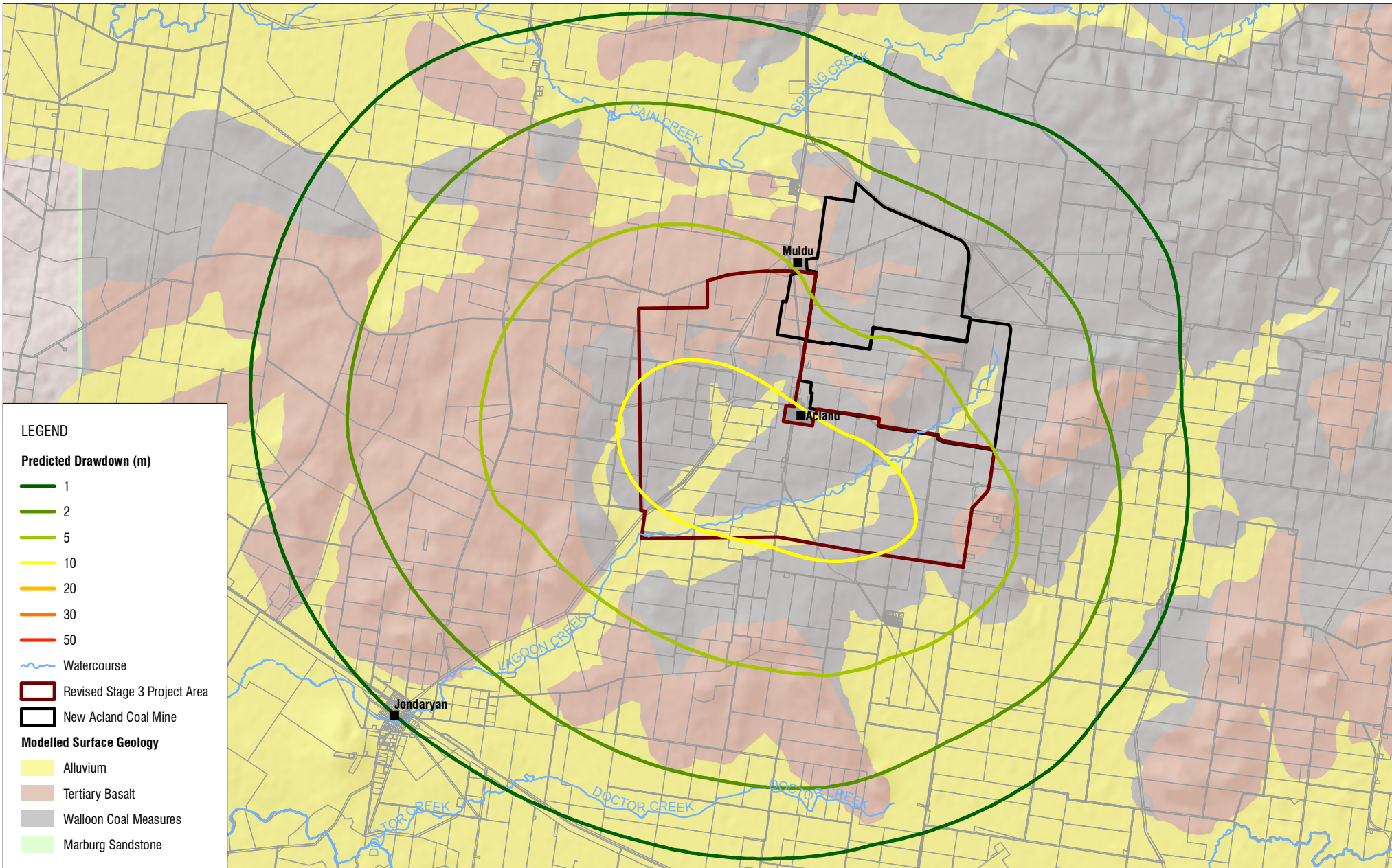
NEW ACLAND STAGE 3 PROJECT

**BASELINE ASSESSMENT PROGRAM**

**PREDICTED DRAWDOWN  
 MARBURG SANDSTONE - 2027**

FIGURE A18

H:\Projects\SLR\620-8NE\620-8NE\620-11279 New Acland S3 Project - Groundwater\GIS Mapping\MXD\Report\Fig\A19\Drawdown\Marburg2029\_02.mxd



**LEGEND**

**Predicted Drawdown (m)**

- 1
- 2
- 5
- 10
- 20
- 30
- 50

~ Watercourse

Revised Stage 3 Project Area

New Acland Coal Mine

**Modelled Surface Geology**

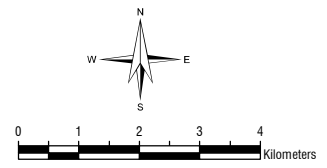
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- Walloon Coal Measures
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NEW ACLAND STAGE 3 PROJECT

**BASELINE ASSESSMENT PROGRAM**

**PREDICTED DRAWDOWN  
MARBURG SANDSTONE - 2029**

FIGURE A19

TIMING OF POTENTIAL IMPACTS

**Cadastral parcels identified as having greater than 2 m predicted drawdown in any aquifer (median case) excluding those with satisfactory EIS baseline assessments**

<b>Lot / Plan</b>	<b>Year of Potential Undue Impact</b>	<b>Lot / Plan</b>	<b>Year of Potential Undue Impact</b>
1/RL8368	2017	10/RP225668	2021
1/RP174029	2017	11/RP25526	2021
1/RP25518	2017	116/AG3153	2021
1/RP55256	2017	12/RP25507	2021
13/RP25520	2017	120/AG2214	2021
15/RP25520	2017	13/RP25507	2021
2/RP174029	2017	14/RP25520	2021
2/RP55256	2017	18/RP30978	2021
2/SP211647	2017	19/RP30978	2021
3306/A341635	2017	19/RP36468	2021
3444/A341748	2017	2/AG1694	2021
4088/A342139	2017	2/RP156503	2021
4102/A342155	2017	2/RP157121	2021
1/AG972	2021	2/RP234028	2021
1/RP24715	2021	2/RP24711	2021
1/RP25506	2021	3/RP25520	2021
1/RP25510	2021	3446/A341747	2021
1/RL6807	2021	3447/A341747	2021
1/RP157121	2021	3451/A341747	2021
1/RP24708	2021	3702/A341859	2021
1/RP24711	2021	4/RP225668	2021
2/RP24715	2021	4/RP25495	2021
2/RP25495	2021	4/RP25529	2021
2/RP25506	2021	23/D361484	2021
2/RP25510	2021	23/RP36468	2021
2/RP25511	2021	24/RP30978	2021
2/RP25512	2021	25/RP30978	2021
2/RP30976	2021	25/RP36468	2021
2/RP40478	2021	3/AG1694	2021
20/RP36468	2021	3/RP25495	2021
21/RP30978	2021	3/RP25510	2021
21/RP36468	2021	7/RP25526	2021
22/RP163253	2021	52/RP862165	2021
22/RP36468	2021	6/RP25526	2021
1/RP24712	2021	60/RP30975	2021
1/RP40478	2021	61/RP30975	2021
7/AG1097	2021	1/AG572	2027



**Appendix B**

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## TIMING OF POTENTIAL IMPACTS

Lot / Plan	Year of Potential Undue Impact	Lot / Plan	Year of Potential Undue Impact
5/RP25495	2021	1/RP133840	2027
5/RP25526	2021	1/RP222852	2027
51/RP862165	2021	1/RP42155	2027
2/RP49551	2024	1/RP50494	2027
25/RP24709	2024	1/RP51252	2027
2517/A341144	2024	1/RP54018	2027
2529/A341144	2024	1/RP55546	2027
2634/A341324	2024	1/RP56901	2027
28/RP24709	2024	1/RP58565	2027
3/RP200083	2024	1/RP96836	2027
3033/A341590	2024	103/A342484	2027
3315/A341636	2024	104/A342484	2027
3570/A341795	2024	4/RP27422	2027
1/RP25494	2024	4/SP103832	2027
1/RP25511	2024	49/RP839773	2027
1/RP36455	2024	5/SP103832	2027
11/RP36467	2024	52/RP30975	2027
13/RP36467	2024	139/AG2231	2027
14/RP36467	2024	16/RP36468	2027
17/RP30978	2024	18/RP57095	2027
17/RP36468	2024	2/AP15802	2027
18/RP36468	2024	2/RP222852	2027
2/RP36455	2024	2/RP42873	2027
9/RP25526	2024	2/RP50494	2027
9/RP27422	2024	2/RP54018	2027
9/RP36467	2024	2/RP55546	2027
A/AP19437	2024	2/RP56901	2027
4/RP72272	2024	2/RP58565	2027
48/RP25514	2024	2/RP72272	2027
51/AG814	2024	2/SP103832	2027
55/RP30975	2024	24/RP24709	2027
58/RP30975	2024	3/RP51252	2027
105/A342484	2027	3/RP58565	2027
122/AG29	2027	3/RP72272	2027
126/A342309	2027	3/SP103832	2027
127/A342309	2027	4/RP24711	2027
128/A342309	2027	53/RP30975	2027
1/A341097	2027	54/RP30975	2027
56/RP30975	2027	24/RP36474	2029

**Appendix B**

Report Number 620.11279.0001

Page 3 of 3

## TIMING OF POTENTIAL IMPACTS

<b>Lot / Plan</b>	<b>Year of Potential Undue Impact</b>	<b>Lot / Plan</b>	<b>Year of Potential Undue Impact</b>
57/RP30975	2027	249/AG1839	2029
6/RP36467	2027	25/RP36473	2029
67/AG3198	2027	2533/A341147	2029
7/RP206526	2027	26/RP36473	2029
7/RP25503	2027	27/AG3437	2029
7/RP36467	2027	2/RP96836	2029
8/RP36467	2027	21/RP36473	2029
132/A342309	2029	22/RP24709	2029
140/AG1696	2029		
19/RP803012	2029		
2/AG572	2029		
2/RP100521	2029		
2/RP24727	2029		
2/RP36461	2029		
2/RP47936	2029		
2/RP59961	2029		
1/AP13196	2029		
1/RP156503	2029		
1/RP25505	2029		
1/RP36461	2029		
1/RP47936	2029		
1/RP58653	2029		
1/SP103832	2029		
130/A342309	2029		
131/A342309	2029		
3/RP48679	2029		
30/A3463	2029		
30/RP24710	2029		
4/AG3462	2029		
8/RP802874	2029		
84/A342309	2029		
85/A342309	2029		
99/AG96	2029		
28/RP36473	2029		
29/RP36473	2029		
3/AG3462	2029		
23/RP36474	2029		
24/RP36473	2029		

**Appendix C**

Report Number 620.11279.0001

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## SURVEY GROUPING

Property BAP ID	Contained Parcels	Survey Group/Round
Landholder 1	2/RP174029	1
	11/RP36467	
	13/RP36467	
	18/RP36468	
	17/RP36468	
	14/RP36467	
	3451/A341747	
	3447/A341747	
	3446/A341747	
Landholder 2	23/RP36468	1
	22/RP36468	
	21/RP36468	
	20/RP36468	
	19/RP36468	
	4102/A342155	
	4088/A342139	
	3444/A341748	
	3306/A341635	
Landholder 3	7/RP25503	1
	1/RP133840	
	2/RP156503	
	1/RP174029	
Landholder 4 (1)	2/SP211647	1
Landholder 5	1/RP25518	1
Landholder 6	15/RP25520	1
Landholder 7(1)	13/RP25520	1
Landholder 8	3398/A341700	1
	24/RP30978	
	18/RP30978	
	19/RP30978	
Landholder 9	2/RP157121	1
	25/RP30978	
	2/RP55256	
	1/RP55256	
Landholder 10	51/RP862165	2
	52/RP862165	
Landholder 11	23/D361484	2
Landholder 12	21/RP30978	2
	22/RP163253	

**Appendix C**

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## SURVEY GROUPING

Property BAP ID	Contained Parcels	Survey Group/Round
Landholder 13	1/RP24715	2
	4/RP24711	
Landholder 14	2/RP24711	2
	1/RP24711	
Landholder 15	116/AG3153	2
	30/A3463	
	132/A342309	
	131/A342309	
Landholder 16	128/A342309	2
	2/RP54018	
	1/RP54018	
	1/RP24708	
	25/RP36468	
Landholder 17 (1)	3/RP25510	2
	2/RP25512	
Landholder 18	3702/A341859	2
	3/RP72272	
	52/RP30975	
	53/RP30975	
	54/RP30975	
Landholder 19	58/RP30975	2
	55/RP30975	
	61/RP30975	
	60/RP30975	
	1/AG972	
	2/RP30976	
	1/RP25505	
	1/RP96836	
	1/A341097	
	1/RP42155	
	1/RP25511	
	2/RP49551	
Landholder 20	9/RP25526	2
	4/RP25529	
	1/RP25510	
	1/RP25506	
	13/RP25507	
	12/RP25507	
	2/RP25511	

**Appendix C**

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**SURVEY GROUPING**

<b>Property BAP ID</b>	<b>Contained Parcels</b>	<b>Survey Group/Round</b>
Landholder 20	2/RP25510	2
	5/RP25526	
	6/RP25526	
	7/RP25526	
	8/RP25526	
	2/RP25506	
	3/RP25520	
	11/RP25526	
	10/RP225668	
	2/RP234028	
Landholder 21	14/RP25520	2
Landholder 22	1/RP222852	2
	67/AG3198	
	2529/A341144	
	3033/A341590	
	9/RP36467	
	3570/A341795	
	3315/A341636	
	10/RP36467	
	2517/A341144	
	51/AG814	
	2634/A341324	
	2/RP36455	
	1/RP36455	
2/RP40478		
1/RP40478		
Landholder 23	1/RP157121	2
Landholder 24	5/RP25495	2
	4/RP25495	
	3/RP25495	
	2/RP25495	
Landholder 25	3/AG1694	2
	2/AG1694	
	1/RP24712	
	2/RP24715	
Landholder 26	1/RP25494	3
Landholder 27	24/RP24709	3
	25/RP24709	
Landholder 4 (2)	48/RP25514	3

**SURVEY GROUPING**

<b>Property BAP ID</b>	<b>Contained Parcels</b>	<b>Survey Group/Round</b>
Landholder 28	28/RP24709	3
	1/RP58565	
Landholder 29	2/RP58565	3
	3/RP58565	
Landholder 30	9/RP27422	3
Landholder 31	7/RP206526	3
	17/RP30978	
Landholder 32	4/RP72272	3
Landholder 33	6/RP36467	4
Landholder 34	4/RP27422	4
	2/AG572	
Landholder 35	2/RP96836	4
	1/AG572	
	24/RP36473	
	24/RP36474	
Landholder 36	23/RP36474	4
	1/RP55546	
	2/RP55546	
Landholder 37	103/A342484	4
	126/A342309	
Landholder 38	127/A342309	4
	16/RP36468	
Landholder 39	1/RP50494	4
Landholder 40	2/RP222852	4
Landholder 41	5/SP103832	4
Landholder 42	8/RP36467	4
	104/A342484	
Landholder 43	7/RP36467	4
Landholder 44	1/RP51252	4
	19/RP803012	
Landholder 45	18/RP57095	4
	2/RP50494	
Landholder 46	4/SP103832	4
	3/RP51252	
Landholder 17 (2)	1/RP56901	4
	2/RP56901	
	2/RP42873	
Landholder 7 (2)	122/AG29	4
Landholder 47	2/SP103832	4

**Appendix C**

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**SURVEY GROUPING**

<b>Property BAP ID</b>	<b>Contained Parcels</b>	<b>Survey Group/Round</b>
Landholder 48	3/SP103832	4
Landholder 49	57/RP30975	4
Landholder 50	105/A342484	4
	2/RP24727	
Landholder 51	140/AG1696	4
	139/AG2231	
Landholder 52	2/RP72272	4
Landholder 53	56/RP30975	4
	1/RP36461	
Landholder 54	2/RP36461	5
Landholder 55	2/RP59961	5
	85/A342309	
Landholder 56	84/A342309	5
	29/RP36473	
	28/RP36473	
Landholder 57	26/RP36473	5
	25/RP36473	
	27/AG3437	
Landholder 58	2533/A341147	5
Landholder 59	130/A342309	5
Landholder 60	22/RP24709	5
Landholder 61	30/RP24710	5
Landholder 62	249/AG1839	5
Landholder 63	2/RP47936	5
Landholder 17 (3)	3/RP48679	5
Landholder 64	1/RP156503	5
Landholder 65	1/SP103832	5
Landholder 66	1/RP47936	5
	3/AG3462	
Landholder 67	2/RP100521	5
	21/RP36473	
	1/RP58653	
Landholder 68	99/AG96	5
	4/AG3462	
Landholder 69	8/RP802874	5

**Appendix D**

Report Number 620.11279.0001

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**BASELINE ASSESSMENT FIELD FORM**



<b>PART A: DOCUMENT IDENTIFICATION AND BORE SITE INFORMATION</b>	
NHG bore Id:	DNRM bore registration number:
DNRM registration number comments:	
Local bore name:	
Property name:	
Lot:	Plan:
Date of site assessment:	
Geographic location (AGD84)	Easting: <span style="margin-left: 100px;">Northing:</span>
	Location method: <input type="checkbox"/> GPS <input type="checkbox"/> GPS – Differential <input type="checkbox"/> Surveyed
Status of works: <input type="checkbox"/> Existing <input type="checkbox"/> Abandoned but still useable <input type="checkbox"/> Abandoned and not useable	
Additional comments:	
<b>PART B: BORE CONSTRUCTION DETAILS</b>	
Are construction details available from the bore owner? <input type="checkbox"/> Yes <input type="checkbox"/> No	
<p>If Yes then verify details (where possible) and supply in the format provided in the Data File Details document. If available, a copy of original log should also be provided.</p> <p>If No then complete this section based on the site inspection and reported information from the bore owner representative (if the information is not available then please leave blank)</p>	
Driller name:	Drilling company name:
Date the bore was drilled:	Total Depth of water bore (m):
Water entry (e.g. perforations, slots, open hole, screens):	
Casing material and outside diameter:	
Geological formation from which water is accessed:	
Additional comments:	

PART C: BORE EQUIPMENT AND CONDITION DETAILS									
Is the bore equipped with a pump? <input type="checkbox"/> Yes <input type="checkbox"/> No <small>If Yes then attach photo of surface mounted pumping equipment and well head and complete this section. If No go to Part D</small>									
Pump type: <small>(e.g. electro-submersible, mono, plunger, etc)</small>	Pump make and model:								
Power source: <input type="checkbox"/> Electric motor <input type="checkbox"/> Generator <input type="checkbox"/> Direct drive engine <input type="checkbox"/> Tractor <input type="checkbox"/> Windmill <input type="checkbox"/> Mains supply									
Pump setting depth (depth from ground in metres):									
Pumping rate at the time of visit (L/s) (If possible, run the pump and measure the pumping rate):									
Is the bore equipped with a meter?	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;"><input type="checkbox"/> Yes (Provide description)</td> <td style="padding: 5px;">Description:</td> </tr> <tr> <td style="padding: 5px;"><input type="checkbox"/> No</td> <td></td> </tr> </table>	<input type="checkbox"/> Yes (Provide description)	Description:	<input type="checkbox"/> No					
<input type="checkbox"/> Yes (Provide description)	Description:								
<input type="checkbox"/> No									
Headworks description (Provide details on the size and type of riser pipe e.g. material, diameter, joint type; details of any connection to a reticulation system e.g. pipe sizes, distances, schematic diagram; headworks size; valves; flow meter) :									
Repairs/maintenance history (Provide any commentary on repairs/maintenance undertaken on the bore e.g. nature and date of work, who has undertaken the maintenance) :									
PART D: BORE WATER SUPPLY INFORMATION									
Purpose of bore <small>(Select one or more)</small>	<input type="checkbox"/> Stock <input type="checkbox"/> Domestic <input type="checkbox"/> Intensive livestock <input type="checkbox"/> Irrigation  <input type="checkbox"/> Other (Provide description) Description:								
Is the bore water use formally licensed? <small>(Note, stock and domestic use is typically unlicensed)</small>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px; vertical-align: top;"> <input type="checkbox"/> Yes  <small>(Provide license information; license number, allocation, etc)</small> </td> <td style="padding: 5px;">           License Number:         </td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;">           Allocation:         </td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;">           Other Details:         </td> </tr> <tr> <td style="padding: 5px;"><input type="checkbox"/> No</td> <td></td> </tr> </table>	<input type="checkbox"/> Yes <small>(Provide license information; license number, allocation, etc)</small>	License Number:		Allocation:		Other Details:	<input type="checkbox"/> No	
<input type="checkbox"/> Yes <small>(Provide license information; license number, allocation, etc)</small>	License Number:								
	Allocation:								
	Other Details:								
<input type="checkbox"/> No									

Is the water use from this bore metered?	<input type="checkbox"/> Yes (Specify average take of water from the bore in last five years and attach records if available )	Average volume used yearly (ML/year):
	<input type="checkbox"/> No (Provide bore owner's estimated yearly take of water from the bore and basis for this estimate e.g. no of hours the bore is pumped, storage of ring tank, no of properties supplied, area irrigated, using standard usage rates supplied in Appendix 1 of the DEHP Baseline Assessment Guideline)	Estimated volume used yearly (ML/Year):
		Estimated volume method description:

Bore Utilisation	How often is the bore utilised (estimated hours pumped/day):
	Description (provide information on operational capacity, seasonal variations, peak usage):

**PART E: WATER LEVEL MEASUREMENT**

Was a water level or pressure measurement taken?	<input type="checkbox"/> Yes	Water level (Provide details)	Water level (depth from measurement point in metres):
			Method of measuring water level: (e.g. conduit, direct access)
			Datum point description (Attach photo and describe measurement point e.g. top of bore casing):
		Height of datum above ground level (metres) :	
	<input type="checkbox"/> No (Provide reason)	Reason not measured:	

Antecedent and/or current conditions relevant to the water level or pressure measurement:

Are historical water level and/or pressure records available for this bore?  Yes  No  
 (Provide copies of records if available)

Anecdotal water level information:

<b>PART F: WATER QUALITY</b> (Please note that any measurement of water quality should only be undertaken after measuring the standing water level. Water quality parameters required to be sampled are detailed in the baseline assessment plan.)				
<b>LABORATORY WATER QUALITY</b>				
Were water quality samples taken for submission to a laboratory?	<input type="checkbox"/> Yes	<input type="checkbox"/> No (Provide reason) Reason not sampled:		
Are historical water quality laboratory records available for this bore? <input type="checkbox"/> Yes <input type="checkbox"/> No				
<b>FIELD WATER QUALITY</b>				
Were water quality field measurements taken?	<input type="checkbox"/> Yes (Provide results)	<b>Field measurements</b>		
		pH:	Temperature (°C):	Electrical conductivity (µS/cm):
		Total Alkalinity as CaCO <sub>3</sub> (mg/L):		
		<b>Field gas measurements (multi-parameter gas detector)</b>		
	CO <sub>2</sub> (ppm <sub>v</sub> ):	H <sub>2</sub> S (ppm <sub>v</sub> ):	CH <sub>4</sub> (%LEL):	
<input type="checkbox"/> No (Provide reason)	Reason not measured:			
Are historical water quality field records available for this bore?    Yes    No				
<b>WATER QUALITY SAMPLING METHODOLOGY</b>				
Was the sampling point and field measurement point at the bore head?	<input type="checkbox"/> Yes			
	<input type="checkbox"/> No (Attach photo and provide measurement point description including GPS location)	Sampling/Measurement point description:		
Was bore purged according to guidelines?	<input type="checkbox"/> Yes			
	<input type="checkbox"/> No (Provide purging method description)	Purge method description:		
Were samples taken using existing pump on bore?	<input type="checkbox"/> Yes			
	<input type="checkbox"/> No (Attach photo and provide sampling setup description)	Sampling setup description:		

<b>PART G: ASSESSMENT FIELD OFFICER DETAILS</b>	
<small>(Provide the contact details of the assessment officer responsible for conducting the baseline assessment)</small>	
Surname:	Given names:
Company:	Role:
Phone:	Alternative phone:
Fax:	Email:
Signature:	Date:
<b>PART H: CERTIFICATION</b>	
<small>(Provide the contact details of the supervisor of the assessment officer responsible for conducting the baseline assessment)</small>	
Surname:	Given names:
Company:	Role:
Phone:	Alternative phone:
Fax:	Email:
Signature:	Date:
<b>PART I: BORE OWNER REPRESENTATIVE</b>	
<small>(Provide the contact details of the person responsible for providing information to the assessment officer responsible for conducting the baseline assessment)</small>	
Surname:	Given names:
Phone:	Alternative phone:
Fax:	
Email:	
Relationship to Bore Owner:	
Other Information:	
Has a copy of the information collected for the baseline assessment been retained by the bore owner representative? <input type="checkbox"/> Yes <input type="checkbox"/> No	

ATTACHMENTS		
(Provide a list of the photos and documentation (i.e. digital images and scanned documents) obtained as part of the baseline assessment <u>applicable only to this bore</u> in accordance with the naming conventions outlined in the baseline assessment plan)		
Documentation Type	Description	
Photos (JPEG)	<input type="checkbox"/> Pump photo (Part C)	
	<input type="checkbox"/> Water level meas. point photo (Part E)	
	<input type="checkbox"/> Water quality meas. point photo (Part F)	
	<input type="checkbox"/> Water quality sample setup photo (Part F)	
	<input type="checkbox"/> Other photo	
Documents (PDF)	<input type="checkbox"/> Driller's log (Part B)	
	<input type="checkbox"/> Water use log (Part D)	
	<input type="checkbox"/> Water license (Part D)	
	<input type="checkbox"/> Water level historical results (Part E)	
	<input type="checkbox"/> Water quality sample lab results from this baseline assessment (Part F)	
	<input type="checkbox"/> Water quality historical lab results (Part F)	
	<input type="checkbox"/> Water quality historical field results (Part F)	
<input type="checkbox"/> Other document		