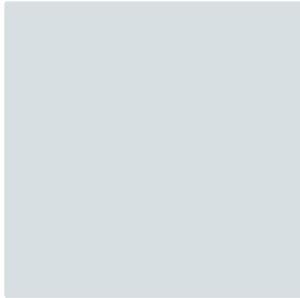
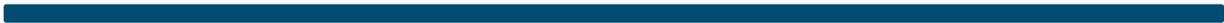




Kestrel SHMS - Report



**RIDA Amendment Supplementary
Information: ML70481**



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Abbreviations

AARC	AARC Environmental Solutions Pty Ltd
DSDILGP	Department of State Development, Infrastructure, Local Government and Planning
GDP	Ground Disturbance Permit
Kestrel Mine	Kestrel Coal Mine
Mitsui	Mitsui Coal Pty Ltd
ML	Mining Lease
PED	Personal Emergency Device
RIDA	Regional Interests Development Approval
RPI Act	Regional Planning Interests Act 2014
RPI Regulation	Regional Planning Interests Regulation 2014
SCA	Strategic Cropping Area
SCL	Strategic Cropping Land

1 Introduction

Kestrel Coal Resources operates on mining lease ML70481 under existing regional interests development approval (RIDA) RPI16/002 which relates to strategic cropping land (SCL) within the strategic cropping area (SCA). The SCA is an area of regional interest identified under the *Regional Planning Interests Act 2014* (RPI Act) and consists of areas shown on the Strategic Cropping Land Trigger Map as SCL.

Through ongoing resource optimisation planning, an additional longwall panel, longwall panel 500 (LW500), was identified as necessary to support ongoing operations. However, the additional disturbance footprint associated with LW500 is not specified in the existing RIDA.

RIDA application RPI22/008 was made under section 29 of the RPI Act for LW500. The Department of State Development, Infrastructure, Local Government and Planning (DSDILGP) has instead proposed an amendment application be made under section 55 of the RPI Act. This supplementary information report has been prepared in response to a request by the DSDILGP to provide supporting information for the amendment application.

The purpose of this supplementary information is to demonstrate that the proposed amendment will not adversely change the impact of the resource activity on the SCL located within ML70481. This document should be read alongside the information already provided with RIDA application RPI22/008.

1.1 The applicant

The applicant for the Project is:

Kestrel Coal Resources Pty Ltd
Level 22, 10 Eagle Street, Brisbane City, QLD 4000
ACN 079044689

The mine is held as a joint venture of Kestrel Coal Resources (80%) and Mitsui Coal Pty Ltd (20%), with Kestrel Coal Resources as the operations entity.

1.2 Project description

The Kestrel Coal Mine (Kestrel Mine) is located in the Bowen Basin, approximately 40 km northeast of Emerald in central Queensland, Australia. The mine is an underground operation producing predominantly high quality coking coal for export using longwall mining methods. Coal is mined from the German Creek coal seam. The mine commenced production in 1992 and, apart from a closure period from October 1997 to February 1999, has remained operational.

Currently, within the 400-series panels, coal extraction and production occurs at depths of 300–450 m, with production rates of 8–10 Mt run of mine coal per year. The current approved life of mine includes mining of a further series of longwall panels, referred to as the 500-series, which extends into ML70481 at depths of between 360 m and 470 m. Typical mining seam thickness ranges between 2.5–3.1 m with the longwall minimum extraction height being 2.6 m.

Mining operations up to and including the 400-series longwall panels have occurred on ML1978, ML70301, ML70302, and ML70330, none of which have been subject to RPI Act approval requirements.

In 2016, ML70481 was granted to enable operation of the 500-series longwall panels. An SCL protection decision (SCLRD2012/000090) was issued for ML70481; one of the first issued under the new SCL regulatory environment. In March 2016, the SCL protection decision was transitioned to a RIDA under section 53 of the RPI Act, referred to as RPI16/002/Rio Tinto - Kestrel Extension #4 Coal Project (RPI16/002).

2 Proposed mine plan layout changes

The original RIDA included an Attachment 1 (referenced as Protection Decision Plan SCLRD 2012/000090), included here as Figure 1, which outlines a mine panel layout that was current at the time the original RIDA was approved. This panel layout is understood to have panels labelled from LW501 in the east to LW510 in the west.

To optimise coal resource recovery, a number of minor modifications have been made to the 500-series longwall panel layout including some minor panel lengthening and the addition of a short panel named LW500, located immediately to the east and adjacent to LW501. The new panel layout is shown in Figure 2. Longwall mining of panel LW500 is due to commence in late November 2023 and is expected to be completed by mid-2024.

Given the area of impact authorised under the current RIDA (being 949.0 ha), a number of modifications to the 500-series panel layout have been proposed at DSDILGP's request to ensure impacts will remain below the authorised impact area of 949.0 ha.

This modification is shown in Figure 3 and identifies the additional LW500 panel, length modifications across various other panels, and the complete exclusion of panel LW510.

The proposed modifications results in approximately 948 ha of potential disturbance.

The specific changes in trigger-mapped SCL are summarised in Table 1 and shown in Figure 4. It should be noted that SCL variances have resulted from a change to the SCL trigger map that have occurred since Attachment 1 was originally drafted. These areas have also been identified in Table 1.

Table 1: *Trigger-mapped SCL variances due to panel layout modifications*

SCL variances and cause	Area (ha)
Unchanged	782
Increased due to panel layout modification (principally the addition of LW500 and extensions to LW503 to LW509)	166
Total SCL disturbance footprint	948
Area reduced due to panel layout modification (principally LW510)	119
Area reduced due to changed SCL trigger-mapping	48
Total reduced area of SCL disturbance	167

2.1 Resource activities associated with LW500

Resource activities associated with the additional LW500 panel and the extended panel lengths do not adversely change the impact of those approved under the existing RIDA. In summary, the modified 500-series panel resource activities have the potential to cause the following land disturbances:

- surface subsidence resulting from underground longwall panel progression; and,
- disturbance associated with supporting surface infrastructure development and operation, including:
 - exploration and pre-production drilling;
 - pre- and post-production gas drainage and dewatering infrastructure, consisting of vertical production wells and flaring infrastructure, and goaf, and lateral and EoH etc.; and
 - PED surface lines installed along the line of the longwall panel.

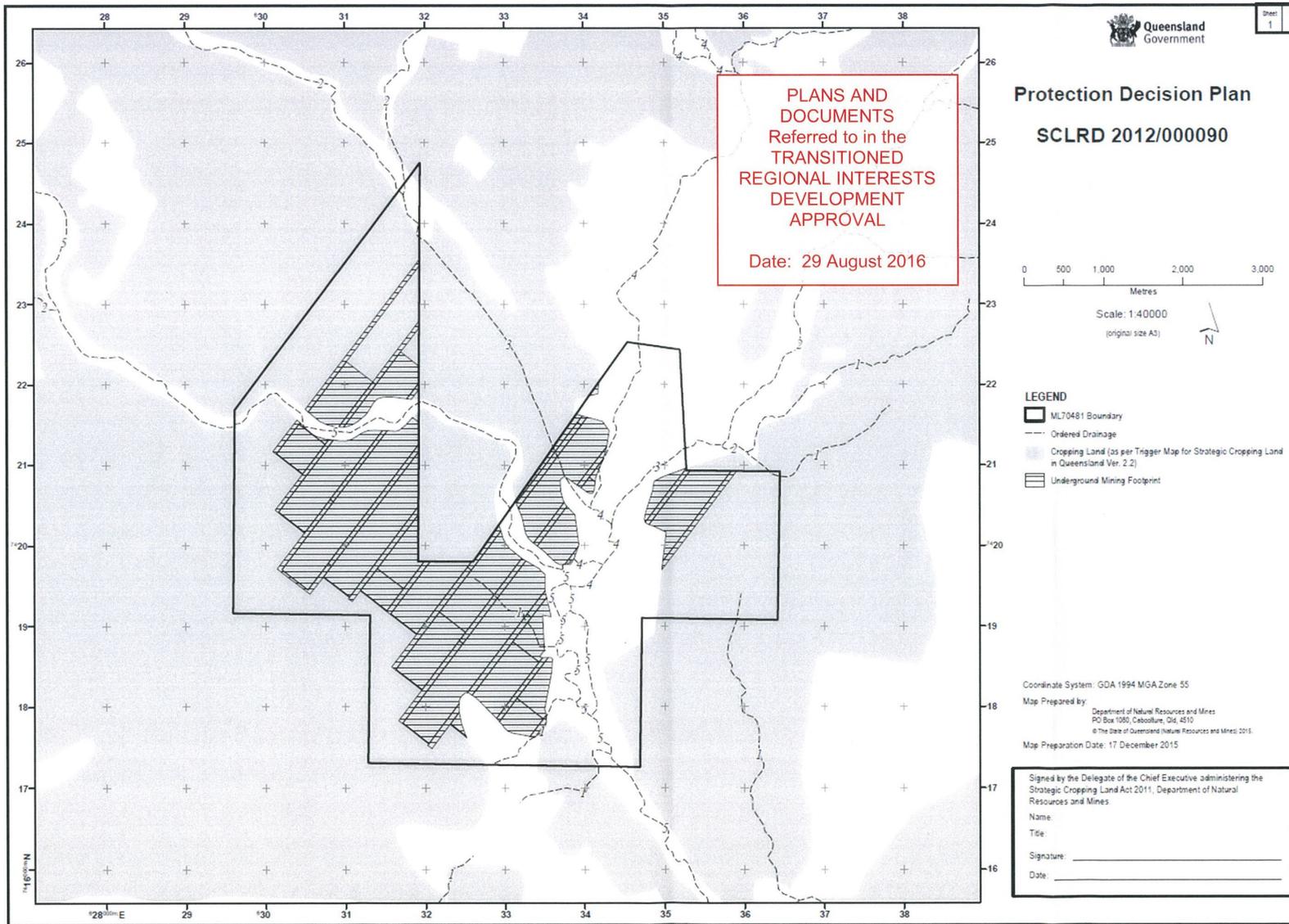


Figure 1: Attachment 1 (RPI 16/002 Rio Tinto – Kestrel)

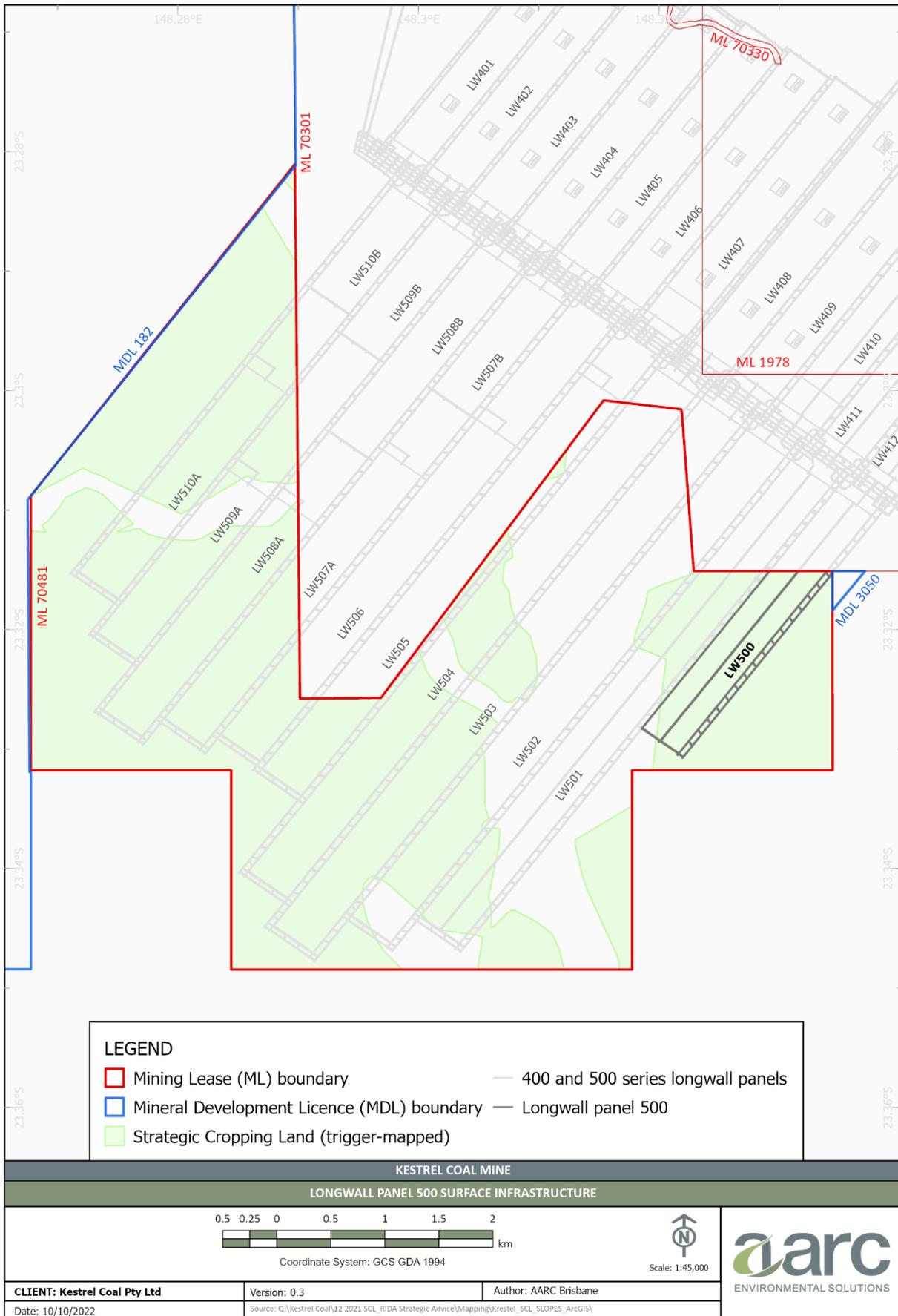


Figure 2: 500 series mine plan showing additional panel LW500

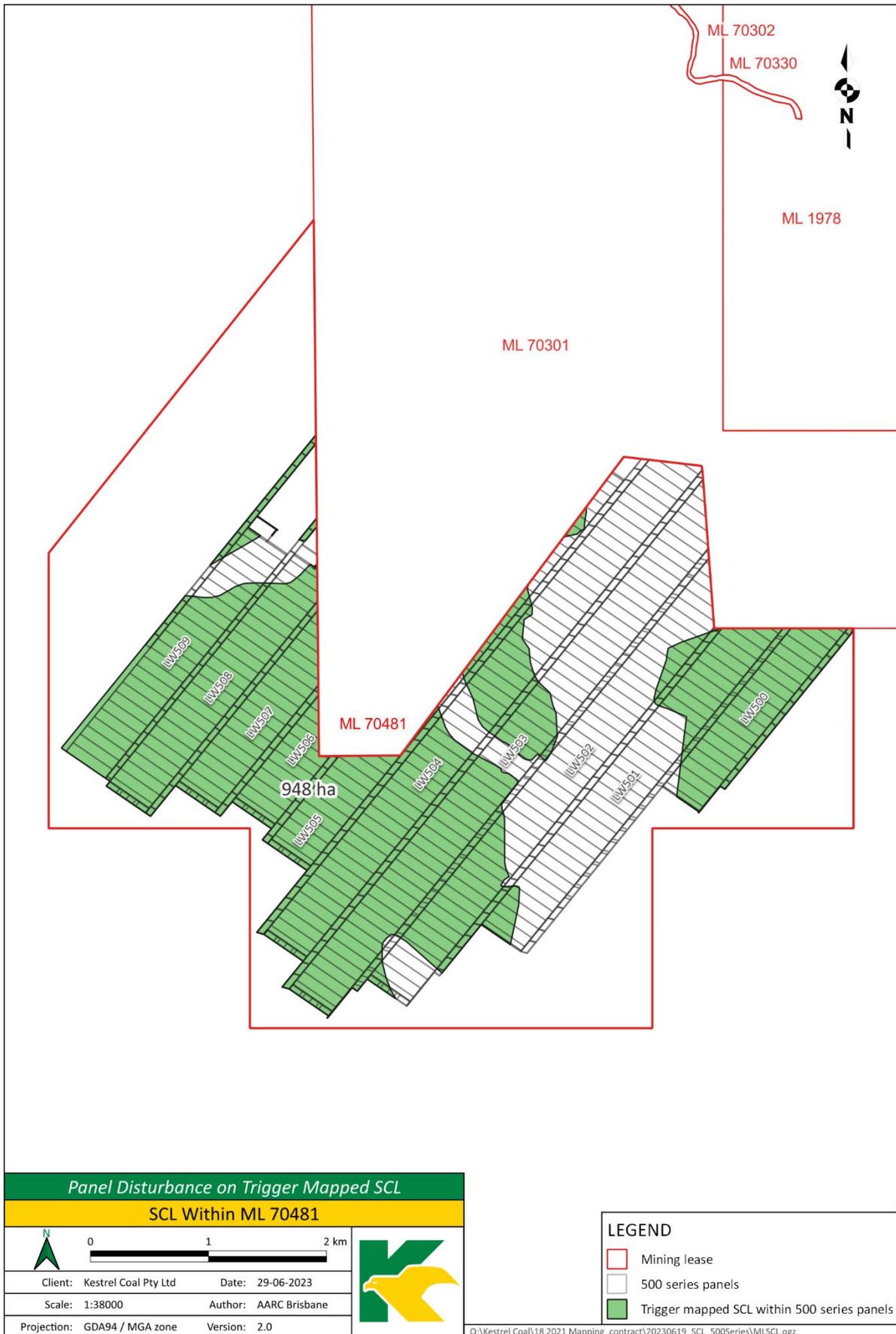


Figure 3: Modified 500 series mine plan omitting panel LW510

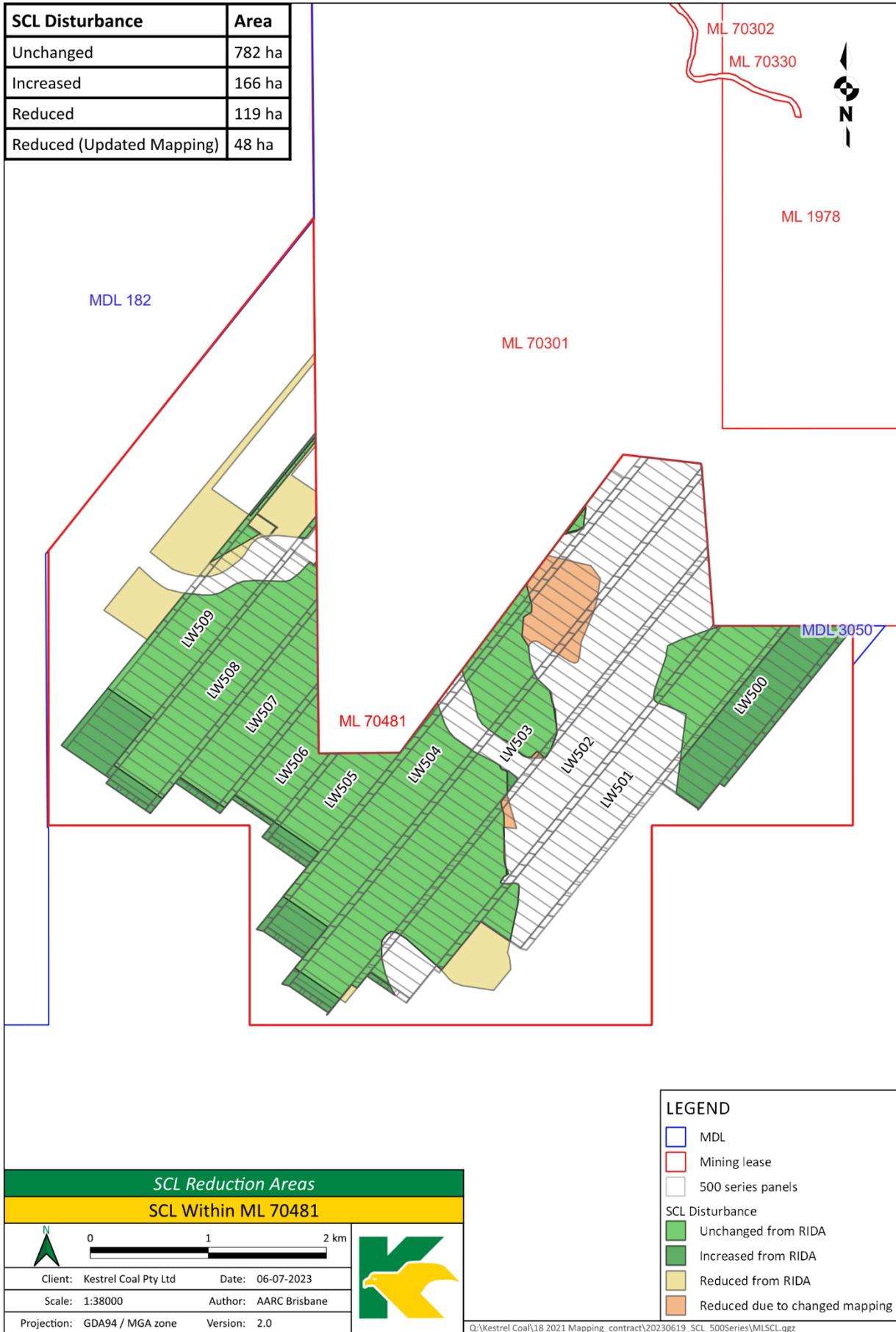


Figure 4: SCL variances arising from the amendment

3 Potential impacts to SCA

3.1 SCL area additions to the RIDA

3.1.1 Longwall panel subsidence

The principal land disturbance associated with underground mining activities at Kestrel Mine is subsidence arising as the longwall progressively extracts the coal seam at depth.

Subsidence predictions for the 500 series, including the LW500 panel, have been undertaken by Mine Subsidence Engineering Consultants (MSEC 2022) using the Incremental Profile Method developed by Waddington and Kay (1995); being an empirical method used to predict subsidence, tilts, curvatures and strains likely to be experienced as longwall mining occurs. The Incremental Profile Method is calibrated at each prediction revision by comparing predicted and observed movements during the mining of prior longwall panels. For the most recent predictions undertaken in 2022, monitoring data from longwall panels 401 to 409 has been used for calibration.

It should be noted that a subsidence prediction has not been able to be undertaken for the modified panels being proposed in this amendment. The LW500 subsidence is included in the prediction data provided however, the extensions to panels LW503 to LW509 have not been modelled. Subsidence impacts associated with LW510 continue to be shown even though this panel is now proposed to be excluded from the RIDA. The omission of the LW503 to LW509 panel extension areas does not change the disturbance but simply displaces the subsidence disturbance to the west. Areas not currently included within subsidence prediction modelling and that might have an impact beyond that covered by the RIDA are discussed in the following sections.

Longwall mining has been carried out at the Kestrel Mine since 1991. As a result, the subsidence impacts of longwall mining at site are thoroughly understood. The results of subsidence at Kestrel Mine are subtle and not easily distinguishable from the surrounding topography, as the range of movement associated with subsidence is within the range of natural elevation variation. Thus, the topography of subsided areas is considered to be consistent with the surrounding un-subsided topography (i.e. gently rolling country with low relief).

Potential land impacts associated with subsidence-induced changes in elevation and slope may include changed erosion rates, changes to soil physical and/or chemical characteristics, localised surface tensile cracking, and changed drainage systems, sometimes including localised ponding. These potential impacts are discussed in the subsections following, with conclusions drawn on the extensive experience associated with subsidence impacts on all Kestrel mining leases. The impacts associated with longwall panel subsidence within the ML70481 area are not expected to have a significant impact on the overlying area of SCA, and will be subject to management and restoration measures.

3.1.1.1 Terrain: slope gradient and complexity

An assessment of Figure 5 clearly indicates that slope changes associated with the additional LW500 panel area are minor and less than those associated with the currently approved LW510 panel area. An assessment by AARC Environmental Solutions Pty Ltd (2022) comparing actual pre-mining slopes and predicted post-mining slope indicates that post-mining, the area of LW500 will not exceed the 3% Western Cropping Zone slope criteria as a direct consequence of subsidence.

Noting that definitive subsidence prediction information is not available for the LW503–LW509 panel extension areas, the slope impacts associated with the panel extensions are not expected to differ significantly from those associated with the panels shown on the original RIDA. Panels LW507 and LW508 however, will now commence within slightly steeper pre-mining slopes falling to the north. There is some potential for these southern panel ends to exceed the 3% criteria associated with the Western Cropping Zone, however these areas are expected to not exceed one (1) ha in size.

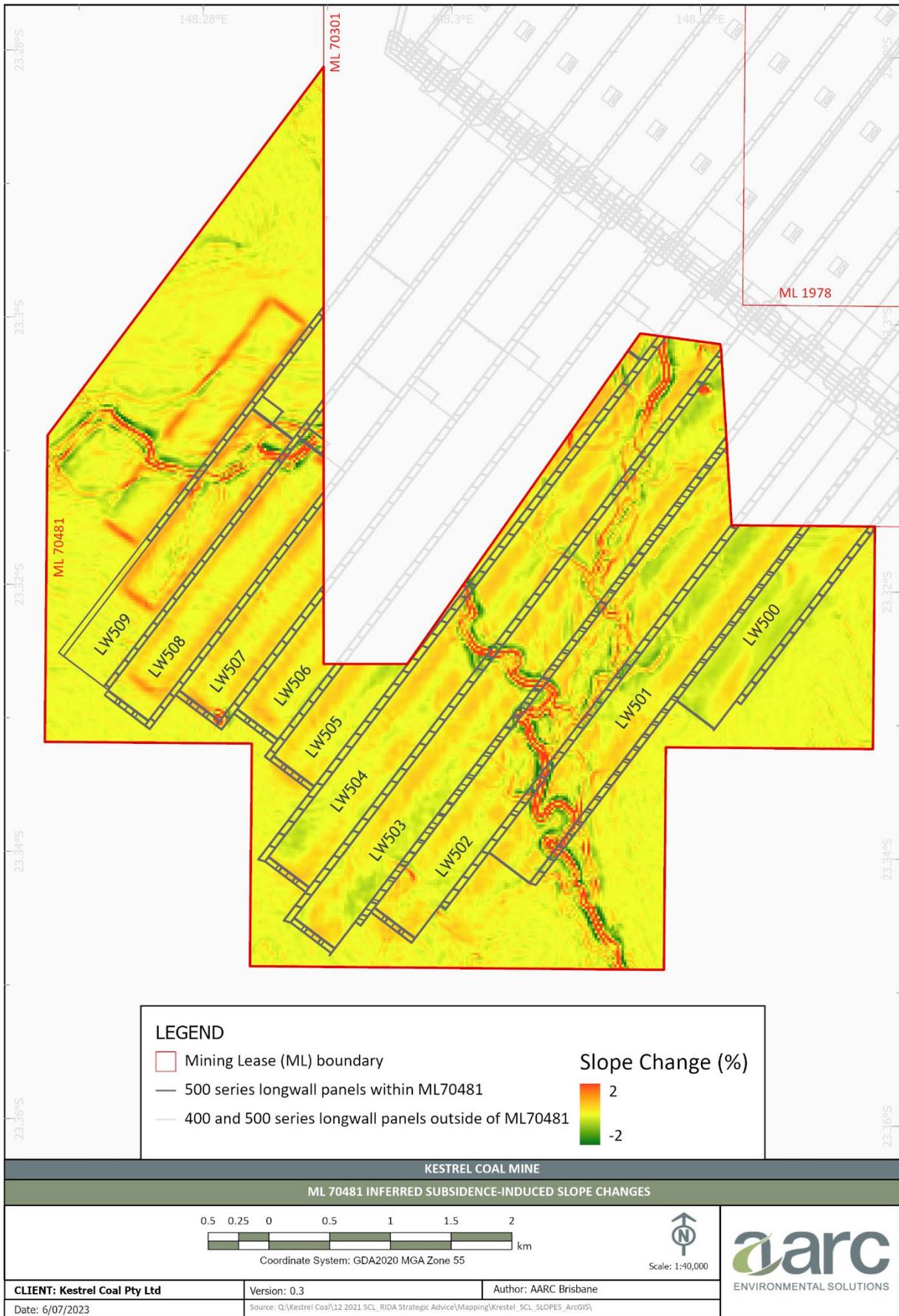


Figure 5: ML70481 predicted subsidence-induced slope gradient and complexity

3.1.1.2 Surface water and hydrology: ponding

Kestrel Mine is located in the upper to mid-reaches of the Crinum Creek catchment and is drained by a number of small ephemeral gullies and tributaries of Crinum, Belcong and Homestead Creeks. It should be noted that watercourses and riparian zones are not mapped as SCL.

Predictions of subsidence changes on the existing topography provide an indication of areas where ponding may occur which are indicated by Figure 6. This clearly indicates that no ponding is predicted to occur in response to resource activities associated with LW500, or the panel extensions proposed for LW503–LW509.

3.1.1.3 Surface condition and microrelief: cracking, gilgai

Surface tension cracks may occur as a result of longwall panel subsidence. Tension cracks are more likely to occur along the line of the inter-panel pillars and at the ends of each longwall panel. For previous, shallower Kestrel Mine panel series, a very limited number of minor tension cracks were observed over the 300 series longwall panels in areas with Vertosols. These areas were monitored and observed to self-heal over two to three wet seasons.

ML70481 soils are dominated by Vertosols, as all but the Lascelles Soil Landscape are mapped as cracking clay soils by Highlands Environmental (2022)(refer to Figure 7). These Vertosols are characterised as expansive clay-rich soils with a high shrink-swell potential that change volume with changes in soil water content. The nature of these expansive cracking clays is such that, within one to two wet seasons, natural soil movement will compensate for any subsidence-induced cracking, resulting in no measurable impact on the soil.

In summary, over 90% by area of the soils contained within ML70481 are Vertosols having a low risk of long-term impact from subsidence-induced surface cracking.

3.1.1.4 Land use and land suitability

The proposed RIDA amendment will result in land suitability Class 2 land (LW510 area) being omitted from the RIDA in favour of land suitability Class 3 land (LW500 area). Less of the higher value Adelong soil landscape (Figure 7) on the floodplains will be included within the RIDA.

The majority of Kestrel mining area land (outside of infrastructure areas) operates as an independent, productive pastoral beef property. Kestrel Coal manages grazing practices through commercial agreements with the lessee, including requirements for responsible land management.

Land use history, current regional land use data, and prior site disturbance history has been provided in the recent 'Agricultural land evaluation on Mining Lease 70481, Gordon Downs, central Queensland' report (Highlands Environmental 2022). An assessment of historical aerial photography indicates what appears to be forage cropping of parts of ML70481 in 1994 and again in 2004, mostly to the eastern part of the ML and coincident with part of the LW500 panel footprint area.

Were commercial cropping to be proposed on any part of ML70481, this is likely to require a site-specific application for an environmental authority for undertaking environmentally relevant activity ERA13A (commercial cropping and horticulture in the Great Barrier Reef catchment).

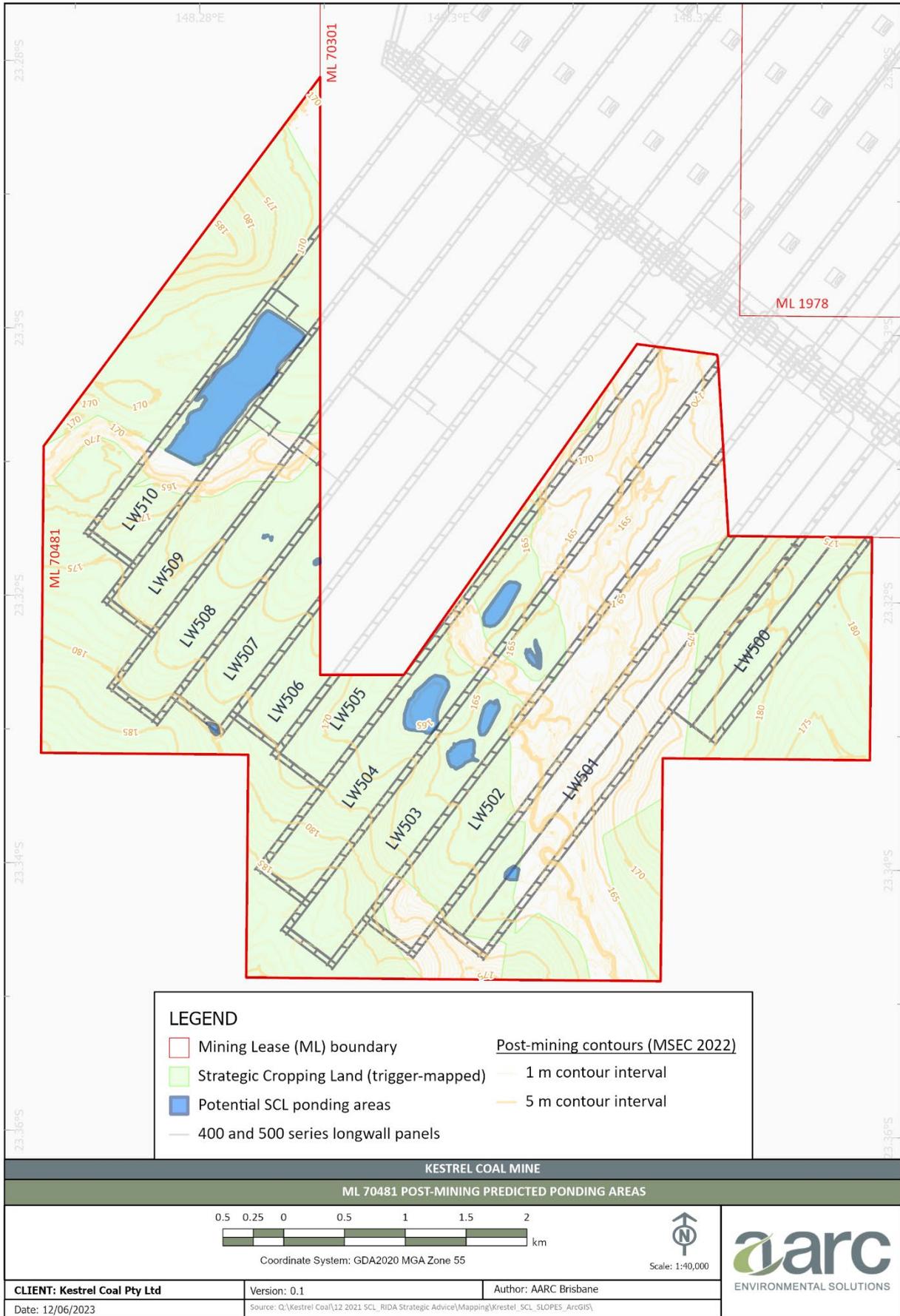


Figure 6: ML70481 predicted post-mining ponding areas

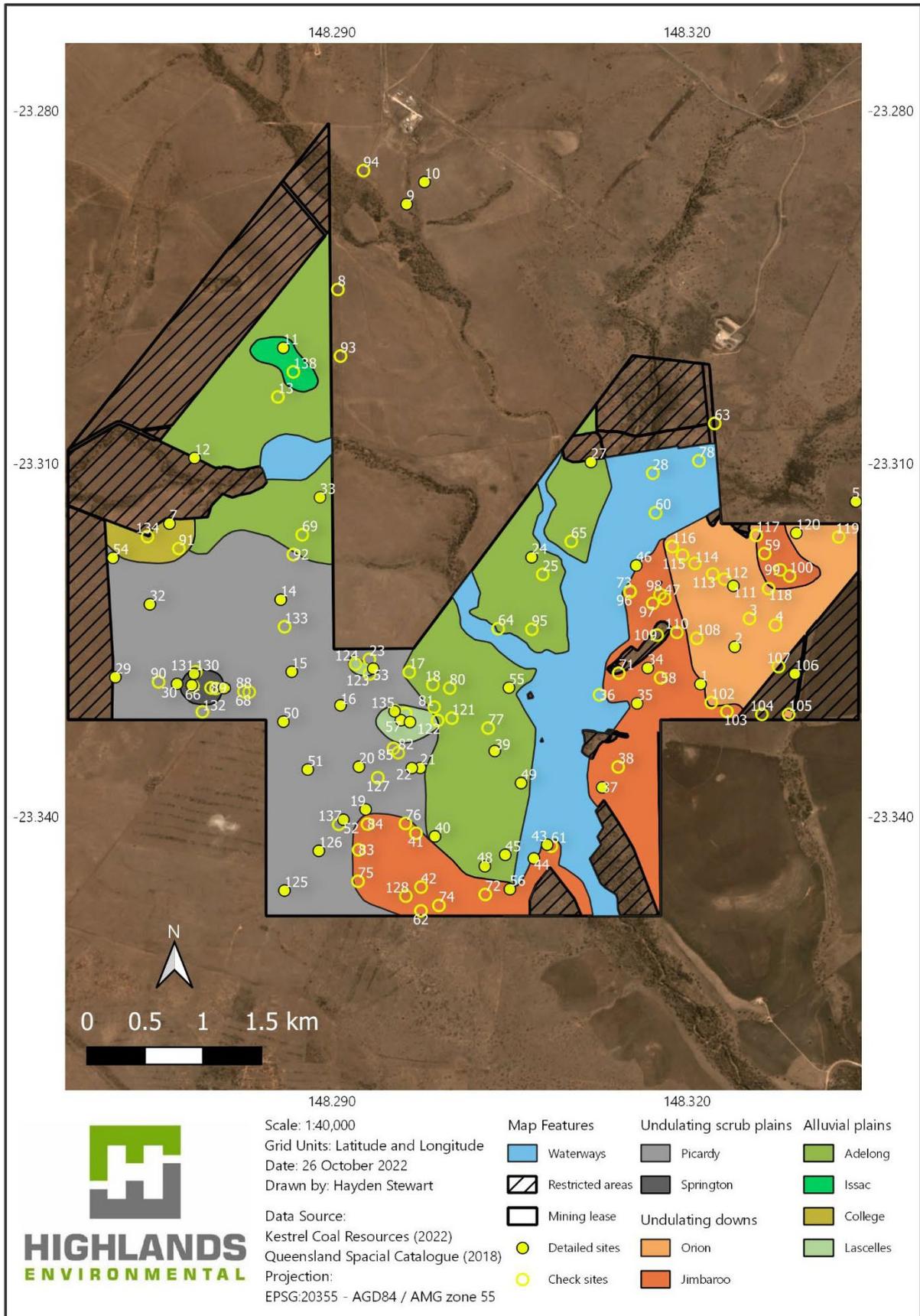


Figure 7: ML70481 soil landscape units

3.1.1.5 Soil conservation works

The only soil conservation works within ML70481 are those existing immediately to the east of LW500 and associated with Lot 11 SP178401. These works consist of a sequence of graded banks draining south to a drainage channel located just off ML70481. Subsidence associated with LW500 is not predicted to have any impact on the graded banks themselves and will not impact the drainage channel.

The resultant magnitude of predicted changes in slopes and slope complexity associated with the modified disturbance footprint does not disallow the construction of soil conservation works should a future change to a cropping land use necessitate the installation of soil conservation works.

3.1.2 Supporting surface infrastructure

Activities having the potential to cause temporary disturbance are outlined at section 2.1. Potential surface impacts associated with these activities are confined to clearing of vegetation and, in some cases, the stripping of topsoil with windrowing for re-use as part of restoration activities.

If not appropriately managed, vegetation and topsoil clearing has the potential to result in localised impacts to land; most commonly soil erosion or degradation of land suitability classification as a consequence of topsoil loss or compaction and a consequential loss of condition. For the area of the 500-series, disturbance is superficial and readily able to be restored.

With respect to the modified panel layout, there will be no difference in the types and impacts associated with surface disturbance between the added SCL areas (LW500 panel area and LW503 to LW509 panel extensions), than what would have occurred within the reduced SCL areas (LW510).

3.2 SCL area reductions to the RIDA

As indicated at Figure 4, the modified panel footprint results in 167 ha no longer falling within the disturbance footprint. To allay concerns with respect to the current condition of these areas Kestrel has completed an assessment (on 6 July 2023), and can confirm that no permanent impacts from resource activities or non-resource activities have occurred within those areas. Minor temporary surface disturbance has occurred within the excluded LW501 area constituting a track and drill pad (1.1 ha) as well as a 0.21 ha drill pad on the very edge of excluded panel LW510. As longwall mining has not commenced within ML70481, no subsidence disturbance has occurred.

4 Assessment of amendment application

This amendment application is lodged in accordance with section 55 of the RPI Act. In accordance with section 55(5) of the RPI Act, the chief executive is required to consider the matters mentioned in section 49 of the RPI Act to the extent the chief executive considers it is appropriate to do so.

This amendment application has been prepared at the request of the DSDILGP in a way that is intended to demonstrate to the chief executive's satisfaction that approving the application would result in a net reduction in the impacts on SCL that are already approved under the existing RIDA. It is submitted that the chief executive should be satisfied that the amendment is:

- a minor amendment for the purposes of section 55(1)(a); or
- an amendment for the purposes of section 55(1)(b) that would not adversely change the impact of the resource activity or regulated activity on the area of regional interest.

It should be noted that the management and restoration activities proposed within other related documents have the objective of restoring the considerable majority of the areas included within the amended RIDA to their pre-activity condition.

5 References

AARC 2022, *Kestrel Coal Mine - Assessment: Subsidence impacts to topography*, report prepared for Kestrel Coal Resources Pty Ltd by AARC Environmental Solutions Pty Ltd (AARC), Brisbane.

MSEC 2022, 500 series longwall layout adjustment, report prepared for Kestrel Coal Resources by Mine Subsidence Engineering Consultants (MSEC), Chatswood, NSW.

MWH 2002, *Kestrel Mine Soil Survey—Final Report*, report prepared for Pacific Coal Pty Ltd by MWH Pty Ltd, Brisbane.

MWH 2011, *Kestrel Mine Extension #4 (Part) Soil Survey*, report prepared for Rio Tinto Coal Australia Pty Ltd, MWH, Brisbane.

Waddington, A. A and Kay, D. R 1995, The Incremental Profile Method for the prediction of subsidence, tilt, curvature and strain over a series of panels, in: *Proc. of the Mine Subsidence Technological Society*, 3rd Triennial Conference on Buildings and Structures Subject to Ground Movement. Newcastle, Australia. February 1995.