SPRINGSURE CREEK

ABN 73 119 713 601

9 August 2013

Errol Sander
SCL Unit
Department of Natural Resources and Mines
PO Box 63,
Mackay Q 4740

Dear Errol

MLA 70486 – Application – SCL Protection Decision

Springsure Creek Coal Pty Ltd (**SCC**) is the applicant for mining lease application (**MLA**) 70486. SCC is a wholly owned subsidiary of Bandanna Energy Limited.

Attached is a strategic cropping land (**SCL**) protection decision application in relation to MLA 70486. MLA 70486 contains potential SCL and, accordingly, is seeking a SCL protection decision in relation to this tenure.

SCC recently abandoned part of the area of MLA 70486. This partial abandonment is not reflected in the Environmental Impact Statement (**EIS**) lodged with the Department of Environment and Heritage as the EIS was lodged prior to the partial abandonment. To ensure consistency with the EIS, the Development Impact Report, and in particular the maps included in that report, attached to the SCL protection decision do not reflect the partial abandonment.

To avoid any uncertainty, SCC confirms that it only seeks an SCL protection decision for the current area of MLA 70486 as reflected in the "Mining Lease Abandonment Application – ML 70486 "Springsure Creek" Metes & Bounds Description" attached to the SCL protection decision application and does not seek an SCL protection decision over the area of the partial abandonment.

SCC is eligible for exclusion of the permanent impact restriction under Chapter 9, Division 3 of the *Strategic Cropping Land Act 2011*. Attached to the application is material which supports that SCC will have no permanent impact and outlines how SCC proposes to avoid and minimise the impacts on SCL.

As previously discussed, SCC would be keen to understand the timing involved in processing this SCL protection decision application. Accordingly, following receipt and an initial review of the application by DNRM, SCC would be grateful for a discussion around the proposed timing involved in reaching a decision.

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F: 61 7 3041 4444

If you require any further information regarding this application please contact Pete Jones from Bandanna Energy Limited 07 3041 4434.

Yours faithfully

Michael Gray
Managing Director
Bandanna Energy Limited

Enc. Application for a SCL protection decision

SPRINGSURE CREEK
ABN 73 119 713 601

8 August 2013

Strategic Cropping Land Unit
Department of Natural Resources and Mines
PO Box 63
Mackay QLD 4740

To whom it may concern

Application for Strategic Cropping Land (SCL) protection decision – Letter of Authority

Springsure Creek Coal Pty Ltd hereby authorises Michael Gray to sign the application for an SCL protection decision on behalf of Springsure Creek Coal Pty Ltd.

Yours faithfully

Michael Gray
Managing Director
Springsure Creek Coal Pty Ltd

Tess Lye
Company Secretary
Springsure Creek Coal Pty Ltd

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APPLICATION FOR A STRATEGIC CROPPING LAND PROTECTION DECISION

DEVELOPMENT IMPACT REPORT

SPRINGSURE CREEK COAL MINE PROJECT

MLA 70486

2013

SPRINGSURE CREEK

Table of Contents

IMPORTANT INFORMATION

This Strategic Cropping Land (SCL) Development Impact Report has been prepared by Springsure Creek Coal Pty Ltd, a wholly owned subsidiary of Bandanna Energy Limited (**Bandanna**) to inform decision makers about potential issues and impacts relating to the construction, operation and decommissioning of the Springsure Creek Coal Project (**Project**), and how these issues and impacts will be mitigated and managed.

This document is not a prospectus, a financial product or investment advice or a recommendation to acquire Bandanna shares under Australian law. A person seeking to make an investment decision in relation to shares in Bandanna should: (1) consider all information in relation to Bandanna and the Project as contained in announcements made by Bandanna with the Australian Securities Exchange, which are available at www.asx.com.au (ASX Code: BND) or from Bandanna's website at www.bandannaenergy.com.au; (2) consider the appropriateness of all such information having regard to their own objectives, financial situation and needs; and (3) seek legal and taxation advice appropriate to their jurisdiction.

Information contained in this document is correct as at the date of the document.

1.0 INTRODUCTION

1.1 BACKGROUND

Springsure Creek Coal Pty Ltd (SCC) proposes to develop the Springsure Creek Coal Mine Project ('the Project') located approximately 47 km south east of Emerald, Central Queensland. The Project would occupy mining lease application (MLA) 70486. This location is entirely within the Central Protection Area of Queensland's Western Cropping Zone, as designated under the Strategic Cropping Land Act 2011 (Qld) (SCL Act) (Figure 1-1).

The Project is undergoing assessment for approval under the EIS process set out in Chapter 3 of the *Environmental Protection Act 1994* (Qld) (EP Act). If approved under this process, the Project would proceed to the next stage of assessment and preparation of an environmental authority under Chapter 5, Part 6 of the EP Act.

As required by section 93 of the SCL Act, an environmental authority or resource authority (mining lease) cannot be issued for the Project until an SCL Protection Decision has been made. This Protection Decision is made independently to the EIS process but is a pre-requisite to the issue of an environmental authority. This Report provides supporting information as part of SCC's application for an SCL Protection Decision in accordance with section 95 of the SCL Act.

1.2 LEGISLATIVE CONTEXT

The purpose of the SCL Act is to:

- Protect land that is highly suitable for cropping;
- Manage the impacts of development on that land; and
- Preserve the productive capacity of that land for future generations.

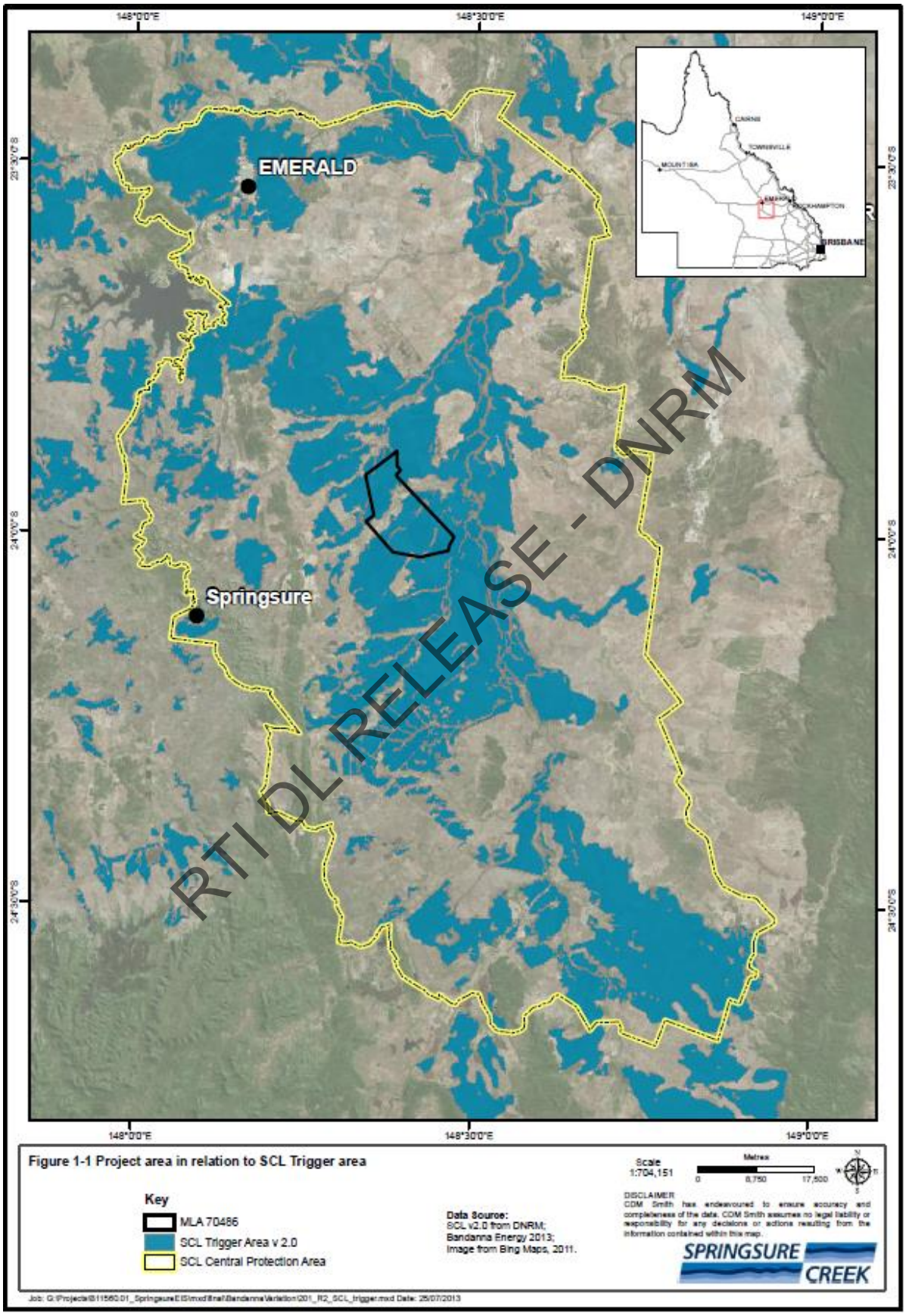
To achieve this, the SCL Act identifies areas of land which are likely to be highly suitable for cropping (known as potential SCL), has provisions for confirming whether potential SCL is suitable for cropping or not, and establishes protection areas and management areas for SCL and potential SCL. The Project is located within the SCL trigger area of the Central Protection Area of the Western Cropping Zone.

Sections 76 and 77 of the SCL Act preclude development that will have a permanent or temporary impact on SCL or potential SCL unless the impacts of development have been permitted through a resource activity. A resource activity includes, amongst others, a mining lease under the *Mineral Resources Act 1989* (Qld). Any resource activity that will have an impact on SCL or potential SCL must be assessed under the SCL Act, including the present Project.

The assessment pathways available to resource proponents proposing to undertake activities on SCL or potential SCL are either:

- Obtaining a compliance certificate under the SCL standard conditions code (DNRM, 2012); or
- Obtaining a Protection Decision.

Figure 1-1 Project Location



The SCL standard conditions code authorises certain resource activities that pose relatively low risk of adversely impacting SCL. However, mining activities are not authorised under the code. Mining activities therefore require an application for a Protection Decision. Indeed, an environmental authority cannot be issued for a resource activity until a Protection Decision has been made in relation to that activity.

Section 94 of the SCL Act provides for restrictions on issuing an environmental authority for activities identified as having a permanent impact on land in a protection area. The permanent impact restriction does not apply for an environmental authority application and its related resource application if it is excluded under chapter 9, part 3 of the SCL Act.

SCC has an exemption from the permanent impact restriction under chapter 9, part 3, section 289 of the SCL Act. The exemption applies to any environmental authority application and any resource application for resource activities described under the Project EIS relating to Exploration Permit for Coal (EPC) 891, which MLA 70486 is wholly within. This exception means that SCC does not have to demonstrate exceptional circumstances for any activity that will result in a permanent impact on SCL within EPC 891. Section 290 of the SCL Act sets out SCL protection conditions imposed on SCC pursuant to this exemption, namely:

- No open cut mining can be carried out under the mining lease; and
- SCC must use all reasonable endeavours to rehabilitate all impacts on the land from underground coal mining carried out under the lease.

Section 290 also enables other SCL protection conditions to be imposed on SCC as part of the SCL Protection Decision.

Prior to the issue of any environmental authority or resource authority, SCC must apply for a Protection Decision in accordance with section 95 of the SCL Act. In making the SCL Protection Decision, the Department of Natural Resources and Mines (DNRM) must consider:

- The extent of Project impacts on SCL and whether the impacts are permanent or temporary;
- Whether SCC has demonstrated that the impact has been avoided or minimised to the greatest extent practicable; and
- Whether additional SCL protection conditions, set in line with the purpose of the SCL Act, are required to be imposed on SCC beyond those set out under Section 290 of the Act.

Part 4, Subdivision 3, section 100 of the SCL Act states that SCL protection conditions may generally:

- Prohibit, limit or restrict the carrying out of the activity on all of or part of the land;
- Require the applicant to install and operate stated plant or equipment in a specific way within a particular period;
- Require the applicant to do, or refrain from doing, anything else the chief executive considers will be necessary to achieve the SCL Act's purpose; and
- Require financial assurance in favour of the State for the applicant's compliance with the following:
- The SCL Act
- Payment of any compliance action expenses

- SCL protection conditions imposed.

1.3 CONSULTATION

Consultation with statutory agencies has been ongoing throughout the Project's development. Several meetings with regard to SCL have been held with DNRM as summarised in Table 1-1. Other key agencies have been consulted as part of the Project's EIS process including the Department of Agriculture, Fisheries and Forestry (DAFF) and the Department of Environment and Heritage Protection (EHP). Consultation with all agencies has included discussions about potential Project impacts on the existing environment and land uses, and SCC's commitments to manage these.

Table 1-1 Consultation Undertaken with DNRM Regarding the Project and SCL

Date	Agenda
6 March 2013	• Confirm mutual understanding of SCL Act provisions in relation to Project • Discussion of assessment approach used in EIS • Confirm application process for Protection Decision and need for Validation Decision • Discussion of approach to impact assessment and mitigation
23 May 2013	• Clarification on methodology for field assessment • Confirm level of detail regarding SCL in EIS and Protection Decision application • Agreement to engage DNRM in development of environmental management plans • Discussion of outcome based conditions sought by SCC
9 August 2013	• SCL Protection Decision application lodgement meeting with DNRM

1.4 STRUCTURE OF THIS REPORT

Following this introduction, the remainder of this Report reads as follows:

- Section 2 describes the resource activity, including the justification for the proposed layout and design, the Project's environmental management system and SCC's coexistence policy;
- Section 3 presents the agricultural context of the Project area including details of existing cropping practices;
- Section 4 presents the methodology and results of the SCL site assessment carried out within the Project area which compared SCL trigger mapping results with actual conditions on site;
- Section 5 provides the assessment of the Project's potential impacts on SCL along with mitigation measures to minimise any effects;
- Section 6 sets out the proposed SCL restoration objectives;
- Section 7 summarises the key outcomes of the SCL impact assessment; and
- Section 8 presents draft SCL protection conditions sought by the Project.

2.0 DESCRIPTION OF THE RESOURCE ACTIVITY

This section describes the resource activities that would be authorised by the resource authority and environmental authority, with particular focus on those activities of relevance to the SCL Protection Decision.

2.1 LOCATION

The Project would be located within MLA 70486. The boundaries of MLA 70486 mirror the extent of geological conditions suitable to mining and occupy an area of 10,736 ha.

2.2 CONSTRUCTION ACTIVITIES

The construction programme for the Project is very much dependent on the earthworks strategy adopted after engagement of the construction contractor. It is assumed that construction activities would commence in Q2 2014 for a duration of 24 months.

The sequence of construction activities would be typical of a large mine and consist of the following:

- Advance/ preparatory works including provision of site access, site drainage and soil salvage
- Main construction works for surface infrastructure including:
- Mine infrastructure area (MIA), coal handling plant, mine water management infrastructure
- Earthworks to access underground mine
- Quarrying of basalt

2.2.1 ADVANCE/PREPARATORY WORKS

Prior to any bulk earthworks taking place within MLA 70486, construction access routes and working areas will be clearly marked out using temporary fencing and signage. This will ensure construction related activities are restricted from taking place outside of the designated working area.

Site Access

Access to the Project site would be via existing state and council owned roads. No new access roads will be created for traffic moving to or from the site. Within the site, seven access roads will be developed to connect the surface infrastructure. The extent of surface works is shown in Figure 2-1.

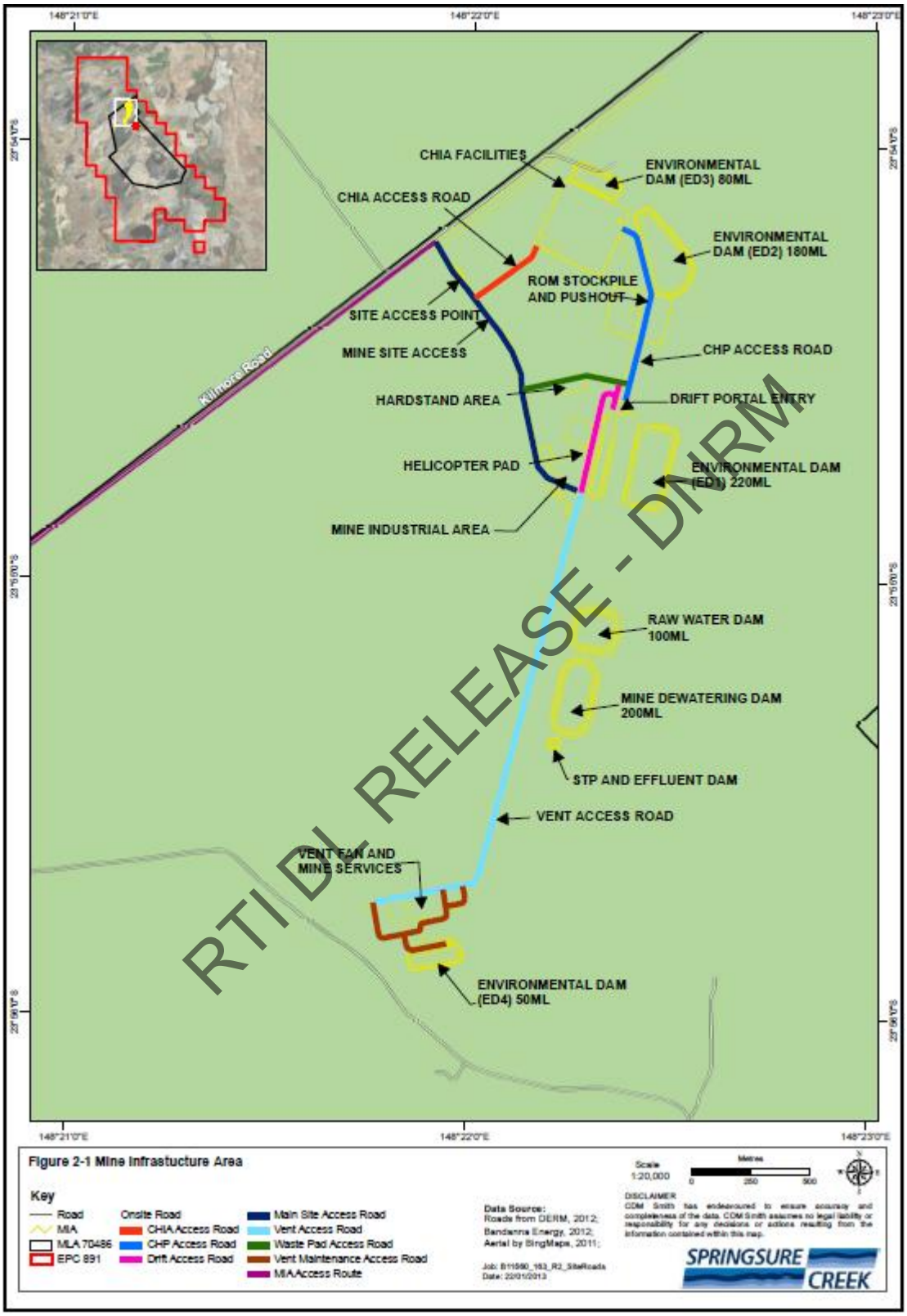
Site Drainage

Surface drainage will be established around the surface infrastructure areas to contain runoff within the site and divert flows from surrounding areas around the site. Erosion and sediment control measures will be installed prior to any ground being disturbed.

2.2.2 SOIL SALVAGE

Topsoils and subsoils located within the footprint of all above ground infrastructure (refer Figure 2-1) will be salvaged following industry practice. The actual strategy on site would be agreed through.

Figure 2-1 Proposed Access Roads and Surface Infrastructure within MLA 70486



consultation with DNRM. The movement of all soils will be recorded within an inventory to ensure the location of salvaged soil is known throughout the life of the Project. The topsoil from within the footprint of the MIA will be stripped at the recommended stripping depth and placed at the same rate on an equivalent area of Class 4 Cropping Land adjacent to the MIA. This will enhance the topsoil quality and depth of this adjacent land for the duration of the mine and is a preferable management option to stockpiling these affected top soils for a period of 40 years. This paddock will not be affected by subsidence as it is not located above any longwall panels.

Subsoils removed from the MIA that are not required for the enhancement of adjacent Cropping Land, as well as any other soils disturbed by construction works, will be stockpiled for the life of the Project. These stockpiles will be located outside but adjacent to an existing drainage channel close to the above ground infrastructure area so as to minimise haulage distances.

Soil stripping and stockpiling during construction works will include the following measures:

Stripping

- Prior to stripping, contractors will be required to be in possession of a permit to clear issued by the Site Environmental Manager describing the area(s) to be cleared and the methods for undertaking such;
- Soils would be cleared progressively to the minimum area required for works at any time;
- Earthmoving plant operators will be trained and supervised to ensure that stripping operations are conducted in accordance with stripping plans to ensure topsoils and subsoils are not mixed, and in situ soil conditions are maintained; and
- Care will be taken to ensure soil moisture conditions are appropriate i.e. neither too wet or dry.

Stockpiling

- Soil would be stockpiled until it is reused in areas outside the construction footprint and outside drainage lines;
- Drainage will be diverted around stockpiles and maintained to ensure proper functioning;
- Topsoil stockpiles will be formed in low mounds up to a height of 3 m and subsoil stockpiles up to 6 m. Long term stockpiles (present for > 6 months) will be deep ripped and sown with local grass seed-stock and legumes in order to keep the soil healthy and maintain biological activity. Side slopes will be reduced to at least a 1:4 gradient; and
- Weed and pest species establishment in stockpiles will be monitored and controlled.

The management process for the restoration of soils, as well as further details of the proposed soil translocation to land adjacent to the surface infrastructure area, is discussed later on in section 6.1.3.

2.2.3 MINE INFRASTRUCTURE AREA, COAL HANDLING PLANT AND MINE WATER MANAGEMENT INFRASTRUCTURE

The MIA will comprise the following buildings: bathhouse, administration, workshop, warehouse, fuelling facilities, helipad, rescue and emergency complex.

Coal handling plant will include: conveyors, run of mine stockpile with stacker – reclaimer, sizing station, sampling station and truck load out bin.

Water management infrastructure will comprise: a raw water dam, four environmental dams to collect and store rainfall runoff within the site, and a mine water dam to contain groundwater removed from the mine working area.

Construction of all three of these areas will require the use of pre-fabricated steelwork, building materials, bulk cement, concrete, and typical plant and machinery associated with building works.

2.2.4 EARTHWORKS TO ACCESS UNDERGROUND MINE

A triangular cut approximately 360 m in length to a depth of approximately 45 m (1 in 8 gradient) will create the portal to drift. The cut will be 2.7 ha in size and require the removal of approximately 526,000 m^3 of overburden. This overburden will be temporarily stored on the surface within the final Project footprint before either being used as backfill into the cut or recycled for use in construction of hard-standing areas or embankments for dams.

From the bottom of the cut, two drifts will be constructed to access the targeted coal seam. One drift would transport product coal to the surface and the other would traffic personnel and equipment between the surface and underground. Overburden removed during the creation of the drifts would be recycled for use in construction.

2.2.5 QUARRYING OF BASALT

The majority of materials required during construction will be sourced from earthworks for the cut and cover and the drifts, with any further requirements sourced from excavation of the dams.

The volume of materials required would be minimised through detailed design and rationalisation of the above ground infrastructure, for example through improvements in the efficiency of the internal access road layout and reduction in the size of stockpads.

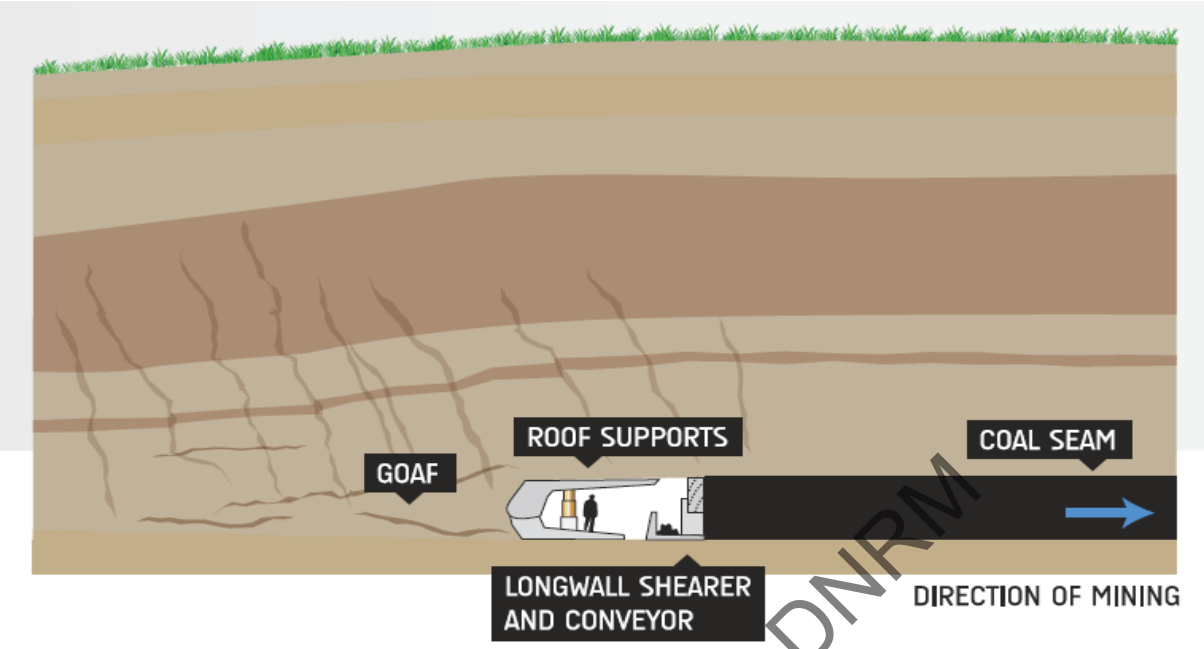
Notwithstanding the above, it is estimated that up to 20,000 m^3 of basalt will be required for ongoing maintenance during the life of the mine. This material would be sourced from a quarry within MLA 70486 and would be approximately 1 ha in size at any one time. Soils will be salvaged prior to any excavation work and once depleted the quarry will be progressively restored to its pre-disturbance condition.

2.3 LONGWALL MINING OPERATIONS

Coal will be removed from underground using the longwall mining technique. Longwall panels would be a nominal 300 m wide and up to 3.6 m high. Coal would be removed using a longwall shearer. The shearer will travel back and forth across the coal face cutting a slice of coal each time. Coal would then fall onto a conveyor and be transported to the surface.

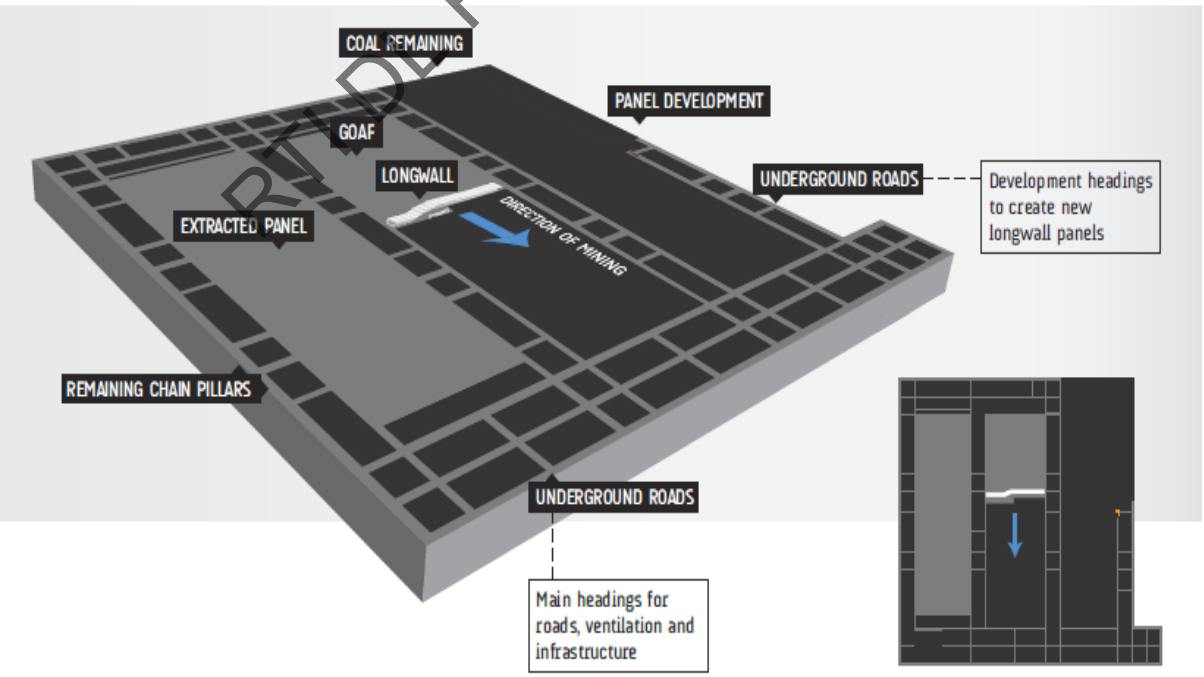
A series of hydraulic roof supports hold up the roof strata above the working area of the longwall shearer. As each slice of coal is removed the roof supports advance forward and allow the overburden behind to collapse into the remaining void and create the residual goaf (Figure 2-2).

Figure 2-2 Longwall Mine Cross-Section



Access to the longwall panel is provided by headings, as shown as light grey squares around the coal in Figure 2-3. The headings also provide ventilation and service corridors for electricity and water supplies. Main headings are created first (located at the bottom of Figure 2-3), followed by additional roadways known as development headings. Development headings are driven on both sides of the longwall panel and are connected across the end of the longwall panel.

Figure 2-3 Undergrounding Mining Process



The longwall shearer, roof supports and other equipment are established at the end of the panel furthest from the main headings. Coal is extracted as the longwall shearer retreats through the panel towards the main headings. Retreat rates are anticipated to be up to 120 m per week, depending on the seam thickness and mining conditions. Production would initially comprise a single longwall panel, with this increasing to two longwall panels in the after 4 years of longwall operations. The coal between the development headings and between the main headings will be left in place as pillars to support the overburden above the roadways during operations. The chain pillars, located either side of a longwall panel, would range in width between 35 m and 55 m depending on the depth and geotechnical requirements. A total of approximately 420 Mt of product coal is expected to be mined over the life of the Project. All run of mine coal would be exported from the site meaning there would be zero waste rock generated by mining. No tailings storage facility is therefore required.

2.4 JUSTIFICATION FOR PROJECT LOCATION AND LAYOUT

In deriving the proposed Project location and layout a number of alternative scenarios have been considered with the intent of avoiding and minimising environmental harm yet within the context of relevant social and economic parameters. Coexistence between the Project and SCL has underpinned the proposed layout and nature of the proposal, in part, with SCL being treated as a finite natural resource.

Alternative scenarios considered were those that are practicable, feasible and available to SCC. These included conceptual, technological and locality alternatives. The scenarios assessed included the following alternatives:

- No development i.e. the Project does not proceed and the existing environmental and social baseline is maintained;
- Alternative locations of the mine;
- Alternative mining methods;
- Alternative siting of the Mine Infrastructure Area (MIA).

The following subsections discuss each of the alternative scenarios listed above.

2.4.1 NO DEVELOPMENT SCENARIO

The ‘no development scenario’ predicts the future scenario which would exist in the absence of any SCC Project. The ‘no development scenario’ is not considered to be a commercially feasible for SCC but is presented here as the opportunity cost of not proceeding with the Project.

Assuming the Project did not to proceed, then approximately 585 direct jobs and many more indirect jobs and business expansion opportunities would not be realised. In economic terms, this would translate to a loss of a potential $47.2 million per year of State coal royalties at a production output of 5.5 Mtpa at AU$85.78/t (as at October 2012). At a production rate of 11.0 Mtpa, the opportunity for a potential $94.4 million per year of direct State revenues through coal royalties would be lost.

2.4.2 ALTERNATIVE LOCATIONS OF THE PROJECT

The location of the Project is determined by the following factors:

- The location of the targeted coal deposit governs the location of the proposed Project. The target coal deposit is wholly contained within Exploration Permit for Coal (EPC) 891 held by SCC and any alternatives proposed need to be considered within the context of this constraint;
- Within EPC 891 the proposed Project area is defined by the mining lease application (MLA) 70486 which has been defined by existing geological conditions which are suitable to mining; and
- The Project is located within the Bowen Basin which is one of the major coal basins of the world.

Taken together, these factors preclude development of the Project at any other location. Additional factors which benefit the proposed location of the Project include:

- Access to the Project area is provided via existing local government and State controlled roads which could feasibly be upgraded for the purposes of the Project, if required; and
- Product coal will be exported through a secured allocation at Stage 1 of Wiggins Island Coal Export Terminal located at Gladstone Harbour.

Wiggins Island Coal Export Terminal is the closest coal export facility to the proposed mine. SCC is investigating alternative options with a view of securing long term port capacity beyond its currently contracted 4 Mtpa WICET Stage 1 capacity.

2.4.3 ALTERNATIVE PROJECT PROCESSES

The Project is located within a rural context and as such is likely to result in impacts to the existing environment, including the local human population and natural resources. The following subsections discuss how the Project will avoid and minimise potential impacts within and surrounding its location, including SCL.

Open-cut versus Underground Mining Methods

The Project lies within the Western Cropping Zone of the SCL Regional Trigger Map C4 – Moranbah and Emerald Region. As discussed in section 1.2, the SCL Act (Section 290) imposes the following SCL protection conditions on the Project:

- No open cut mining can be carried out under the lease;
- SCC must use all reasonable endeavours to rehabilitate all impacts on the land from underground coal mining carried out under the lease.

In order to lawfully operate, the Project cannot involve any open cut mining operations. The Project must therefore utilise underground mining methods.

In terms of environmental performance, underground mining methods have a lower environmental impact than open cut methods, despite being more technically complex and of a similar cost overall. Underground mining methods are advantageous environmentally as they result in significantly lower volumes of waste materials from overburden and interburden. This reduces the extent and magnitude of most physical and chemical environmental impacts directly related to waste rock. Underground mining also results in relatively lower impacts on existing surface land uses and

existing land cover. Lastly, the reduced influence of climate and topography on underground operations typically results in reduced impacts from noise and dust relative to open-cut mining methods. Underground mining is therefore the preferred mining method for the present Project to coexist with SCL.

Alternative Underground Mining Methods

The following methods of underground mining were assessed during early mine planning:

- Bord and pillar mining (also known as room and pillar mining);
- Mini-wall mining; and
- Longwall mining.

Bord and Pillar and Mini-wall mining practices were ruled out as feasible methods of coal extraction primarily because these methods result in lower overall coal recovery per unit excavation cost. The site naturally lends itself to longwall mining methods because of the thickness of the Aries 2 coal seam and the local geological conditions. As a result, longwall mining is the selected method for coal extraction by the Project.

Alternative Longwall Configurations

In development of the longwall configuration, SCC has sought to ensure that there is an appropriate balance between the economic returns and minimising impact on the environment and surrounding communities. The longwall design which has been selected meets these objectives, minimising impacts to environmental and agricultural areas whilst maximising resource utilisation and importantly does not result in sterilisation of remaining coal seams and deposits. For example, longwall orientations at the moment are proposed to run in parallel to the creek systems traversing the Project area. This has the effect of minimising changes to drainage and creek flows.

Alternative Access Options to Underground Mine Areas

There are typically two access options to underground mines, as follows:

- Shaft or vertical access from the surface to the coal seam. A winder is used to raise and lower personnel, underground equipment and to remove the coal. This method is generally used for coal mines between 300 m to 500 m in depth; and
- Drift access from the surface to the coal seam typically using two drifts or tunnels driven below ground at gradients of between 1 in 10 and 1 in 4. Drift access is one of the most typical access methods and is most suited to coal seams at depths of less than 300 m. This method allows drive in and drive out access for equipment and personnel, and a conveyor system which facilitates coal removal to the surface.

Irrespective of the access option chosen, underground access points are ultimately located to provide a cost effective way of accessing the underground mine workings. Design and positioning of the access was based on the following criteria:

- Minimise distances to underground extraction areas for the haulage of equipment and materials, removal of coal, water and power;

- Provide rapid egress from the mine for safety reasons;
- Provide rapid access to the longwall panels to maximise production time;
- Enable the re-use or replacement of all overburden (primarily from initial cut to construct drifts) so that all excavated material remains within the Project area;
- Reduce the potential for flooding from surface areas; and
- Minimise any other environmental and social impacts, as appropriate.

For the present Project, drift access has been deemed most feasible. This decision is based on:

- Ability to locate the drift entrance in an area of Den-Lo Park that would result in the least impact to agricultural productivity, environmental values, water resources and site drainage;
- Ability to excavate to shallowest depth of the target coal seam;
- Minimise waste rock excavation;
- Ability to re-use excavated basalt for the creation of hardstand areas and road surfacing and excavated spoil as substrate for grassland habitat above the cut and cover (such habitat creation would not be possible for a box cut design); and
- Reduce footprint of mining operations on existing land uses.

Alternative Locations for Mine Infrastructure Area

The location of the MIA has been determined through consideration of the following key variables:

- Ownership of land (Den-Lo Park is owned by Springsure Creek Property Holdings Pty Ltd a wholly owned subsidiary of Bandanna Energy Limited);
- Minimising the loss of soil types on Den-Lo Park to maintain overall soil diversity and the flexibility this provides in terms of crop planting; and
- Minimising the scale of earth-moving works.

The proposed MIA will sit within two existing paddocks at Den-Lo Park. One of these fields is developed for flood irrigation but is considered to be the least efficient irrigated field on Den-Lo Park due to its topography and layout. The relatively steep slope of the field makes it difficult to irrigate efficiently and the short length of the planting rows further reduces efficiency. The other field is a dryland field which wraps around the side of a hill. This field is on the boundary of two soil types. Taken together, the topography and soil characteristics of this field make it one of the least productive areas and thus most suitable for the location of the MIA.

It is acknowledged that most of the MIA would be located within designated SCL. However, through the implementation of topsoil and subsoil management measures included as part of the proposed Project, it is fully expected that these areas can be fully rehabilitated to at least their present condition. Furthermore, whilst these areas are occupied by the MIA for the operational life of the Project, no impacts are expected on overall agricultural production either locally or at any other scale.

Additional variables considered were:

- Proximity to the drift entrance to reduce the extent of coal handling above ground;
- Locating the MIA above 1 in 1000 flood heights to reduce risk of shut down;

- Proximity to existing roads;
- Proximity to existing homesteads (with a preference to distance the MIA from these); and
- Minimising above-ground footprint as far as possible and avoiding natural habitats, watercourses, and drainage courses.

Construction Materials

Construction materials will be sourced from excavation of the drift and cut and cover, as well as excavation of the dams. This will avoid the extent of impacts on SCL during construction by concentrating basalt extraction in areas already disturbed.

Rejects Management Process

The Project is based on all run of mine coal being mined, transported off site and exported without the need for benefaction. The Project will not result in the creation of any coarse or fine tailings. This decision is based, in part, on the location of the Project in an environmentally sensitive area i.e. SCL Protection Area. No approval is sought for coal benefaction infrastructure or rejects management.

Operational Water Management

The Project's water requirements have been derived through a conceptual water balance study. Based on this, the Project will meet its operational water requirements through two supply processes. Firstly, the Project will recycle any mine affected water. Mine affected water includes rainfall which falls within the footprint of the surface mine infrastructure and also groundwater removed from the targeted coal seam underground. All mine affected water will be contained within dams and recycled for use as part of operations. Secondly, raw water will be piped to site from a purchased allocation within the Nogoa – McKenzie River System. This raw water will also be stored on site within a dedicated dam. Accordingly, the Project will not draw on existing water supplies used for local agriculture and required to maintain SCL.

The capacity of all the dams and their associated water management systems have been designed to limit the frequency and duration of any overflows. Overflows are expected to occur only during extreme or unusually high rainfall events (i.e. 5% chance of overflowing in any 12 months). Thus, the risk of discharges from the dams to adjacent SCL is low. Importantly, in the unlikely event that a discharge does occur, then any contaminant loads within the water would be low because of the large volume of water contained within the dam before it overflows. Contaminants within dam waters will vary between the individual dams and the source of water they contain. However, contaminants could include coal dust or, in the case of any groundwater stored on site, relatively high levels of naturally occurring salts and heavy metals (relative to surrounding surface watercourses).

A Water Management Plan will be developed and approved to ensure water is appropriately managed on site. This will include the establishment of a water quality monitoring programme and a risk-based response procedure in the event any overflows occur. Contamination of SCL via overflows is largely avoided through this design measure.

2.5 ENVIRONMENTAL MANAGEMENT SYSTEM

An Environmental Management System will be established for both the construction and operational phases of the Project based on the principals of AS/NZS ISO 14001:2004 *Environmental*

Management Systems. This will ensure the delivery of appropriate environmental mitigation and management measures according to a risk-based approach.

The Project is presently at its conceptual stage and is seeking approvals in terms permits and leases to lawfully operate i.e. an SCL Protection Decision under the SCL Act, an environmental authority under the EP Act and mining lease under the MR Act. Management measures defining how the Project will operate within any conditions attached to the environmental authority and mining lease will be set have been set out within the EM Plan included as part of the Project EIS (SCC, 2013). The EM Plan provides for a series of subsidiary management plans which will require statutory approval prior to the Project commencing (Table 2-1). These management plans are referenced within the following sections of this Report as appropriate.

The Protection Decision carried out under the SCL Act informs part of the Project's approval under the EP Act and MR Act in that the environmental authority cannot be issued before the Protection Decision is made. SCL management proposals commensurate to the information provided to support the environmental authority decision are set out within this Report and establish an additional plans and procedures to those presented in Table 2-1, as a result of the impact assessment work undertaken here.

Table 2-1 EMS Subsidiary Management Plans

Management Plan	Environmental Value	Subsidiary Management Plan
Environmental Management Plan	Land	Subsidence Management Plan Topsoil Management Plan Closure and Rehabilitation Plan
	Waste	Waste Management Plan
	Surface water	Erosion and Sediment Control Plan Water Management Plan Subsidence Management Plan
	Groundwater	Groundwater Management Plan Waste Management Plan Subsidence Management Plan
	Air quality	Air Quality Management Plan Greenhouse Gas Abatement Strategy
	Noise and vibration	Noise and Vibration Management Plan
	Ecology	Significant Species Management Plan Pest and Weed Management Plan Offsets Strategy
	Health and safety	Emergency Response Plan
	Hazard and risk	Integrated Risk Management Plan
	Health and safety	Health and Safety Management System

Management Plan	Environmental Value	Subsidiary Management Plan
	Climate	Water Management Plan
Cultural Heritage Management Plan	Cultural Heritage	Indigenous Cultural Heritage Management Plan
Social Impact Management Plan	Social Values and economy	Workforce Management Plan Community Development Plan Housing and Accommodation Strategy Local Content Strategy
	Health and Safety and Hazard and Risk	Community Health and Safety Plan Workforce Management Plan
Commitments not in Environmental Management Plan	Ecology	Significant Species Management Plan
	Cultural Heritage	Historical Heritage Management Plan
	Transport	Road-use Management Plan Traffic Management Plan

2.6 COEXISTANCE

SCC intends to integrate mining and agriculture in a mutually beneficial and sustainable partnership. The objectives of SCC's coexistence policy are:

- To mine in a way that provides an economic return for Bandanna shareholders; and
- To maintain or improve agricultural productivity on properties directly impacted by the Project.

In the absence of any statutory definition on coexistence, SCC defines coexistence as:

> *"Working together with the agricultural community to ensure agriculture and mining can occur concurrently in an economically sustainable manner while maintaining productivity at the field/paddock, property and regional level."*

SCC's commitments to coexistence include:

- To establish and fund the Springsure Creek Agricultural Project which includes development of the Springsure Creek Agricultural Plan;
- To invest in an Agricultural Coexistence Research Committee;
- To fund an agricultural research programme in the area specifically aimed at developing methods that ensure coexistence between mining and the agriculture can occur;
- To support the Agricultural Coexistence Research Committee as stewards of the Springsure Creek Agricultural Plan allowing the committee to govern the implementation of the Plan including:

- Defining, monitoring (including collecting a baseline) and reporting on agricultural productivity in a way that respects the confidential information of landholders
- Undertaking coexistence research on Den-Lo Park (owned by Springsure Property Holdings Pty Ltd) prior to subsiding other properties to be impacted by subsidence
- To involve landholders and other stakeholders in the development and implementation of the Springsure Creek Agricultural Plan;
- To adhere to the environmental authority for the Project's mining lease; and
- Undertake an annual audit of SCC's activities and implement public reporting mechanisms.

2.6.1 AGRICULTURAL COEXISTANCE RESEARCH COMMITTEE

The Agricultural Coexistence Research Committee was established in October 2012 to guide the coexistence research programme. It consists of a number of scientists and agricultural experts that have extensive experience working in Queensland agricultural systems. The committee will liaise with expert researchers to develop research programmes for the Project area.

The research programme includes, for example, setting the research framework and questions, and disseminating the research findings to relevant stakeholders. The Committee has prepared a draft Coexistence Research Plan and provided this to stakeholders for comment in June 2013, including directly affected landholders, relevant government agencies (DNRM, EHP and DAFF) and relevant agricultural industry organisations.

It should be noted that the Agricultural Coexistence Research Committee has been established to steer research direction. The research itself will be carried out by individual researchers with expertise in specific areas of interest. One of the key research topics is to define agricultural productivity. Once this is defined, a baseline will be gathered, monitored and reported prior to subsidence commencing and throughout the life of the Project.

Bandanna's Managing Director and Chief Development Officer represent SCC on the Agricultural Coexistence Research Committee. By having two of the most senior company members involved in the Committee, its role and advice can be incorporated throughout the development of the Springsure Creek Coal Project.

3.0 AGRICULTURAL CONTEXT

3.1 OVERVIEW OF AGRICULTURE WITHIN AND SURROUNDING THE PROJECT AREA

Historically, early agricultural production in the Springsure district was dominated by pastoralists, with cattle and sheep grazing dominating the region. Through the late 1940s and 1950s grain production was introduced as part of a joint venture between the British and Queensland governments to overcome post-war food shortages. The introduction of grain production ultimately led to significant changes in local land uses and the alteration of the districts landscape.

Cropping now dominates the district which has been facilitated by advancements of technology both through plant breeding and machinery cropping which have increased viability. The greatest driver for the shift from grazing to cropping has typically been the economic benefits offered from the greater gross margins associated with cropping.

Dryland and irrigated cropping form the dominant agricultural land use in the Project area. The region supports both summer and winter crop rotations. Summer crops grown include but are not limited to sorghum, mung beans, corn, irrigated cotton, forage sorghum, sunflowers and a very small percentage of dry land cotton. Winter crops include wheat, barley, chick peas (both desi and Macarena varieties) and forage oats for grazing.

Cotton is predominantly grown in the Emerald region and associated with irrigated areas in this region. Cotton has been grown on Den-Lo Park and the neighbouring Springton Property, however, it is typically grown on an opportunistic basis when water is able to be harvested and stored for use at a later date due to the crops high water demands.

Grazing activity continues throughout the region particularly in areas less suited to cropping, due primarily to soil, drainage and landform characteristics. Some producers will sow fodder crops to facilitate fattening or finishing of cattle for the slaughter market. Grazing in the Project area would constitute approximately 20-25% of the total land surface available.

It should be noted that agricultural land uses in the region form an ever changing mosaic of crops and alternative land uses. As demonstrated by EHP land use mapping, the proportion of irrigated to non-irrigated areas within the Project area changed by more than 10% between 2004 and 2012. Furthermore, the types of crops planted within particular years and seasons will also vary significantly and be driven by:

- Supply and demand in individual agricultural markets;
- Weather conditions;
- Season;
- Advances in crop productivity;
- Advances in farming methods; and
- Market price.

3.2 FARMING PRACTICES AND ADVANCEMENTS

There have been a number of recent advancements in farming practices which have ultimately led to greater yields, better soil management, improved efficiencies and reduced costs. A number of the

advancements and strategies have been integrated into farming systems in the Project area and include:

- Zero/minimal till farming;
- Changes in irrigation practices;
- Crop storage;
- Paddock design and levelling; and
- Crop rotation strategies.

The following sub-sections describe these systems in further detail.

3.2.1 ZERO/MINIMAL TILL FARMING

Minimum and zero till farming methods effectively reduce soil disturbance through tillage leading to greater soil water and nutrient retention. Minimum and zero till farming practices have been adopted by many of the more efficient farming operations in the region and Project area. Those producers that have adopted this technology would generally utilise minimum rather than zero till with some summer weed control still being done by traditional cultivation methods.

3.2.2 IRRIGATION PRACTICES

Irrigation practices within the Project area apply flood irrigation techniques. Flood irrigation involves the release and flow of water along man-made irrigation furrows. These furrows are typically laser levelled to provide necessary the contours for flows. As such, flood irrigation practices are dependent on landscape form and topography.

Flood irrigation typically displays poor water efficiency in comparison to newer boom or pivot irrigation methods due to the large releases of water required when utilising the method. Although uncommon in the Project area, boom and pivot irrigation methods provide a more directed efficient use of water resources and typically lead to increased yields as water resources can be distributed evenly among plants. These methods are less dependent on landform as water is applied topically.

3.2.3 CROP STORAGE

Some grain storage is carried out on farms in the Project area, however, the majority of grain from the region is freighted directly to storage facilities at either Gindie or Emerald. The practice of on farm storage is one that is increasing in recent years with many operators looking to service markets directly from sales off farm. The majority of grain stored on farm is in permanent silo infrastructure with temporary storage facilities such as silo bags generally not used.

3.2.4 PADDOCK DESIGN AND LASER LEVELLING

Generally it is only flood irrigated fields which are laser levelled to allow the water to run across them. Not all flood irrigated fields are laser levelled however, including those on Den-Lo Park. Dryland farming does not require fields to be laser levelled as they are not irrigated. Typically, a well-developed efficient irrigation system requires laser levelling and the maintenance of contours through re-levelling approximately every 5 years, intervals depending on usage.

3.2.5 CROP ROTATION STRATEGIES

Most winter crops in the region are planted during April and May with harvest occurring late September and into October. Early summer crops such as sorghum and corn are planted in late August and into September with harvest of these occurring in January, late summer crops are usually

planted in December and January with harvest occurring in April through to June depending on the variety of the crop.

Cotton planting usually occurs during September and is harvested in March or April depending on the season. Many crops in the region are “double cropped” if there is sufficient moisture available in the soil. Double cropping is the practice of planting a crop straight after the preceding crop is harvested. Usually the crop will not yield quite as well as that of one which is planted after a fallow period of 6 to 12 months, however, due to the uncertainty of the seasons in the region many of the producers in the district will plant when there is sufficient moisture to reduce the risk of losses.

4.0 SCL SITE ASSESSMENT

This section describes the methodology and results of the study carried out to confirm the presence and extent of SCL within the Project area. The site assessment was carried out on behalf of SCC by Graham Tuck (GT Environmental Services) in accordance with DERM (2011) *Guidelines for applying the Strategic Cropping Land Criteria*. Full details of this SCL site assessment are provided in Appendix 1.

4.1 SCL TRIGGER MAPPING

SCL Trigger Mapping provides a starting point for identifying where potential SCL may exist. Trigger Maps are developed by DNRM based on soil, land and climate information to indicate the location of potential SCL. Across Queensland, five SCL zones have been identified that accommodate regional differences in climate, land forms and cropping systems i.e. Western Cropping, Eastern Darling Downs, Coastal Queensland, Wet Tropics and Granite Belt zones.

Based on DNRM's SCL Trigger Map, the Project lies within the Central Protection Area of the Western Cropping Zone (Figure 1-1). The Trigger Map shows an area of 8,868 ha of potential SCL within MLA 70486.

4.2 EXISTING SOIL AND LAND RESOURCES INFORMATION AT SURVEY SITE

A review was undertaken of existing soil and land resources information to develop preliminary soils mapping units and distribution for the Project area. This information assisted in the development of the field investigation. The following subsections set out the results of this desktop review.

4.2.1 GEOMORPHOLOGY AND GEOLOGY

Surface geological mapping from the Geological Survey of Queensland (1:250,000 Series) for the Project area indicates the area to be dominated by unconsolidated Cainozoic sediments and basalts, underlain by the Permian to Triassic Denison Trough basin fill. Three major geological units occur;

- Quaternary channel and flood plain alluvium; gravel, sand, silt, clay;
- Quaternary soil, sand, gravel, scree, alluvium. May include some residual alluvium; sand dominant, with gravel; and
- Tertiary basalt flows, olivine basalt, trachy basalt, trachyandesite, leucitite, basanite, nephelinite, limburgite, rhyolite minor agglomerate and tuff. High level intrusives; rare volcaniclastic sediments.

Galloway, R.W in Story et al (1967) also states that a wide variety of basalt rocks are represented. Soil types are influenced mainly from source rock in addition to widespread erosion and accumulation of clays, sand and gravels which occurred throughout the Tertiary period.

4.2.2 REGIONAL SOILS REPORTS AND AVAILABLE DOCUMENTATION

The CSIRO and Queensland Government have undertaken a variety of soil mapping and assessment work over the cropping areas of the Central Highlands region. The following references have been utilized to varying extents in the development of this report.

Lands of the Isaac-Comet Area, Queensland (Story et al., 1967):

This report mapped land systems which are landscape patterns comprised of generally uniform geology but with variable landforms, soils and vegetation. Within each land system are individual 'units' which describe the range of individual soil types and vegetation. In addition, the relative proportion of each unit in the land system is provided although they have not been mapped. The report also contains detailed geological information and discusses geomorphological processes and influence on existing soil types and landscapes.

Story et al described the area as undulating plains and lowlands with clay soils and softwood scrub and floodplains. This summary is an accurate portrayal of soil types found in this survey.

The main value of the CSIRO reports in this survey is that it was possible to refine soil types which may be expected to occur from the land systems mapping. The presence of land systems and 'expected' soil types which Story identified proved to be basically correct however too broad a basis for soil type boundary delineation at a 1:50,000 scale. Land systems described across the project area are shown in Figure 4-1.

Springsure Creek Coal Mine Project. DRAFT Environmental Impact Statement (Dated 14 February 2013) Chapter 5 – Land:

The Draft EIS released for public consultation (dated 14 February 2013) included a Soils and Land Suitability report however it did not meet sampling requirements of the Terms of Reference for the Project due to limited access to land at the time of the survey. Nevertheless, it includes directly relevant data which has been incorporated into this SCL site assessment.

Understanding and Managing Soils of the Central Highlands (Bourne and Tuck, 1993):

Agricultural Management Units (AMU's) are described which focus on land management requirements. It is a relevant reference in the assessment of land suitability and management of soil types described.

Major Soils of the Raingrown Cropping Lands at Emerald. (G.A. Tuck 1993 unpublished):

Graham Tuck (pers comm) completed soils mapping of the Emerald 1:100000 map sheet in the late 1980's however the work has not been published to date. Another Land Resources Officer with the QDPI at that time, Mr Peter Shields, coordinated the development of this 1993 report. However, while specific soil types described by Tuck are presented, mapping in the report is restricted to broad geomorphological land units.

The soil types described by G.A. Tuck (1993) have been used in the current report.

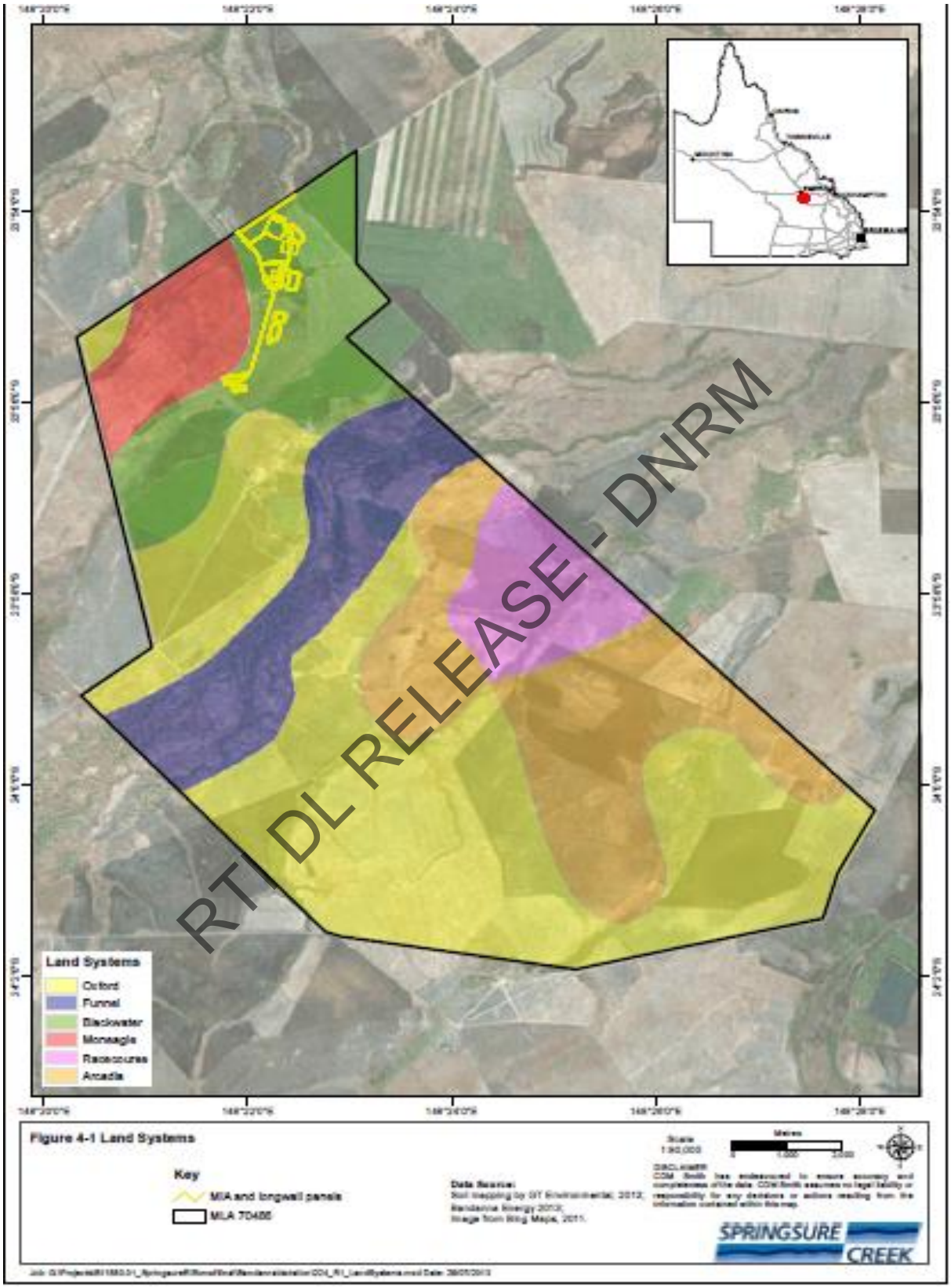
Land Resource Survey and Evaluation of the Kilcummin Area, Queensland (Shields and Williams, 1991):

This survey is located north of Clermont in an area dominated by basaltic soils which are comparable with those found in the Project Area. In addition, it provides a practical application of the Land Resources Branch (1989) land suitability assessment techniques which have been used in this report.

Soil survey reports of the Emerald Irrigation Area from 1970 to 2003:

Officers of the Queensland Department of Primary Industries (QDPI) produced a range of reports which mapped and described soils and land management within the Emerald Irrigation Area. This data includes detailed evaluations of soil attributes relevant to the Project area including soil water relationships and morphology.

Figure 4-1 Land Systems



Site Characterisation Report – Gindie Sustainable Farming Group (Irvine, S.A. 1999)

This report presents detailed information, including laboratory data, for basaltic soil type Ronnoc which forms a major component within the Project area. The work was done on Juanita property located approximately 15 kilometres to the west of the Project area.

Cross-references to relevant regional soil types identified within Story et al (1967), Bourne and Tuck (1993) and Tuck (1993) are provided within Appendix 1, section 4.

4.2.3 AERIAL PHOTOGRAPHY

Aerial photography was reviewed as part of the desktop evaluations. Initial map units and boundaries were marked up on available Google Earth™ imagery. The aerial photography reviewed included:

- EHP Land Centre, Brisbane:
- 12/05/1973;
- 11/06/1983;
- 15/12/1990;
- 19/11/1998;
- Google EarthTM:
- 22/10/2012.

4.2.4 PRELIMARY SOILS MAPPING

After the detailed review of reports and aerial photography, and prior to field work, a preliminary soils map was created. This preliminary mapping provided an initial understanding of the different types of soil and landscapes likely to occur across the project site and provided a basis for planning the field work.

4.3 FIELD WORK

4.3.1 METHODS

A detailed field survey was undertaken over two separate dates by GT Environmental Surveys. The fieldwork dates included 29 April to 7 June, 2013 and 30 to 31 June, 2013 using 'free survey' techniques (Gunn 1988) to collect observational and sampling data. This data was used to confirm and refine the preliminary mapping. The sampling intensity adopted for the soil survey followed McKenzie (2008) using field methodology of DME (1995).

A mapping scale of 1:50,000 was applied across the Project area. This scale has been recommended by DNRM (2011) to provide an appropriate scale for investigation and mapping of study areas which may contain both potential cropping and grazing land. This scale of mapping requires a minimum of 2 sites per 100 hectares of which approximately 20% should be detailed and approximately 80% of which are observation sites.

Within the Project area there were 75 detailed sites and 176 observation sites; and overall, the field work included a total of 251 investigation sites over the Project area. A further 13 sites from the CDM Smith Soil Survey conducted between 29 November to 3 December 2011, within and outside the Project area have being included within this assessment for a total of 88 detailed sites. The total number of sites exceeds the minimum sampling requirements by McKenzie, 2008.

Observation Sites

A total of 176 surface observation sites were recorded during the field investigation. Surface observation sites provided basic information for indicative soil type, slope, surface condition and landscape characteristics and were used to refine mapped soil boundaries.

Detailed Sites

Detailed soil profile information was collected at the 66 detailed sites using a 50 mm diameter hand auger. This method is well established and is appropriate for sub-surface assessment and sampling for this survey. Detailed sites were augered to 1.0 m for a majority of the sites however some profile cuttings observed allowed sites to be recorded up to 3.0 m.

The location of detailed sites is presented in Figure 4-2. The specific locations of the detailed sites were determined in the field based on the location being a sound representation of the soil unit being described, available site access and preliminary mapping.

The information collected from detailed sites included:

- Location (GDA94) and type of soil observation (e.g. erosion exposed cutting or hand auger);
- Major vegetation types and land use;
- Landform type, position of the site and slope gradient;
- Surface condition (e.g. presence of cracks, surface crust, rocks stones and cobbles, erosion status, microrelief);
- Types and vertical extent of soil horizons;
- Colour (as per Munsell Soil Colour Charts) and mottling of each horizon;
- For each horizon, observations of field texture, pH, presence and abundance of segregations, coarse fragments, structure, consistence and pedality and moisture content;
- Presence of organic matter, roots and prevalence of biological activity; and
- Photographs of the soil profile and surrounding landscape.

Samples were collected from those detailed soil profiles considered most representative of the major soil units at the project site. A total of 33 samples were collected during field investigations from nine (9) detailed sites. Soil sampling of profiles was conducted as per Gunn et al (1988) Guidelines for Surveying Soil and Land Resources with samples taken from the surface (0.0-0.1m) and every horizon change within the soil profile. Samples were not collected across horizon or sub-horizon boundaries.

Laboratory Analysis

Samples of soils considered to be most representative of mapped soil units were submitted for laboratory analysis. Laboratory analysis was undertaken to assist in determining the overall soils characterisation and agricultural suitability of the soils and to establish the physical and chemical limitations of surface and near-surface soils for use in rehabilitation works. Laboratory testing was also used to identify soils that may require specific management measures.

Samples were analysed at Australian Laboratory Services (ALS), Brisbane, accredited by National Association of Testing Authorities (NATA).

The soil samples selected from within the project area were analysed for the following parameters:

- pH (1:5);
- Electrical conductivity (EC [1:5]);
- Total N, Nitrates;
- Bicarbonate Extractable P;
- Organic matter content;
- Exchangeable Cations, CEC, Ca/Mg Ratio, ESP;
- Metals - Total (Mn, B, Cu, Fe, Zn);
- Sulfur (Total as S);
- Chloride;
- Particle Size Distribution - Hydrometer Method; and
- Emerson aggregate test.

Subsoil from the Project area were analysed for a limited suite of parameters (pH, EC, cation exchange capacity and exchangeable ions and chloride) due to the low likelihood of these soils being disturbed by the project and used in rehabilitation.

In addition, calculations were undertaken to determine the exchangeable sodium percentage and the calcium to magnesium ratio. The rationale for the selection of individual analyses is presented in Appendix 1.

The laboratory analytical results were used in conjunction with the field assessment results to determine the suitability of the soil for agricultural use as well as the depth of soil material that is suitable for stripping and reuse during rehabilitation. The laboratory results are summarised in Attachment 1, section 3 and detailed in attachment C (Laboratory Certificates).

4.4 SOIL MAPPING UNIT RESULTS

Eight soil mapping units have been identified within the Project area. The soil mapping units have been grouped according to basic soil morphology, position in the landscape and parent material and are summarized in Table 4-1. Individual soil types have been classified in accordance with the Australian Soil Classification (Isbell, 2002). In some instances, mapped soil mapping units may include other associated soil types. Comparable soil types described by Story et al (1967) and AMU's of Bourne and Tuck (1993) are cross-referenced.

Figure 4-2 illustrates the spatial distribution of all mapped soil units within the study area and detailed descriptions of each soil mapping unit are provided in the following sections. Full analysis of each soil mapping unit is provided in Appendix 1, section 4.2.

Figure 4-2 Soil Mapping Units

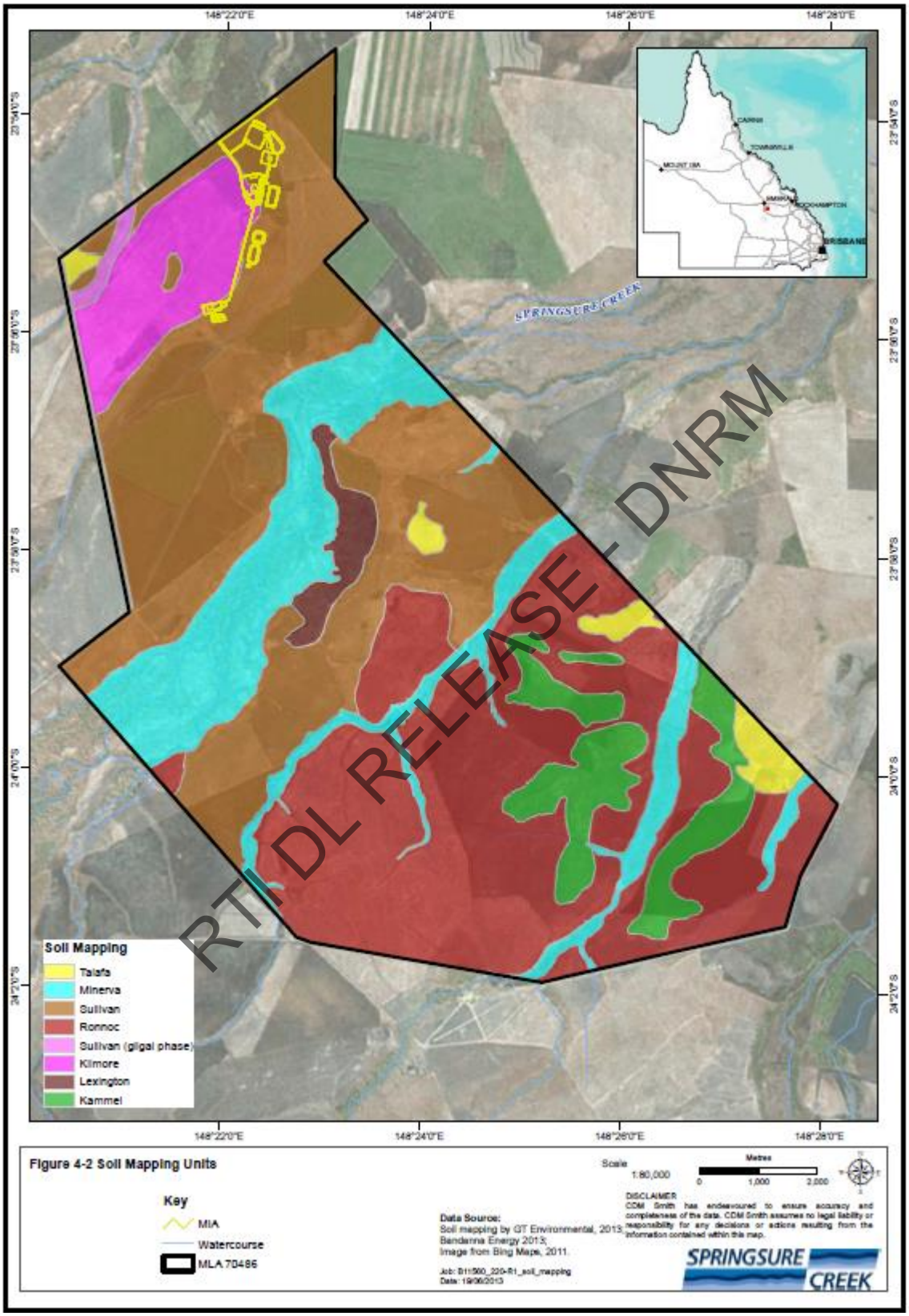


Table 4-1 Soil Mapping Units (SMU)

SMU	Concept	Land System (Story et al (1967)	AMU (Bourne and Tuck (1993)	Soil Type of Story et al (1967)	Major Vegetation	Detailed sites] (* laboratory site)
Recent alluvial channels and floodplains						
Mv **Minerva**	A grey to black cracking clay with coarsely self mulching surface	Funnel	Adelong	Vermont	Flooded coolibah, Black tea tree, Queensland bluegrass	14, 35, 57, 58, 60, 61*, 65, 71 73, 74, SB7.
Gently undulating plains with soils overlying Tertiary volcanics						
Rn **Ronnoc**	A self mulching, black to grey, alkaline cracking clay overlying basalt below 0.45m.	Oxford	Orion	Arcturus May Downs	Mostly cleared. Previous bluegrass downs with mountain coolabah and bloodwood.	15, 20, 22, 23, 24, 25, 26, 27, 28, 33, 34, 39, 40, 44, 48, 49, 50, 53, 54, 56, 59, SB10*, SB11*.
Undulating plains and rises with soils overlying deeply weathered Tertiary basalt						
Ka **Kammel**	A deep self mulching, red to brown cracking clay overlying a mottled zone below 0.5m depth	Oxford	Picardy	Glenora	Mostly cleared. Previous brigalow, yellowwood and Dawson gum scrub.	36*,38, 45, 47, 51.
Lx **Lexington**	A shallow, firm, red to brown clay / clay loam overlying ferruginised basalt or other gravel by 0.5m depth.	Oxford	Jimbaroo	Gindie	Mostly cleared. Previous Bonewood mixed scrub	18,19, 62*, 66, 67, 69.
Level to undulating plains with soils overlying Cainozoic sediments						
Tf **Talafa**	A firm to hard setting red to brown massive gradational or duplex soil overlying buried layers of possibly mottled grey clay or gravelly material below 0.9m depth.	Arcadia / Monteagle	Duckponds	Taurus	Mostly cleared. Previous silver leaf ironbark and bloodwood.	6, 16, 17, 37*, 46, 52, 75
Km **Kilmore**	A firm red to brown duplex soil with sandy clay loam over clay subsoil which may be mottled over gravel and carbonate dominated material	Arcadia / Racecourse	Glen Idol	Springwood	Mostly cleared. Previous brigalow and Dawson gum	9, 12, 31*

SMU	Concept	Land System (Story et al (1967)	AMU (Bourne and Tuck (1993)	Soil Type of Story et al (1967)	Major Vegetation	Detailed sites] (* laboratory site)
	below 0.7m				scrub.	
Sv **Sullivan**	A deep sandy self mulching grey to black (occasionally brown) cracking clay over buried layers with gravel below 0.7m depth.	Arcadia / Racecourse	Picardy	Rolleston	Mostly cleared. Previous Brigalow Dawson gum and yellowwood scrub.	1, 3, 4, 5, 10, 11, 13, 21, 29, 30,32, 63, 64, 70, 72, SB1*,SB4*
SvDv **Sullivan duplex variant**	An intermittent, non mappable variant with a thin sandy clay loam surface layer overlying deep, moderately well structured medium clay subsoils.	Arcadia / Funnel	Turkey Creek	Gindie / Rolleston	Mostly cleared. Previous thick brigalow scrub.	32, 41, 42*, 43, 55
Sv-Gp **Sullivan gilgai phase**	Normal or linear gilgai complexes, Mounds are brown self mulching cracking clay (similar to Sv). Depressions are grey to black, cracking deep clay.	Arcadia	Rolleston	Rolleston	As above	7*, 8*

4.5 SCL EVALUATION

4.5.1 SCL CRITERIA FOR WESTERN CROPPING ZONE

The SCL Act defines eight criteria that confirm whether land is SCL or not. These criteria are inclusionary and have threshold levels. SCL is only confirmed when all of the eight criteria are met (DERM, 2011).

The thresholds for the SCL criteria are particular to each of the five cropping zones identified by DERM in Queensland. This allows for the regional differences in climate, land form and cropping systems between each zone. The Project lies within the Western Cropping Zone for which the relevant SCL criteria are presented in Table 4-2 below.

Table 4-2 SCL Criteria for Western Cropping Zone

SCL Criteria	Limitations
1. Slope	Slope is 3% or less.
2. Rockiness	Less than 20% surface rocks larger than 60 millimetres (mm).
3. Gilgai micro-relief	The average density of gilgai microrelief depressions deeper than 500 mm is less than 50% of the land surface.

SCL Criteria	Limitations
4. Soil depth	Soil depth is equal to or greater than 600 mm.
5. Drainage	The land has favourable drainage (no waterlogged layers within 300 mm of the ground surface).
6. Soil pH	Rigid soils (not shrink/swell clays): soil pH at 300 mm and 600 mm is between pH 5.1 and pH 8.9 inclusive.
	Non-rigid soils: soil pH at 300 mm and 600 mm is greater than pH 5.0.
7. Salinity	Chloride content is less than 800 milligrams per kilogram (mg/kg) from the surface to 600 mm depth.
8. Soil water storage	The land's soil water storage is equal to or greater than 100 mm to a soil depth or soils physico-chemical limitation of equal to or less than 1000 mm.

To confirm the presence of potential SCL at the Project site, the following steps have been taken:

- Determine exclusion areas from the trigger mapping based on:
- Assessment against SCL criteria 1 to 3 (i.e. slope, rockiness and gilgai microrelief);
- Minimum size requirements of map units in the Western Cropping Zone;
- Existing land use or disturbance;
- Map and described soil mapping units in a manner consistent with DERM (2011) Guidelines; and
- Assessment of field validated soil type characteristics and mapping extents against SCL criteria 4 to 8.

4.5.2 EXCLUSION AREAS

Assessment against SCL Criteria 1 to 3

A total of 251 soil survey sites were described in or near to the Project area which included 75 detailed soil survey investigations and 176 observation level soil survey sites (Refer Table 4-3).

The location of detailed soil survey sites within the Project area is presented in Figure 4-2. This represents a sampling intensity of about 1 site every 42 hectares. All sites were measured for slope, surface rockiness and gilgai microrelief in accordance with the SCL Guidelines to assess if they should be excluded as SCL.

No sites fail the SCL criteria for slope, rockiness and gilgai microrelief. Also, no areas smaller than the minimum size criteria of 10 ha and 80 m width were identified. Therefore no exclusion areas are proposed within the Project area on the basis of SCL criteria 1 to 3.

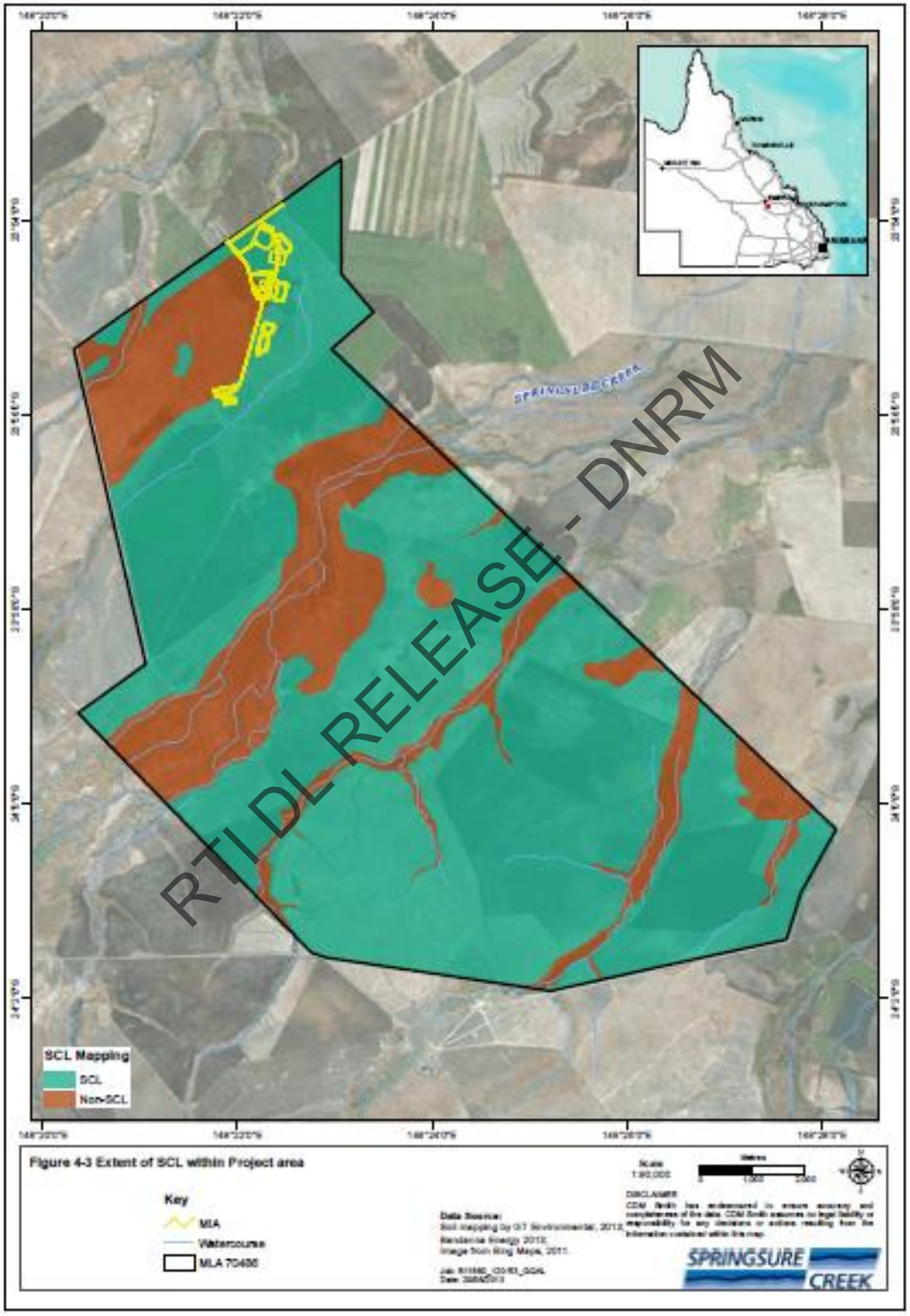
Conflicting Land Uses

The Project area contains built infrastructure and areas of existing disturbance. However, the areas of such disturbance are low so no exclusion areas on the basis of built infrastructure have been recorded.

Cropping History Assessment

As the Project area lies within the Central Protection Area, the cropping history assessment guidelines do not apply (DERM, 2012 cropping history guidelines). A cropping history assessment is only applicable to land within an SCL management area. Land within the Project area will therefore only need to meet the SCL criteria in order to be validated as SCL and cropping history will not need to be demonstrated.

Figure 4-3 Extent of SCL within Project Area



4.5.3 ASSESSMENT OF SOIL TYPES

In terms of SCL assessment, areas larger than the minimum size criteria of 10 ha and 80 m width which pass the exclusion tests must be delineated as soil mapping units. To capture variation in each soil mapping unit, the SCL Guidelines dictate that the SCL assessment should be based upon the characteristics of the dominant soil type for each mapping unit.

The assessment carried out as part of the present Project meets SCL Guidelines which require that a minimum of 2 detailed sites and 1 analytical site are undertaken per soil type, as well as at least 2 check sites per individual map polygon.

Appendix 1 of this Report presents the range of laboratory, soil morphology and topographic data used in the formulation of soil mapping units and the subsequent SCL assessment. Eight SMUs are described in the Project area with all occurring within the potential SCL area in sufficient size to be considered.

Laboratory data of attributes relevant to SCL criteria assessment was obtained from nine sites. All soil mapping units were assessed for laboratory attributes in conformance with DERM (2011) guidelines. Table 4-3 includes numbers of the types of soil survey sites undertaken in or near to the SCL area, and the area of each SMU within the SCL area as presented in Figure 4-2 above.

Table 4-3 Site Details of SMUs for the Project area

SMU	Concept Description	Soil Survey sites described		Area (ha)
		Detailed	Analytical Sites	
Recent alluvial channels and floodplains				
Mv Minerva	A grey to black cracking clay with coarsely self mulching surface	14, 35, 41, 42, 43, 55, 57, 58, 60, 61, 65, 71, 73, 74, SB7.	61, SB7	283
Gently undulating plains with soils overlying Tertiary volcanics				
Rn Ronnoc	A self mulching, black to grey, alkaline cracking clay overlying basalt below 0.45m.	15, 20, 22, 23, 24, 25, 26, 27, 28, 33, 34, 39, 40, 44, 48, 49, 50, 53, 54, 56, 59, SB10, SB11.	SB10*, SB11*.	3600
Undulating plains and rises with soils overlying deeply weathered Tertiary basalt				
Ka Kammel	A deep self mulching, red to brown cracking clay overlying a mottled zone below 0.5m depth	36, 38, 45, 47, 51.	36	702
Lx Lexington	A shallow, firm, red to brown clay / clay loam overlying ferruginised basalt or other gravel by 0.5m depth.	18,19, 62, 66, 67, 69.	62	8
Level to undulating plains with soils overlying Cainozoic sediments.				
Tf Talafa	A firm to hard setting red to brown massive gradational or duplex soil overlying buried layers of possibly mottled grey clay or gravelly material below 0.9m depth.	6, 16, 17, 37, 46, 52, 75	37	209
Km Kilmore	A firm red to brown duplex soil with sandy clay loam over clay subsoil which may be mottled over gravel and carbonate dominated material below 0.7m	9, 12, 31	31	637
Sv Sullivan	A deep sandy self mulching grey to black (occasionally brown) cracking clay over buried layers with gravel below 0.7m depth.	1, 3, 4, 5, 10, 11, 13, 21, 29, 30,32, 63, 64, 70, 72, SB1,SB4	SB1,SB4	3389
SvDv Sullivan duplex variant	An intermittent, non mappable variant with a thin sandy clay loam surface layer overlying deep, moderately well structured medium clay subsoils.	32, 41, 42, 43, 55	42	-

SMU	Concept Description	Soil Survey sites described		Area (ha)
		Detailed	Analytical Sites	
Sv-Gp Sullivan gilgai phase	Normal or linear gilgai complexes, Mounds are brown self mulching cracking clay (similar to Sv). Depressions are grey to black, cracking deep clay.	7, 8	7,8	40
TOTALS		73 (+2 Boundary Sites)	9	8868

4.5.4 ASSESSMENT OF SCL

The assessment of dominant soil type characteristics against the SCL criteria demonstrates that three of the eight soil mapping units within the Project area cannot be classed as SCL (Table 4-4). The remaining five soil mapping units do comply with the SCL criteria, meaning these units can be classed as SCL.

The three soil mapping units which do not comply with the SCL criteria are:

- *Minerva* (Mv) – alluvia soils located in floodplain. Crop productivity affected by poor drainage and susceptibility to flooding.
- *Lexington* (Lx) – crop productivity affected by limited root growth as a result of <0.6 m soil depth and low soil water storage
- **Talafa** (Tf) – low soil water storage restricts root growth and limits crop productivity

Table 4-4 Summary of SCL Assessment

SCL Criteria	Soil Mapping Unit						
	Mv	Rn	Ka	Lx	Tf	Km	Sv SvGp
1 Slope	PASS	PASS	PASS	PASS	PASS	PASS	PASS
2 Rockiness	PASS	PASS	PASS	PASS	PASS	PASS	PASS
3 Gilgai Microrelief	PASS	PASS	PASS	PASS	PASS	PASS	PASS
4	PASS	PASS	PASS	**FAIL**	PASS	PASS	PASS

SCL Criteria	Soil Mapping Unit						
	Mv	**Rn**	**Ka**	**Lx**	**Tf**	**Km**	**Sv SvGp**
Soil Depth	(>1.0m)	(0.8m+)	1.0m	**<0.5m**	0.9m	1.0m	0.7m+ (mostly >1.0m)
5 Soil Wetness	**FAIL** Susceptibility of flooding	PASS	PASS	PASS	PASS	PASS	PASS
6 Soil pH	PASS Moderately alkaline <8.8	PASS Slightly alkaline <8.5	PASS Slightly alkaline <8.5	PASS Slightly alkaline <8.5	PASS Neutral to slightly alkaline <7.6	PASS Neutral – slightly alkaline <8.6	PASS Moderately alkaline <8.8
7 Salinity	**FAIL** Site 61 has 1400 mg/kg at 0.6m depth and further increasing to 0.9m. Site SB7 is non saline throughout.	PASS Very low Cl throughout	PASS Very low Cl throughout	PASS Very low Cl throughout	PASS Very low Cl throughout	PASS Very low Cl throughout	PASS Generally low Cl throughout. SVDv tends towards saline below 0.8m depth
8 Soil Water Storage Estimated from DERM (2011) field water storage.	PASS 120-130mm	PASS 130mm+	PASS 110-130mm	**FAIL 50-60mm**	**FAIL 50-60mm**	MARGINAL PASS 90-100mm	PASS 90-140mm (mostly >100mm
SCL Status	**FAIL**	**PASS**	**PASS**	**FAIL**	**FAIL**	**PASS**	**PASS**

4.6 SCL VALIDATION

Of the total area of potential SCL presented on the SCL Trigger Map within MLA 70486, an area of 8,368 ha (94%) passes all SCL criteria. An area of 500 ha (6%) of potential SCL fails to meet all of the SCL criteria. SCL therefore occupies approximately 77% of MLA 70486. The difference between SCL shown on DERM trigger mapping and the extent of SCL recorded on site through the field investigations is therefore limited.

SCC does not intend to submit an application for an SCL validation decision under Part 2 of the SCL Act to statutorily record the land decided as non-SCL within the Project area. Rather, all potential

SCL (as shown on the SCL Trigger Map) within MLA 70486 is considered as SCL for the purposes of this assessment and Protection Decision. This assumes a conservative approach to the assessment of impacts, as presented in the next section.

5.0 IMPACT ASSESSMENT

5.1 METHODOLOGY

The methodology applied to evaluate impacts on SCL follows the definitions set out in the SCL Act. In particular, section 14 of the SCL Act defines whether impacts are considered permanent or temporary as follows:

> "*Carrying out development on SCL or potential SCL has a **permanent impact** on the land if –*
>
> a) The carrying out impedes the land from being cropped for at least 50 years; or
> b) Because of the carrying out, the land cannot be restored to its pre-development condition; or
> c) The activity involves-
> - Open-cut mining; or
> - Storing hazardous mine wastes, including for example, tailings dams, overburden or waste rock dumps."

A temporary impact on the land is therefore any activity which does not meet these criteria.

In addition to the definitions set out in the SCL Act, DNRM has released the draft guidance *Fundamentals of Preparing an Application for an SCL Decision* (DNRM 2012). This provides the following additional considerations with regard to impacts on SCL:

> *"An impact on SCL results when land is either altered from its predevelopment condition or impeded from being cropping for a period of time, regardless of whether the land is currently being cropped or has been cropped prior to the activity, or is likely to be cropped in future. Potential impediments to cropping may be legal or physical. Impacts are not exclusively confined to the footprint of activities, for example an activity may impede access to an adjacent area of SCL or isolate a fragment of SCL reducing its availability for cropping.*"

The term "pre-development condition" follows the meaning given in schedule 2 of the SCL Act:

> "*Pre-development condition…means that the land is restored to –*
>
> a) Its condition before the development started; or
> b) …a condition consistent with contiguous SCL for the land."

DNRM (2012) provides guidance on mitigation arrangements for impacts on SCL. The principles of mitigation for impacts on SCL are as follows:

- Mitigation measures should lessen the impact on production that results from a permanent impact such that the value of the mitigation measure is equal or greater than the lost productive capacity;
- Financial contributions to activities that enhance cropping productivity are the most suitable means of mitigating for losses;

- Mitigation measures should provide benefits for the future productivity of cropping in Queensland, and preferably within the area in which the impact occurs; and
- Mitigation is to provide positive benefits for the productivity of cropping land in an enduring manner.

The following section predicts the magnitude and significance of the Project's impacts on SCL. It considers impacts on SCL by accounting for the following potential effects of development, and presents mitigation measures as appropriate:

- Physical e.g. changes to topography and landform, soil stability, erosion;
- Chemical e.g. emissions and deposits within or on the soil;
- Biological e.g. spread of weeds and pests; and
- Land use e.g. changes to land tenure, access, water resources or land suitability.

5.2 POTENTIAL PHYSICAL IMPACTS ON SCL

Almost all development is likely to result in the physical modification of landform, topography, soil stability and soil erosion unless suitable mitigation measures are adopted. Each of these potential impacts are discussed below with reference to the construction and operational phases of the Project, and with particular attention given to activities or processes which are likely to generate key impacts on SCL.

5.2.1 CONSTRUCTION ACTIVITIES

The Project's construction activities described in section 2.2 will alter existing ground levels to those required by the above ground infrastructure. This impact is unavoidable due to the existing nature of the ground surface which is unsuitable to construction in its present form.

Construction works also have the potential to cause soil erosion. The Project could increase the rate of soil erosion as a result of increased runoff from hardstanding areas or the creation of any unstable slopes, for example, during the creation of temporary soil or basalt stockpiles. Importantly, the advance/preparatory works that are proposed to occur ahead of any bulk earthworks or construction works will provide for site drainage infrastructure. This infrastructure will contain all surface runoff from the Project construction area and be designed with consideration to annual rainfall, storm frequency and intensity and landform. The erosion control measures will comprise sediment traps, silt fences and stormwater drainage management.

It should be noted that soil erosion already occurs in the area as a result of existing agricultural land management practices. Notwithstanding this, any potential erosion caused by soils exposed by the clearance of crops from the construction area on Den-Lo Park will be managed. The Project's construction will not require the clearance of crops from any other areas within MLA 70486. Soil erosion will not significantly change within the Project area as a result of the Project.

Construction works could affect soil structure through compaction as a result of vehicles driving on site or materials being stored in lay down areas. Soil compaction inhibits root penetration and may also cause soil to have a reduced capacity to retain moisture and subsequently reduce the amount of water available to plant roots. The extent of this impact will be mitigated by limiting all Project vehicle movements along defined roads within the Project site. All members of the Project workforce will be briefed on where to drive and the sensitivity of adjacent land.

Changes to ground levels as a result of bulk earthworks and as a result of soil compaction beneath roads within the Project area will remain altered for the life of the Project until the infrastructure is dismantled and the land restored. The above ground infrastructure will be operational for as long as the mine i.e. 40 years. Dismantling and restoration of this infrastructure would be completed within 3 years of operations finishing. The extent and magnitude of these potential impacts has already been reduced through careful consideration of the Project's layout (refer section 2.4).

Quarrying for basalt will also disturb the land surface and create depressions where basalt is extracted to provide materials for maintenance of hardstanding areas during operations.

5.2.2 LONGWALL MINING OPERATIONS

As explained in section 2.3, longwall mining allows for the overburden behind the coal shearer to collapse into the goaf. The effect of this sagging may transfer to the surface and present as subsidence. The extent to which subsidence occurs depends on the width and height of the coal seam, the depth of the seam from the surface and the strength of the overburden to resist collapsing throughout its depth.

Subsidence modelling carried out as part of the Project's EIS predicts the following worst-case consequences in the absence of any mitigation:

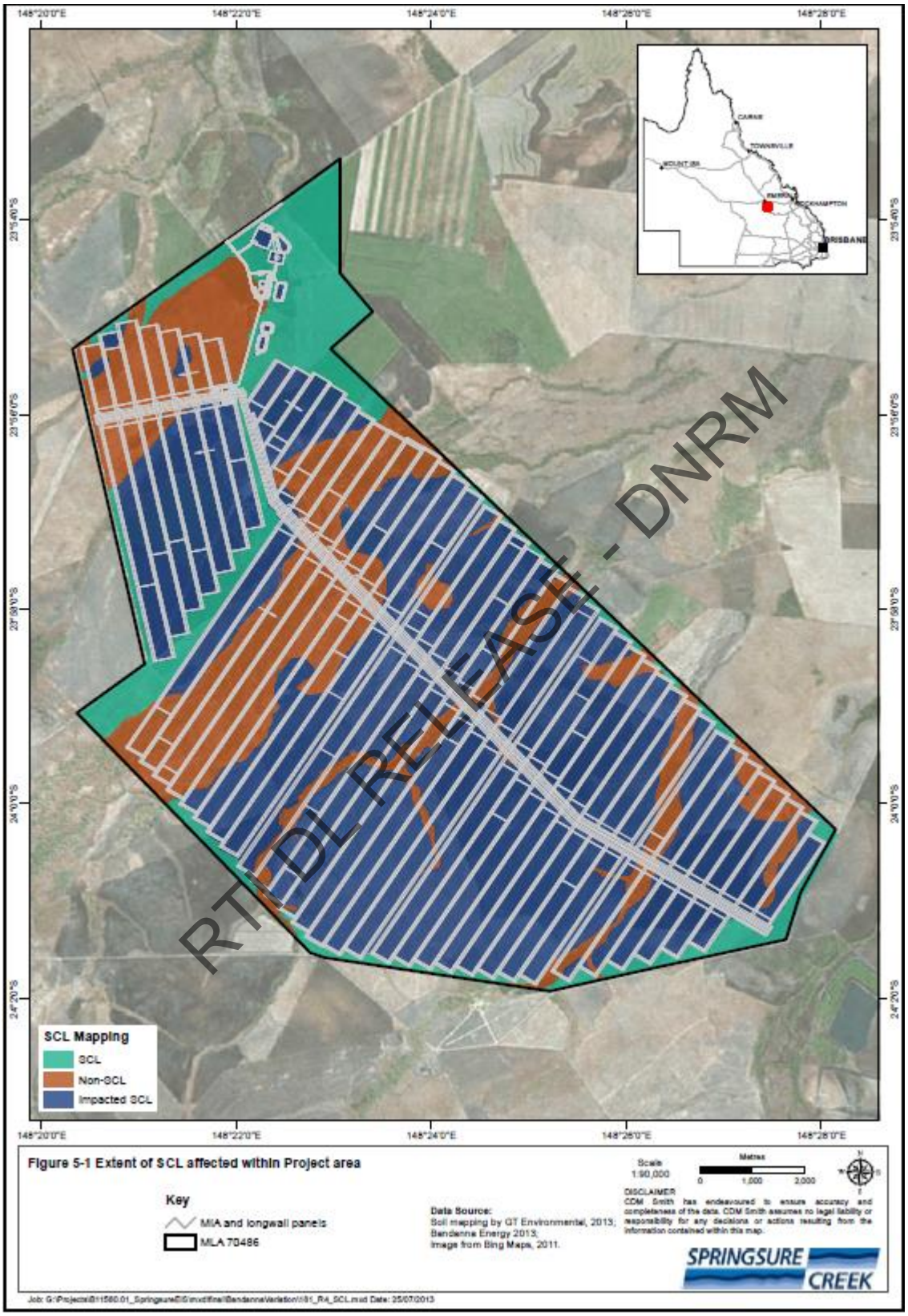
- An area of 7,050 ha will be subsided within MLA 70486 comprising 65% of the Project area;
- Subsidence will occur gradually with 100 ha / yr during single longwall operations and 200 ha / yr during dual longwall operations;
- Within the area subsided, maximum surface subsidence will be 2.2 m. This is notably in the middle of longwall panels in the centre of the Project area;
- A maximum subsidence of up to 1.4 m is predicted above pillars retained either side of longwall panels. Again this is at the centre of the Project area;
- A maximum tilt of approximately 36 mm/m will occur at the very edge of longwall panels in the centre of the Project area; and
- Impact on other areas will be of a lower magnitude with minimum of 0.2 m subsidence and 0% tilt depending on the location within the subsided area.

The extent of SCL affected by subsidence is 6,794 ha (refer dark blue areas within Figure 5-1). Other areas of SCL within the Project area would not be affected by subsidence, for example that on land east of the surface infrastructure area and in the central west portion of the site.

Modelling to assess the effects of subsidence on surface watercourses and farm dams was also undertaken as part of the EIS to establish any change in flooding extent and duration, flow velocities, bed shear stress and stream power. The modelling was based on worst case subsidence predictions without any mitigation measures. The key findings of this study are:

- Ponding will occur in subsided areas but be contained within existing drainage areas which are mostly non-SCL;
- The depth of ponding will be approximately 1 to 2m; and
- Changes to flow velocity, shear stress and stream power for 2 and 50 ARI flood events are likely to increase erosion and channelization but values are within DERM criteria for stable watercourses.

Figure 5-1 Extent of SCL affected by Operations



Based on the results above and without any mitigation measures undertaken, physical changes as a result of subsidence could therefore potentially impact on SCL within and surrounding the Project area by:

- Altering soil drainage, soil wetness and soil water content;
- Altering slope and flood irrigation practices; and
- Affecting farm infrastructure such as road and crop storage (with the latter possibly becoming increasingly important in the future as operators look to service markets directly from sales off farm).

Natural geomorphological processes would not rectify the effects of subsidence on land resources within a period of 50 years and given the very slow rate at which these natural processes take place the impacts of subsidence would be permanent unless mitigation is implemented. Subsidence impacts on man-made farm infrastructure would of course be permanent without any intervention by SCC. The Project proposes to fully mitigate the effects of subsidence as part of the mining operations and improve productivity where possible.

Mitigation measures will comprise the sensitive timing of mine and agricultural activities so as to avoid impacts on the latter. For example, areas to be mined and thus subsided will be known well in advance of actually occurring i.e. at least 5 years ahead during preparation of the Plan of Operations and Development Plan. Planning will take place on a paddock by paddock and longwall panel by longwall panel basis. Agricultural activities and mine advancements will thus be planned coincidentally to avoid impacts on SCL.

This approach also allows for the timing of agricultural improvement programs to be aligned with the mine plan, such as the timing of laser levelling, timing of fallow periods and re-contouring of erosion banks. These works could, for example, restore the land following subsidence at the same time. Improvement works would utilise the same techniques as those currently used in the Project area as part of existing agricultural management practices.

All impacts on productivity will be managed through an Agricultural Management Plan developed in consultation with landholders and statutory agencies. It is SCC's objective that land use suitabilities and production yields for areas directly impacted by the Project will be maintained or improved. The Project therefore seeks to result in no net loss of agricultural productivity. Research and strategies to achieve this objective will be directed by the independent Agricultural Coexistence Research Committee, funded by SCC.

5.3 POTENTIAL CHEMICAL IMPACTS ON SCL

5.3.1 CONSTRUCTION ACTIVITIES

Soil pollution can occur through two potential pathways:

- The disturbance and spread of soils already contaminated within the Project area as a result of previous land use activities; or
- Through emissions to land.

Disturbance and Spread of Soils Already Contaminated

A search of EHP's Environmental Management Register and Contaminated Land Register was undertaken as part of the EIS to determine whether any Notifiable Activities have been undertaken in the Project area. Notifiable Activates are those which have the potential to cause land contamination. The search of the Environmental Management Register identified Lot 5 DSN856 as having been used for the storage of Mine Wastes and Petroleum Product or Oil Storage. This listing is expected to be associated with a gas well. As this site is not listed on the Contaminated Land Register a site based management plan is not required.

Given the low risk of existing contamination being present within the Project area, no special measures will be required to remove, contain or remediate soils during construction works. SCL is not expected to be impacted temporarily or permanently as a result of any existing contamination from previous land use activities.

Spills of potentially polluting materials could theoretically occur during construction. Any spills would likely comprise of fuels, oils and other regulated substances typically used during construction works. However, the volume of potentially polluting materials to be stored on site or used at any one time would be low and not warrant an environmental authority for any Environmentally Relevant Activity listed under schedule 2 of the Environmental Protection Regulation.

Notwithstanding this, SCC will be required to comply with the general environmental duty of care prescribed under section 319 of the EP Act, whereby no activity may be carried out that causes, or is likely to cause, environmental harm unless all reasonable and practicable measures to prevent or minimise the harm are taken. Measures proposed by SCC to prevent and minimise the risk of contamination are included as part of the Project's Environmental Management System. Mitigation measures will include:

- Contractors carrying dangerous goods loads will be appropriately licensed in accordance with the legislative requirements;
- Fuel, oil and chemical storage areas will be designed in accordance with the relevant Australian standards. Storage areas will allow for adequate bunding and separation distances between incompatible fuels and chemicals. Storage areas will be regularly inspected and maintained as required;
- Prior to commencing works, all plant and equipment will be inspected on a daily basis to ensure leaks, breaks in hoses, pipes have not occurred;
- All operators will be trained in emergency response procedures in the event of fuel oil leakage;
- Adequately sized spill response kits will be available and maintained at all locations where spills are likely to occur across the Project site;
- A re-fueling procedure will be developed to ensure all vehicles that require refueling on-site is undertaken within designated areas on-site, on level ground and away from watercourses and drainage features;
- Site personnel will be trained to appropriately handle and use fuels, oils and other chemicals;
- Procedures will be developed for the handling and use of fuels, oils and other chemicals;

- A sump will be provided to collect any spillage and allow recovery during fueling of vehicles and maintenance activities;
- Ignition sources will be strictly controlled and limited to avoid a fire;
- Maintenance of fuel oil tanks will be undertaken to ensure safe and effective operation of all components; and
- Tank level indicators will be installed on fuel oil tanks for monitoring of fuel oil levels.

With these measures in place, it is considered highly unlikely that any permanent impact on SCL will occur as a result of soil contamination. These measures will also serve to protect other resources besides soils that are important to SCL including, for example, the quality and condition of water resources and surrounding agricultural land.

Emissions to Land

The Project could generate liquid or solid emissions that pollute SCL. Key sources of emissions to soils from the Project potentially include:

- Acid drainage from waste rock;
- Inappropriate management of general waste; and
- Dust and other airborne emissions.

Each of these contamination risks is discussed below. Impacts from emissions such as coal dust which could affect the palatability of crops or grazing land are discussed in section 5.5.

Acid Drainage from Waste Rock

An assessment of potential acid forming materials and potential acid mine drainage was undertaken to establish the risk of these to occur as a result of the Project. The assessments followed relevant industry standards (DME 1995a and DME 1995b). Based on samples collected as part of the Project's EIS, the overburden is:

- Of very low acid forming potential;
- Unlikely to release salts; and
- Of a low erosion potential.

As a conservative measure, any temporary waste rock stockpiles used during the construction phase will be managed to minimize hazardous associated with runoff. Measures will include, for example, stockpiling rock to an appropriate height and providing surrounding stockpile pads with appropriate drainage. All waste rock generated during construction will be recycled for construction of the dams and roads. Waste rock is therefore highly unlikely to affect SCL.

Inappropriate Management of General Waste

Construction wastes are likely to include liquid wastes, such as black water and grey water, and solid wastes, for instance excess building materials, old tyres or other products of machinery servicing. All waste, whether regulated under the schedule 1 of the *EP Regulation* or not, will be managed according to the waste management hierarchy i.e. (in order of preference): avoid, minimise, re-use and recycle, improve efficiency, or dispose.

All sewage effluent generated on the Project site will be contained and pumped to an effluent pond for treatment. Treated water will then be used as part of site water demands. Solids from this treatment process, as well as other solid waste types, will be collected and transported off site by appropriately licensed contractors for recycling or disposal. Disposal will occur within the capacity of existing landfills in the region.

Temporary storage sites used to contain waste on site will comply with relevant design criteria to avoid any emissions to surrounding areas, for example via runoff, seepage or by being wind-blown onto surrounding paddocks. Construction wastes are not expected to have a permanent chemical impact on SCL.

Emissions of Dust and other Air Pollutants

The Project's EIS included an assessment of emissions from construction and operations and the potential effect of this on adjacent areas. Potential key sources of dust emissions from the Project include: stockpiles, earthworks and vehicle movements on unsealed roads. Chemical emissions may also result from vehicle exhausts.

The assessment of air emissions was underpinned by a 3-dimensional model which incorporated local meteorological conditions and emission profiles for the typical equipment and activities proposed by the Project. Existing sources of dust within the Project area primarily include agricultural activities (N.B. stubble burning and large areas of exposed soils which can be eroded by wind), vehicle movements along unsealed roads and smoke from bushfires.

Results from the dust deposition modelling predict no exceedances above relevant air quality standards appropriate to the Project (i.e. 120 mg/m^2/day averaged over 30 days). This applies to both the construction and operational phases of the Project. It is acknowledged that this dust deposition criteria pertains to the protection of visual amenity rather than the specific protection of crops and grazing land from coal dust in particular. At present, there is no statutory standard defined for the protection of crops or livestock from impacts associated with particulate matter. However, the conservative criteria used to the aesthetic environment from deposited dust are considered adequate to protect SCL from any impacts.

Emissions of other air pollutants which could affect vegetation include nitrogen dioxide and sulphur dioxide. Exposure to these pollutants can present as surface spotting or bleaching on leaves, depending on the duration of exposure. Emissions of nitrogen dioxide and sulphur dioxide are generated from vehicle exhausts. Modelling carried out as part of the EIS predicts that all emissions from vehicles will be negligible and compliant to relevant standards, including the protection of agriculture. Lastly, the Project will not result in any emissions of ozone, which can also cause flecking on plant leaves, or any emissions of fluoride, which may accumulate in grazing animals and cause dental problems.

The Project proposes to include a number of mitigation measures to reduce the potential for dust and other air pollutant impacts, throughout all phases of development. These measures will be delivered through an Air Quality Management Plan and include, for example:

Construction

- Upgrade and seal the roads to be used by Project traffic to access the site in order to minimise dust emissions;

- Set speed limits for light and heavy vehicles moving;
- Minimise the amount of exposed soil at any one time to reduce dust lift-off;
- Cover all haul trucks carting materials likely to generate dust emissions e.g. sand, soil or other loose materials;
- All vehicles, mobile plant and machinery to be maintained and operated in accordance with manufacture's specifications and service schedules to minimise exhaust emissions;
- Water areas as needed to reduce dust lift-off; and
- Educate all site personnel and contractors to make them aware of requirement to minimise dust.

Based on the results of the emissions modelling and the implementation of the Air Quality Management Plan, the Project is not expected to impact on SCL as a result of any emissions to air.

5.3.2 LONGWALL MINING OPERATIONS

The Project's operations will not require the use of any large quantities of chemical agents or other potentially polluting materials. An environmental authority will not be required for any Environmentally Relevant Activities during the Project's operation. The management of the use and storage of potentially polluting materials will mirror that to be applied during construction.

The Project will export all run-of-mine coal to market. This avoids the need for a coal processing plant within the Project area (or indeed elsewhere along the coal export chain). In the absence of any coal processing plant, there is no requirement for the use, storage or disposal of chemicals typically used during the coal benefaction process. It also means there will be no requirement for the storage of waste rock or fine tailings.

All potentially polluting materials or waste streams stored or handled as part of Project operations will be subject to the same controls and fates as those applied during the construction phase of the Project, as will those for the control of airborne emissions N.B. the use of water or suppression sprays on any unsealed areas and coal stockpiles.

No permanent chemical impacts are expected on SCL as a result of the Project's operation.

5.4 POTENTIAL BIOLOGICAL IMPACTS ON SCL

Biological impacts on SCL comprise issues of biosecurity, in particular weed and pest species. Weed species typically invade disturbed land areas, including tilled agricultural soils, where they compete against crops for nutrients, water and light. Some weeds can be very difficult to remove from the soil. Pest species include vermin such as introduced rodents which can decimate stored grain and seed supplies if their numbers are not controlled. The following assesses the potential impacts of weeds and pests on SCL in the Project area.

5.4.1 CONSTRUCTION ACTIVITIES

Ninety-seven introduced weed species were identified within the Study area (Appendix A4-12). Of the 97 weed species identified, seven are classified as Class 2 under the *Land Protection (Pest and Stock Route Management) Act 2002*, and five are also declared as Weeds of National Significance (Table 5-1).

Table 5-1 Invasive Species Recorded within the Project Area

Species Name	Common Name	LP Act Class	WoNS
Baccharis halimifolia	Groundsel Bush	2	-
Cryptostegia grandiflora	Rubber Vine	2	Declared
Harrisia tortuosa	Harrisia Cactus	2	-
Opuntia stricta	Common Prickly Pear	2	Declared
Opuntia tomentosa	Velvety Tree Pear	2	Declared
Parkinsonia aculeata	Parkinsonia	2	Declared
Parthenium hysterophorus	Parthenium	2	Declared

Vehicles and machinery bought to the Project site have the potential to introduce additional weed species. Furthermore the disturbance of existing areas occupied by weeds can encourage their spread across the site. To control for this, construction activities will implement the following measures and deliver them through a Weed and Pest Management Plan. These measures will work in combination with some of the waste management controls described above:

- All machinery brought to site must be certified weed free;
- Pre-construction weed mapping should be undertaken to accurately determine the extent of weeds and pests;
- Vehicle wash down procedures;
- Minimise the use of off-road vehicle movements;
- Onsite waste disposal strategies (particularly for food wastes) to be employed that will not encourage the presence of vermin;
- Strategies for the storage of construction and operation materials/equipment to be employed that will not encourage the presence of resident vermin;
- Regular onsite inspections of site infrastructure/equipment for resident pest fauna and establishment of register for pest sightings;
- Sediment control mechanisms to minimise the risk of weed seeds washing into waterways;
- Control strategies outlined in the Department of Agriculture, Fisheries and Forestry weed and pest animal fact sheets and other relevant government biosecurity management strategies; and
- Monitoring and weed and pest inspections particularly in responses to reported outbreaks or from complaints or adjacent property owners.

In the highly unlikely event an outbreak of any weed or pest species occurs at the Project site then targeted control and removal measures would be carried out in consultation with landholders and relevant statutory agencies.

With all of these measures in place, no permanent biological impact on SCL is predicted as a result of the Project.

5.4.2 LONGWALL MINING ACTIVITIES

Operations will apply the same measures used during the construction phase for the control of weed and pest species, as appropriate. No permanent biological impacts are expected during the operational phase of the Project on SCL.

5.5 POTENTIAL IMPACTS FROM LAND USE CHANGE

Development results in the replacement of existing land uses beneath its footprint although it is typically required to be of a compatible nature in terms of avoiding or minimising indirect impacts on surrounding land use activities and resources. Potential indirect impacts of the Project on land uses associated with SCL could arise from:

- Changes to the quantity or quality or water resources;
- Changes to tenure or access; and
- Changes to land suitability.

5.5.1 CHANGES TO THE QUANTITY OR QUALITY OF WATER RESOURCES

Measures to avoid impacts on water as a result of the Project's design are presented in section 2.4.3. The following subsections assess potential impacts on water as a result of the Project's operation.

Subsidence Impacts on Surface Water Flows

Two waterways traverse the Project area, Springsure Creek and Station Creek and a number of tributaries of these as well as Orion Creek and Turkey Creek. Six agricultural dams are also present: four on Den-Lo Park and two on Springton (the location and ownership of properties are discussed in more detail in the next section 5.5.2 below). Stream flows within the Project area have been affected by the diversion and storage of water for agriculture. A total of 81 water entitlements exist for the Comet River Sub-Catchment, within which the Project area is located. These entitlements are allocated through the Fitzroy Water Resource Plan (2011). There are no existing water rights for properties within the Project area. Of the 17 properties downstream of the Project, these have entitlements to source water from Minerva Creek and the Comet River, both of which are fed in part by watercourses traversing the Project site. Water quality is affected by high levels of nutrients, salts and heavy metals. This is generally typical of agricultural areas.

The potential change to surface water drainage and flows was assessed using a model linked to the outputs of the subsidence modelling referenced in section 5.2.2. This hydrological model provided information on any changes to water velocity and stream power and was based on a theoretical worst case scenario assuming all subsidence occurs at the same time. In reality, subsidence will occur as a staged process and with affected areas progressively rehabilitated.

The key results from the hydrological modelling of subsidence impacts on surface waters without any mitigation are summarised below. Actual changes will be lower as mining will occur progressively across the Project area and be rehabilitated throughout the life operations:

- Water is expected to be held within subsidence depressions on the land surface (ponding) (refer Figure 5-2).

- Broadly water will be contained within the existing extents of drainage lines across the site. These areas are already prone to flooding are not SCL.
- Drainage channels within longwall panels will be realigned but overall the direction and end point of flows will remain the same (Figure 5-3 and Figure 5-4).
- Ponding will reduce annual stream flows with greatest reductions occurring at the three smaller tributaries downstream of the site. Reductions at tributary of Springsure Creek, tributary of Orion Creek and Station Creek without mitigation will be 28%, 19% and 15% respectively. Larger creeks will experience smaller changes to flow (Springsure Creek 3% reduction and Turkey Creek 2% reduction). Commensurate reductions will be realised in the dams fed by Springsure Creek on Den-Lo Park (Springsure Creek Agricultural Holdings Pty Ltd) and Springton properties.
- Peak flood flows will be reduced downstream during relatively low flow events in smaller tributaries (e.g. 2 year ARI flood events) due to greater proportion of run off volume remaining in ponded areas. Peak flood flows in larger creeks will not be reduced except for flows within the tributary of Turkey Creek (80% reduction).

Impacts on surface water have been largely avoided due to the longwall panels being aligned in parallel to the primary drainage directions (i.e. southwest to northeast). Furthermore, any affected water courses are likely to 'heal' the effects of subsidence as ponded areas will deposit sediment. Thus, after a sufficient number of flood events the ponded areas will be filled with sediment and reduce the overall volume of water captured within longwall panels, and reduce any impact on stream flows.

As mentioned in section 5.2.2, Subsidence Management Plans will be developed on a longwall panel by longwall panel and paddock by paddock basis, and consider effects on water resources both within and downstream of the affected area. These plans will be developed in consultation with landholders and relevant government agencies. Mitigation measures to minimise the effects of subsidence proposed by SCC include:

- Excavating through pillar areas of longwall panels to maintain hydraulic connectivity (where natural erosion processes do not already provide this);
- Re-contour and level land to maintain drainage channels required by agriculture;
- Providing bank stabilisation and re-shaping of stream banks where any instability occurs;
- Drainage or lowering of farm dam water levels to ensure potential outflows from damaged dam walls are minimised; and
- Reinstatement of any damaged dams or farm water infrastructure in accordance with the Fitzroy Water Resource Plan.

Monitoring of subsidence will be based on DNRM's *Watercourse Subsidence – Central Queensland Mining Industry Guideline*.

Figure 5-2 Maximum Expected Surface Water Ponding

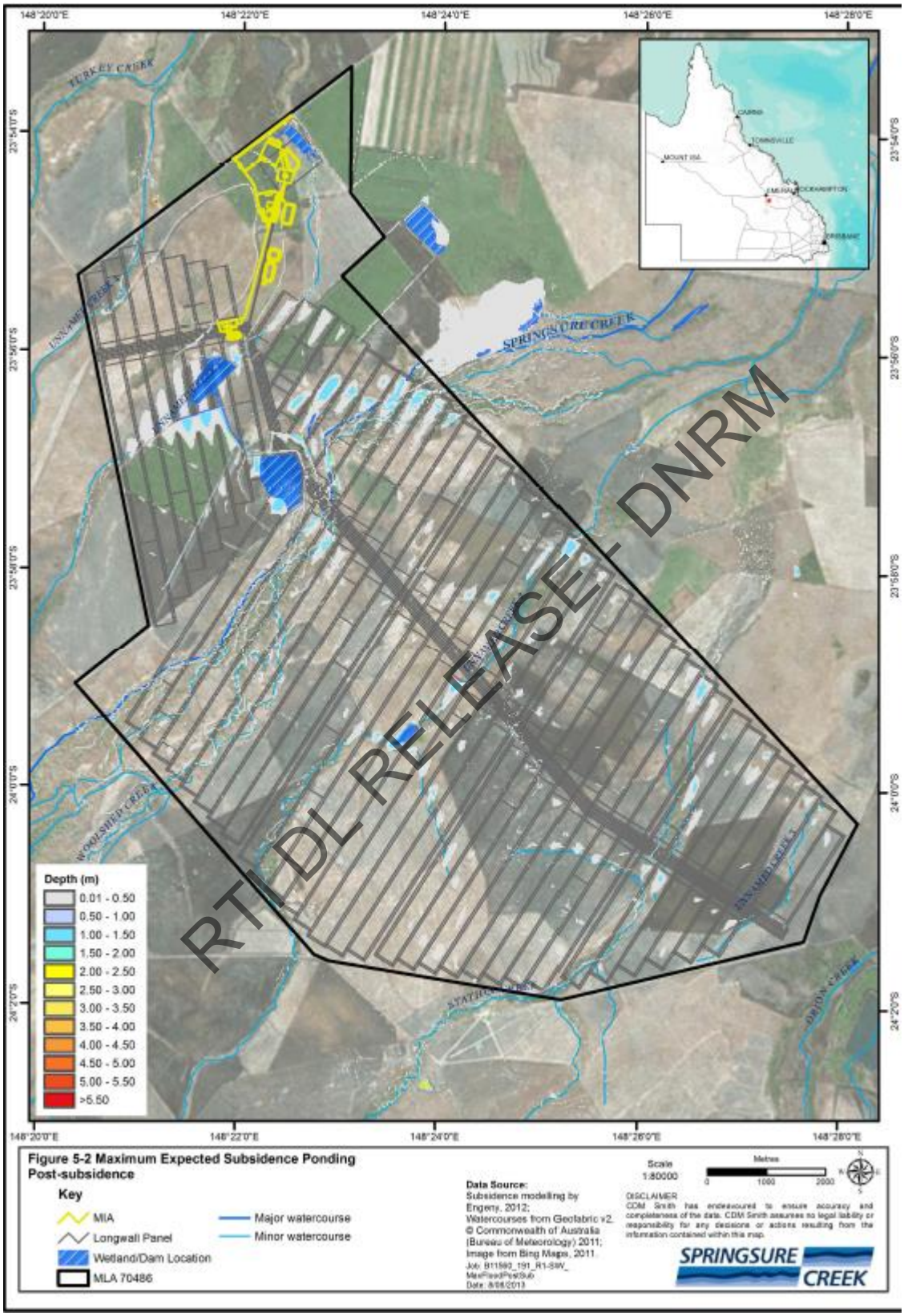


Figure 5-3 Changes to Drainage Channels 1

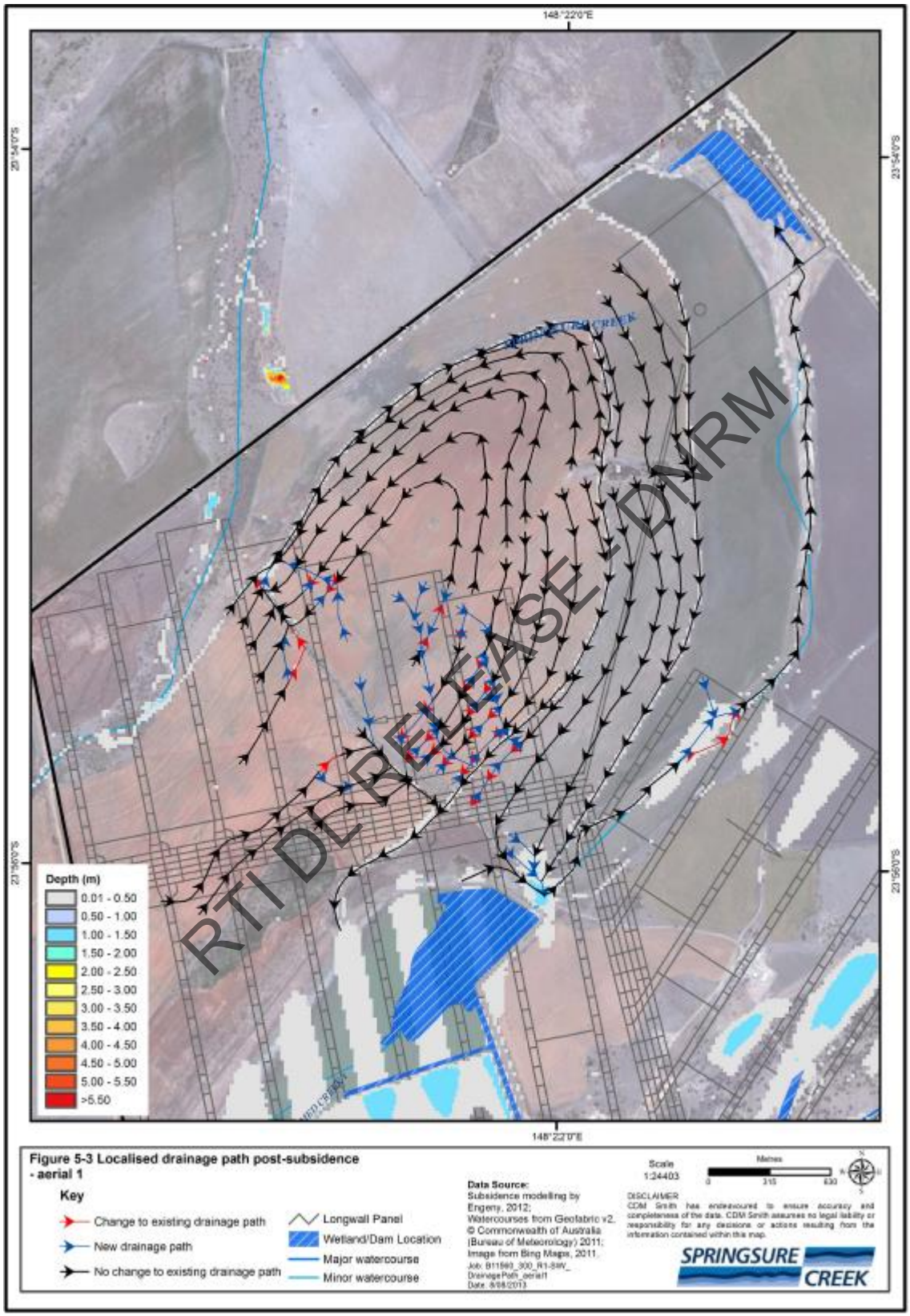
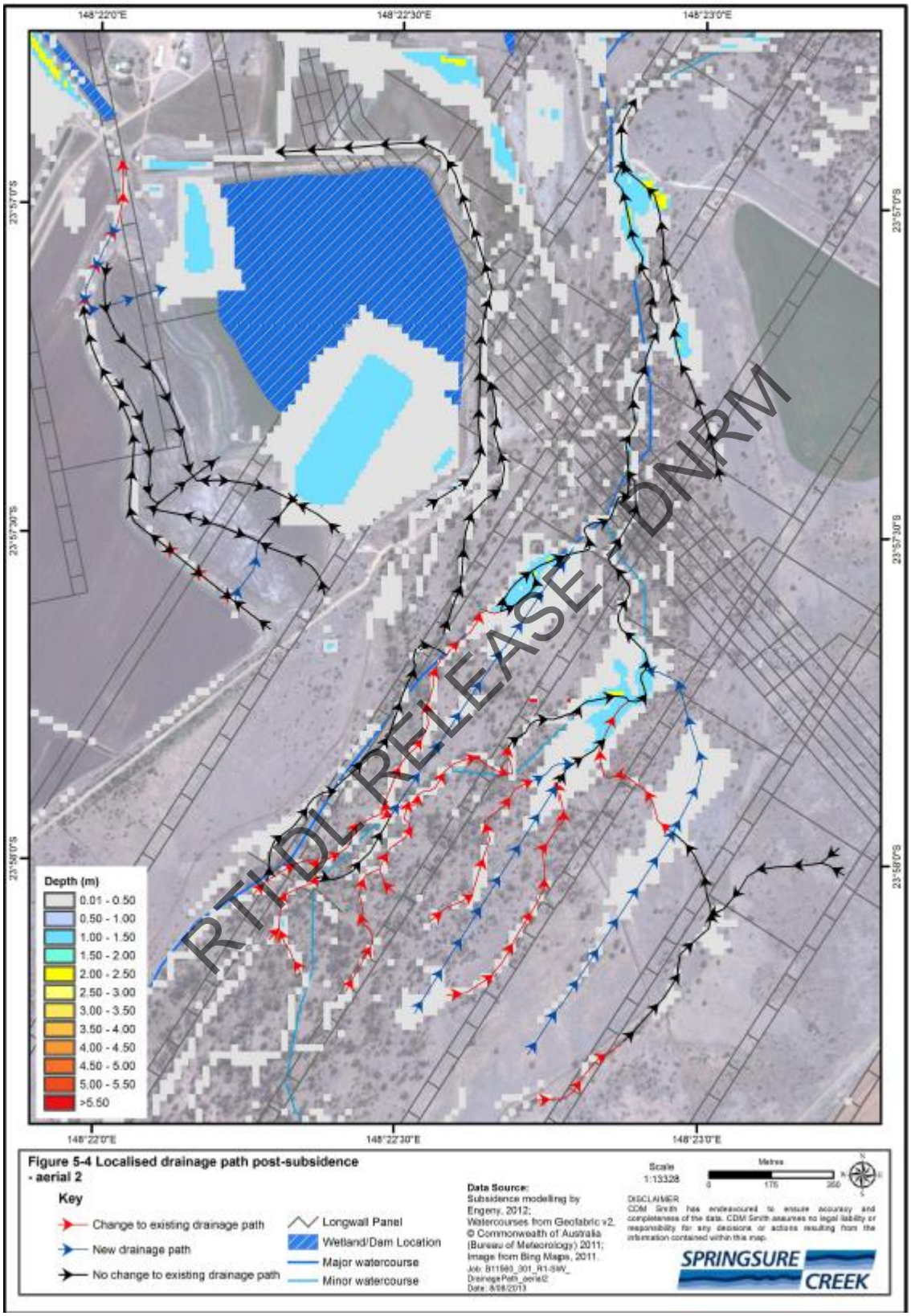


Figure 5-4 Change to Drainage 2



Operational Impacts on Groundwater

Studies carried out for the Project have conceptualised an understanding of the groundwater system within and surrounding the Project area. Based on this, the water table is considered to occur primarily within the uppermost geological strata i.e. the Alluvium and Basalt, which extend approximately 15 m and 130 m deep respectively. These aquifers are replenished by rainfall and surface runoff. Beneath the basalt another geological stratum known as the Rewan Formation separates the uppermost strata from the Bandanna Formation, within which the targeted coal seam is located. The Rewan Formation is an aquitard meaning groundwater movement within it is limited. The Bandanna Formation is also an aquitard but with groundwater flows occurring preferentially via the coal seams therein.

A search of the DNRM Water Management System as part of the EIS process revealed that groundwater is routinely used for agricultural supply both for stock watering and irrigation in the vicinity of the Project area. However, no bores are licenced for irrigation use within the Project area itself. Bores within the Project area are authorised for stock and domestic use only. All bores within the Project area draw groundwater from the Basalt.

Subsidence will result in caving and fracturing of the goaf. This will allow for increased inflows of groundwater into the underground mine and a drawdown on connected aquifers. Based on the conservative assumption that subsidence fractures extend into the Basalt by several tens of metres, then changes to groundwater levels is limited between 1 to 2.5 m (depending on location within the Project area). These changes are localised in extent. It should be noted that it is possible the fractures are of lower magnitude and do not extend into the Basalt. In this case, there would be negligible drawdown on the water table. Recharge is also not anticipated to be affected.

SCC will prepare a Groundwater Management Plan in consultation with the Agricultural Coexistence Research Committee, landholders and relevant government agencies. The Groundwater Management Plan will be closely linked to the Subsidence Management Plan and will include measures to mitigate and monitor impacts on groundwater.

In the event any landholder bores (whether DNRM registered or not) experience significant drawdown and result in the loss or reduction of access to groundwater then these bores will be deepened or replaced. Whilst no bores are presently used for irrigation within the Project area, the provision to deepen or replace any bores affected by the Project is inclusive of any bores sunk in the future for irrigation purposes, in addition to any other agricultural uses. It is fully expected that the Basalt will have sufficient saturated thickness to enable the deepening of bores. It has been identified that four registered bores are located where the modelled saturated thickness of the Basalt may preclude these being deepened. These bores would therefore require re-locating along with any infrastructure required to convey water to where it is required on affected properties. SCC will maintain the supply of water to affected landholders, as agreed through consultation.

Consultation is ongoing with landholders regarding existing groundwater extraction and uses. The scope of groundwater management will include, amongst other measures:

- Monitoring of groundwater levels at selected locations where there is greatest potential for fractures to extend into the Basalt, drawdown within the Basalt and Alluvium, and monitoring outside the predicted impact area to monitor natural regional variation;
- Groundwater quality monitoring; and

- Impact verification through comparison of predicted and observed mine inflow rates and drawdown, and update of the groundwater model if required.

Summary of Water Impact Assessment

The Project, inclusive of mitigation and management measures, is not expected to result in any change to existing water resources such that their use in maintaining SCL would be affected.

5.5.2 CHANGES TO TENURE OR ACCESS TO SCL

Tenure

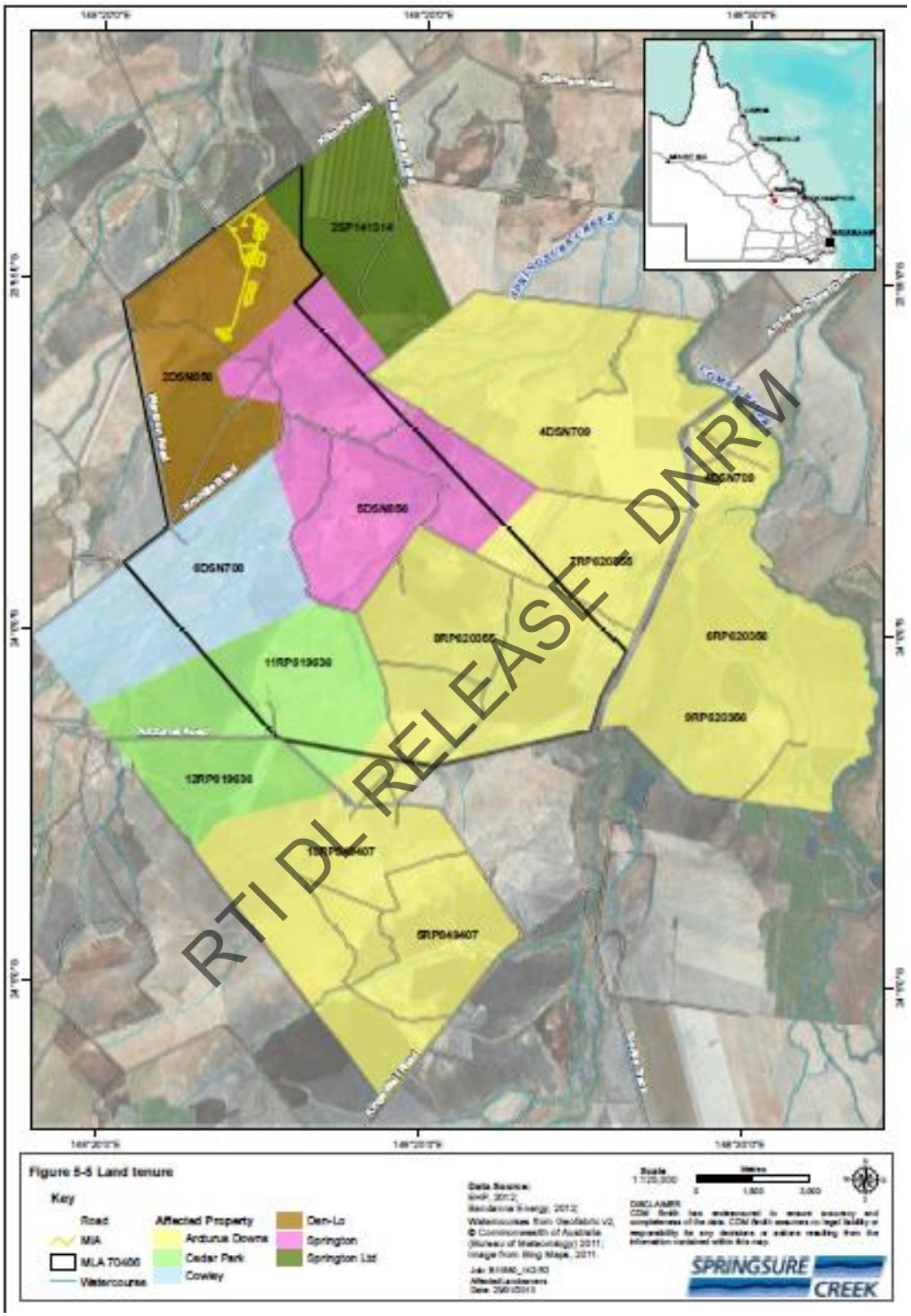
MLA 70486 comprises seven separate allotments owned by five separate landholders. All tenure within this area is freehold. Land tenure details for the properties are presented in Table 5-2 and Figure 5-5.

Table 5-2 Land Tenure

Real property description	Property name	Tenure	Primary land use*
Lot 2 DSN856	Den-Lo Park	Freehold	Grains
Lot 5 DSN856	Springton	Freehold	Grains
Lot 2 SP141314	Springton Limited	Freehold	Grains
Lot 6 DSN708	Cowley	Freehold	Cattle breeding and fattening
Lot 7 on RP620355	Arcturus Downs	Freehold	Grains
Lot 8 on RP620355	Arcturus Downs	Freehold	Grains
Lot 11 RP619636	Cedar Park	Freehold	Grains

Springsure Property Holdings Pty Ltd is the owner of Lot 2 DSN856 / Den-Lo Park property where all above ground on lease infrastructure will be located. The MIA will occupy 60 ha of land which is 0.5% of the total area within MLA 70486. Den-Lo Park is currently leased to a third party farming company, with the expectation that farming operations at the property will continue in the long term beyond the commencement of the Project. Regardless of whether Den-Lo Park farming operations are conducted by a third party lessee or by Springsure Creek Agricultural Holdings Pty Ltd, the aim is to maintain and, where practicable, enhance agricultural production and to ensure the successful coexistence of underground mining and agriculture.

Figure 5-5 Land Tenure



SCC will be required to have compensation agreements with all landholders within MLA 70486 as part of the mining lease application process under the MR Act. It is SCC's intent that all areas presently used for agricultural activities remain in production irrespective of ownership and occupation, and where this remains an economically viable land use. Any change in ownership and occupation is therefore unlikely to impact on SCL. SCC is continuing ongoing consultation with local landholders to engage and inform them of activities by the Agricultural Coexistence Research Committee. Findings from activities of the Agricultural Coexistence Research Committee will be shared with owners and occupiers with the aim of assisting with the maintenance and improvement of production on cropping land. This measure further mitigates the risk of any impacts on SCL.

Access

Access to the Project area will be via the existing State and Local Government controlled road network. From the townships of Emerald and Springsure, access will be along the Gregory Highway, Glenorina Road, Wyntoon Road and Kilmore Road. These existing roads are utilised to varying degrees by agricultural operations in the local area. The rail network is not typically relied on by the cropping industry in the region.

The Project will increase traffic on roads mentioned above, in particular heavy vehicle movements. The construction and operational phases of the Project are expected to generate approximately 3.2 and 3.5 heavy vehicle movements per day respectively. The magnitude of these impacts could be heighted as a result of other proposed major projects in the region.

The magnitude of any potential impacts on existing roads and road users is reduced largely by the separate the haulage of coal within a privately owned infrastructure corridor and train load out facility. The infrastructure corridor will be within MLA 70502 and run eastwards from the mine for approximately 40 km to a proposed train load out facility at MLA 70501. MLA 70502 and 70501 are outside EPC 891 and are therefore not subject to the permanent impact restriction under section 290 of the SCL Act. The environmental assessment and approval of these components, including an SCL Protection Decision application, is in preparation and will comprise a separate application.

In relation to the existing local road network, a Road Use Management Plan will be developed and approved to minimise impacts on efficiency and safety. Upgrades will be carried out at key intersections and unsealed sections along the proposed access route. Key intersections to be upgraded are:

- Gregory Highway – Glenorina Road; and
- Gregory Highway – Workers Accommodation village (13 km south of Emerald and not located on potential SCL)

These upgrades will include road widening works which will also reduce any potential impacts of any over-dimension vehicle movements required throughout the life of the Project. Notwithstanding this, such vehicle movements will be coordinated through consultation with the Heavy Vehicle Road Operations Program Office in Rockhampton. Typically a 6 month lead time is required to organise permits from this Office for over-dimension vehicle movements and this provides good opportunity for communicating upcoming movements with the community and any agricultural traffic. It is anticipated that existing movements of over-dimension vehicles, such as the movement of farm machinery between lots, would have appropriate permits in place from the relevant authorities.

Thus, any movements generated by the Project can be coordinated around existing permitted movements such that impacts are avoided.

The Project is therefore unlikely to result in any impacts on SCL as a result of effects on agricultural traffic and transport movements.

5.5.3 CHANGES TO LAND SUITABILITY `

Land suitability in Queensland is primarily based upon the classifications provided within the *Land Suitability Assessment Techniques (LSAT) Guidelines*, contained within the Department of Mines and Energy (DME) *Guidelines for Environmental Management of Exploration and Mining in Queensland* (DME, 1995). Relevant to the LSAT Guidelines are the Queensland Government's State Planning Policies (SPPs) on Good Quality Agricultural Land (GQAL), namely *SPP 1/92 Development and Conservation of Agricultural Land*, and accompanying planning guideline *The Identification of Good Quality Agricultural Land* (Department of Primary Industries, 1993). This policy states that agricultural land is a finite resource that should be conserved and managed for the longer term. It also states that, in principal, agricultural land should be protected from development that leads to its alienation or diminished productivity.

The LSAT Guidelines were employed to assist in the determination of existing land suitability within the Project area. The Guidelines establish five land suitability classes which can be applied to land depending on its relative suitability and limitations to production, as presented in Table 5-3.

Table 5-3 Land Suitability Classes

Land Suitability Class	Definition
Class 1	Suitable land with negligible limitations that is highly productive and requires only simple management to maintain economic production.
Class 2	Suitable land with minor limitations which either reduce production or require more than the simple management practices of Class 1 to maintain economic production.
Class 3	Suitable land with moderate limitations which either further lower production or require more than those management practices of Class 2 to maintain economic production.
Class 4	Currently unsuitable land with severe limitations which make it doubtful whether benefits of the activity will outweigh the inputs/costs required to achieve and maintain production in the long term under current environmental and economic conditions. A change in future conditions may induce a change to Class 3.
Class 5	Unsuitable land with extreme limitations that preclude its use.

The Guidelines also provide general criteria and threshold values for assessment of a range of soil limitations to rain-fed broad acre cropping and beef cattle grazing land use. The cropping classification evaluates the broad acre potential for growing non-irrigated cash and forage crops

which would be mainly sorghum, wheat and sunflower. Only major limiting factors have been considered, including:

- Plant available water capacity (m)
- Nutrient deficiency (n)
- Soil physical factors (p)
- Salinity (s)
- Rockiness (r)
- Mircorelief (g)
- Susceptibility to water erosion (e)
- Topography (t)
- Flooding (f)

The assessment of grazing suitability used the same approach as described above for cropping but with varied interpretation of severity of limiting factors.

As part of the field studies carried out during the EIS, data collected were used to assess the severity of any limitation and the land suitability class of each soil unit against the LSAT Guidelines. Methods from Burgess (2003) and Shield & Williams (1991) were applied to support the land suitability classification of soils mapped at the Project area. The suitability of each Soil Mapping Unit for rain-fed cropping and beef cattle grazing has been assessed and presented in Table 5-4 below. Soil Mapping Units follow the descriptions presented in section 4.4 above. Suitability classes and major limiting factors of each soil type in terms of production potential for rain-fed cropping and grazing is presented in Figure 5-6 and Figure 5-7.

Table 5-4 Suitability Classes for Rain-fed Broad Acre Cropping and Grazing Soil Management Units

Soil Unit	Description	Cropping		Grazing	
		Major Limitations and Severity	Class	Major limitations and severity	Class
Mv Minerva	A grey to black cracking clay with coarsely self mulching surface	moisture – m3 nutrients - n1 physical factors – p2 salinity – s4 rockiness – r1 microrelief – g1 topography – t2 erosion - e2 flooding – f5	5	moisture – m2 nutrients – n2 physical factors – p2 salinity – s2/3 rockiness – r1 microrelief – g1 pH – 2 ESP – 1 erosion - e1 flooding – f2	2
Rn Ronnoc	A self mulching, black to grey, alkaline cracking clay overlying basalt below 0.45m.	moisture – m2 nutrients – n1 physical factors – p2 salinity – s1 rockiness – r1 microrelief – g1	2	moisture – m1/2 nutrients – n1 physical factors – p2 salinity – s1 rockiness – r1 microrelief – g1	2

Soil Unit	Description	Cropping		Grazing	
		Major Limitations and Severity	Class	Major limitations and severity	Class
		topography – t1 erosion - e2 flooding – f1		pH – 2 ESP – 1 erosion - e1 flooding – f1	
Ka Kammel	A deep self mulching, red to brown cracking clay overlying a mottled zone below 0.5m depth	moisture – m3 nutrients – n2 physical factors – p2 salinity – s1 rockiness – r1 microrelief – g1 topography – t1 erosion - e3 flooding – f1	3	moisture – m2 nutrients – n2 physical factors – p2 salinity – s1 rockiness – r1 microrelief – g1 pH – 3 ESP – 1 erosion - e1 flooding – f1	3
Lx Lexington	A shallow, firm, red to brown clay / clay loam overlying ferruginised basalt or other gravel by 0.5m depth.	moisture – m5 nutrients – n2 physical factors – p2 salinity – s1 rockiness – r1 microrelief – g1 topography – t1 erosion - e3 flooding – f1	5	moisture – m4 nutrients – n2 physical factors – p2 salinity – s rockiness – r1 microrelief – g1 pH – 3 ESP – 1 erosion - e1 flooding – f1	4
Tf Talafa	A firm to hard setting red to brown massive gradational or duplex soil overlying buried layers of possibly mottled grey clay or gravelly material below 0.9m depth.	moisture – m5 nutrients – n3 physical factors – p1 salinity – s1 rockiness – r1 microrelief – g1 topography – t erosion - e2 flooding – f1	5	moisture – m4 nutrients – n3 physical factors – p1 salinity – s1 rockiness – r1 microrelief – g1 pH – 2 ESP – 1 erosion - e1 flooding – f1	4
Km Kilmore	A firm red to brown duplex soil with sandy clay loam over clay subsoil which may be mottled over gravel and carbonate dominated material below 0.7m	moisture – m4 nutrients – n2 physical factors – p2 salinity – s1 rockiness – r1 microrelief – g1 topography – t1	4	moisture – m3 nutrients – n2 physical factors – p3 salinity – s1 rockiness – r1 microrelief – g1 pH – 1	3

Soil Unit	Description	Cropping		Grazing	
		Major Limitations and Severity	Class	Major limitations and severity	Class
		erosion - e3 flooding – f1		ESP – 1 erosion - e1 flooding – f1	
Sv Sullivan	A deep sandy self mulching grey to black (occasionally brown) cracking clay over buried layers with gravel below 0.7m depth.	moisture – m2 nutrients – n1 physical factors – p2 salinity – s1 rockiness – r1 microrelief – g1 topography – t1 erosion - e2 flooding – f1	2	moisture – m2 nutrients – n1 physical factors – p2 salinity – s1 rockiness – r1 microrelief – g1 pH – 2 ESP – 1 erosion - e1 flooding – f1	2
Sv-Gp Sullivan gilgai phase	Normal or linear gilgai complexes, Mounds are brown self mulching cracking clay (similar to Sv). Depressions are grey to black, cracking deep clay.	moisture – m3 nutrients – n2 physical factors – p2 salinity – s1 rockiness – r1 microrelief – g2 topography – t1 erosion - e2 flooding – f1	3	moisture – m2 nutrients – n2 physical factors – p2 salinity – s1 rockiness – r1 microrelief – g2 pH – 2 ESP – 1 erosion - e1 flooding – f1	2

Figure 5-6 Land Suitability (Rainfed Cropping)

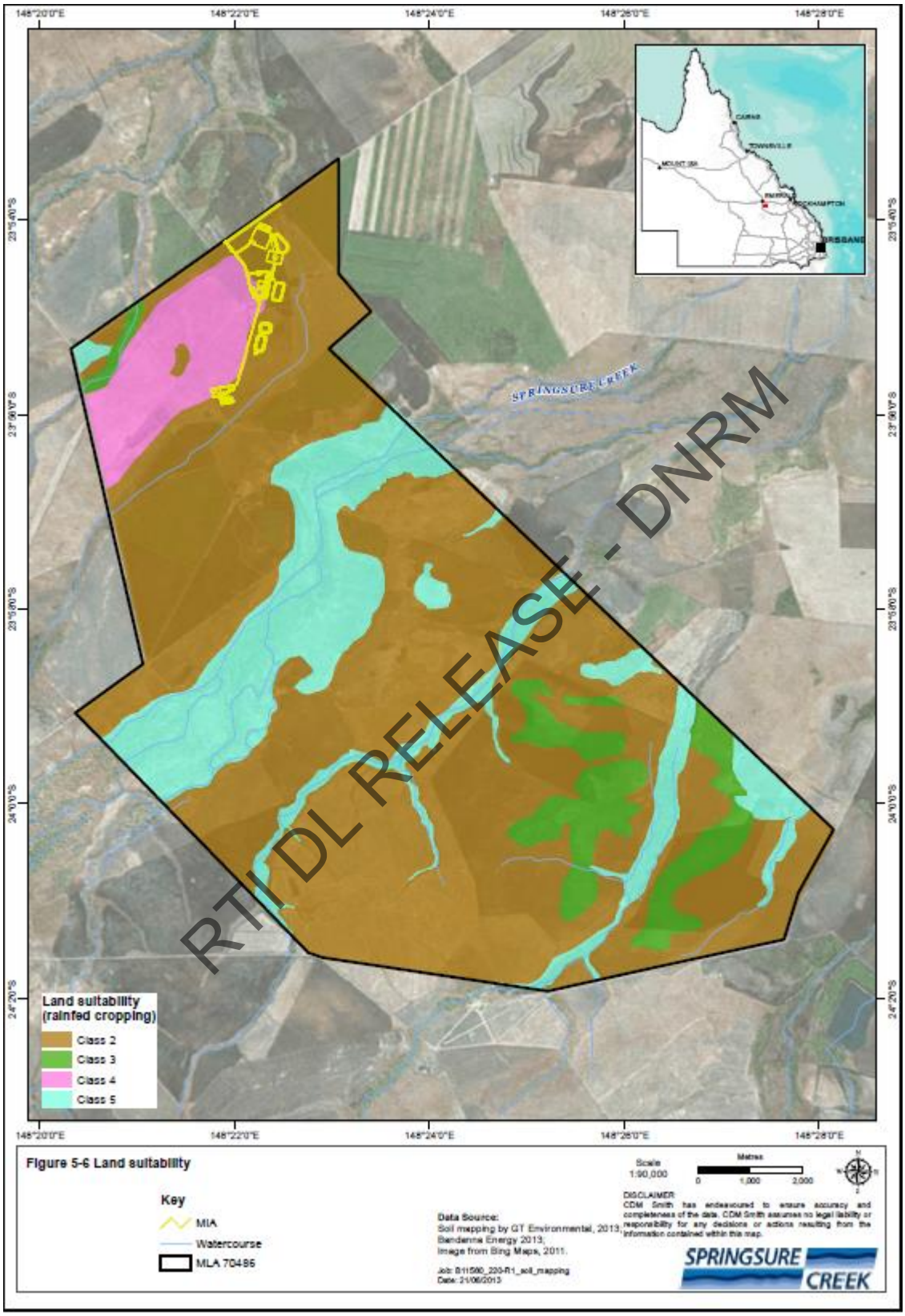
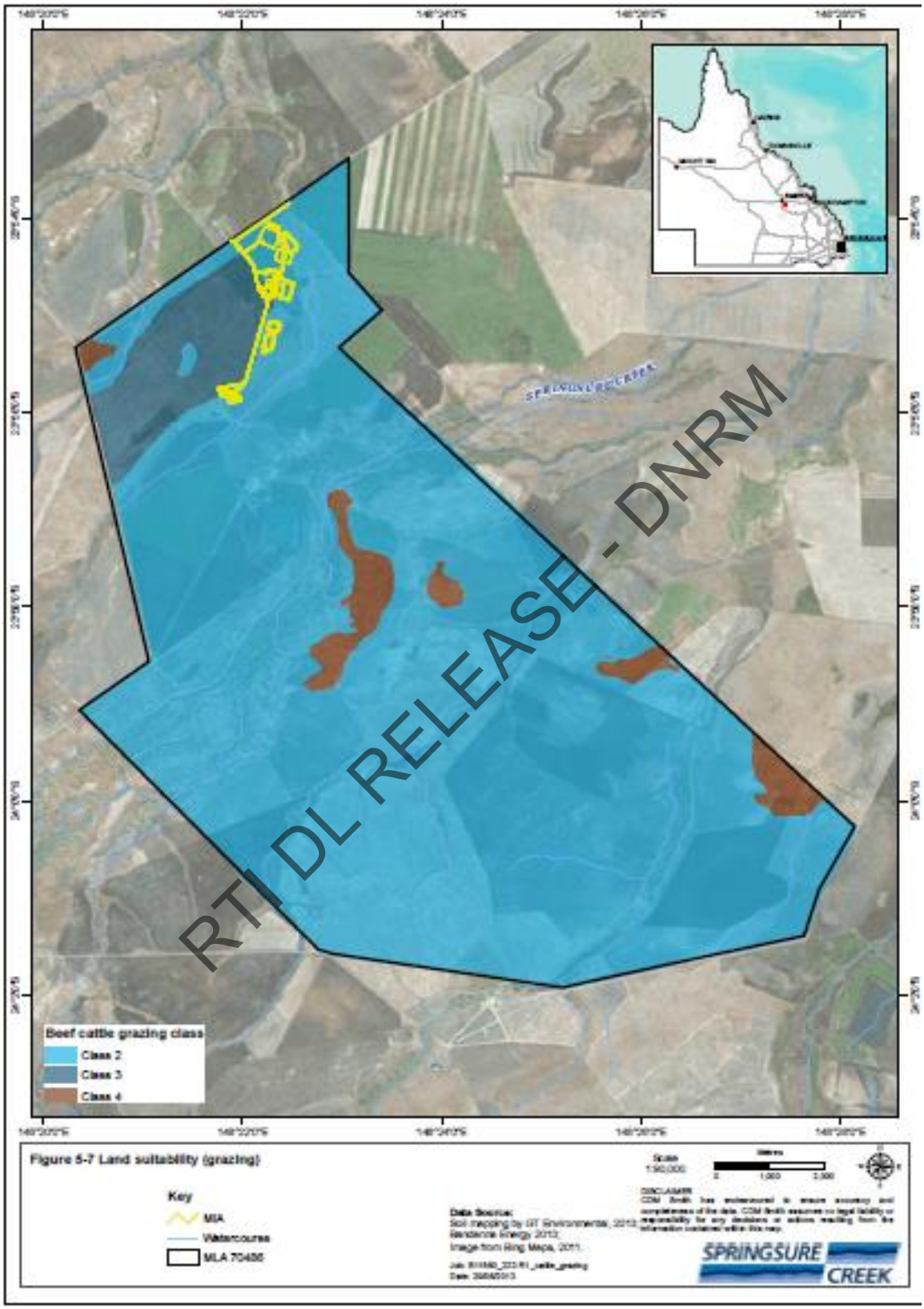


Figure 5-7 Land Suitability (Grazing)



Rainfed Broadacre Cropping

Plant Available Water Capacity (m)

Plant available water capacity (PAWC) is a significant soil property in this locality as cropping is based on fallow storage of moisture in the soil profile. Effective rooting depth is defined as the depth to which approximately 90% of plant roots will extract water. It is normally limited either by the presence of underlying rock or other hard materials or by chemical or physical attributes within the subsoil that restrict root growth (Land Resources Branch, QDPI 1989).

Field morphology observations and chemical data used included soil texture and barriers to root growth such as high sodium, bedrock, poor soil structure, high electrical conductivity and chloride. PAWC is classically defined as the moisture present between field capacity and permanent wilting point (15 bar). In addition, field assessments of effective soil depth, and subsequently soil water storage, was undertaken which followed the method used by Burgess (2003) in the Windeyers Hill survey. This involved estimates of field texture combined with field pH, electrical conductivity and depths to hard soil horizons.

Table 5-5 shows the criteria which Shields and Williams (1991) proposed for assessment of the moisture availability limitation for crops in the Kilcummin area. Table 5-6 shows PAWC limitation severity for each SMU.

The deep clay soil types have an effective soil depth often exceeding 1.0m and are favourable for cropping soils, however SMUs containing shallow earths and clay loams overlying gravel and weathered basalt horizons were deemed not suitable for cropping.

Table 5-5 Criteria for PAWC Limitations for Cropping (Shields and Williams 1991)

LIMITATION LEVEL	PAWC (MM)	EFFECTIVE ROOTING DEPTH	PREDICTED CROPPING SUCCESS
2	>130	900 mm	70-75%
3	100-130	600 mm	40-70%
4	75-100	400 mm	<40%
5	<75	<400mm	<30%

Table 5-6 PAWC Limitation Levels for SMUs

Soil Unit	Concept	Est. effective rooting depth (m)	PAWC (mm)*	Dryland cropping limitation level	Grazing limitation level
Mv Minerva	A grey to black cracking clay with coarsely self mulching surface	1.00	120-130	3	2
Rn Ronnoc	A self mulching, black to grey, alkaline cracking clay overlying basalt below 0.45m.	1.00+	130+	2	2
Ka Kammel	A deep self mulching, red to brown cracking clay overlying a mottled zone below 0.5m depth	1.00	110-130	3	3
Lx Lexington	A shallow, firm, red to brown clay / clay loam overlying ferruginised basalt or other gravel by 0.5m depth.	0.45	50-60	5	4
Tf Talafa	A firm to hard setting red to brown massive gradational or duplex soil overlying buried layers of possibly mottled grey clay or gravelly material below 0.9m depth.	0.90	50	5	4
Km Kilmore	A firm red to brown duplex soil with sandy clay loam over clay subsoil which may be mottled over gravel and carbonate dominated material below 0.7m	1.00	90 - 100	4	3
Sv Sullivan	A deep sandy self mulching grey to black (occasionally brown) cracking clay over buried layers with gravel below 0.7m depth. Minor texture contrast variant included. (SvDv)	1.00+	120 - 140	2	2
Sv-Gp Sullivan gilgai phase	Normal or linear gilgai complexes, Mounds are brown self mulching cracking clay (similar to Sv). Depressions are grey to black, cracking deep clay.	0.7 – 0.9	90-120	3	2

Nutrient deficiency (n)

Laboratory data related to nutrients for this Project shows quite wide variation in some attributes, particularly phosphorus. According to DME (1995), levels of nutrient deficiency found in this survey fluctuate between favourable, reasonable and not favourable. SMUs Ka, Tf, Km, and SvGp reported the lowest levels of nutrient deficiency.

Given that the area has been extensively cropped for many years and any nutrient deficiencies has been, or may be managed with fertiliser and crop rotation / tillage practices, conservative limitation levels have been adopted for nutrient limitating levels for the Project area. For this reason, no SMU's have been significantly downgraded in land suitability as a result of nutrient deficiency.

Soil Physical Factors (p)

This limitation deals with conditions which determine sufficient seed contact with moist soil to prevent desiccation prior to germination and establishment. In this survey, no significant limitations of this nature were found with Mv, Rn, Ka, Lx, Km, Sv, and SvGv, having minor levels of limitation.

Salinity (s)

This refers to the reduction in dry matter yield as a result of soluble salt in the soil profile. It also contributes to reduced water availability limitation. The only SMU which indicated high salinity was Mv where one of the two sites tested for chloride was highly saline from 0.6m depth. The other site tested was non saline throughout the profile. SvDv indicated moderate salinity however the levels are not considered sufficient to restrict effective soil depth.

Rockiness

This refers to the amount of coarse fragments located on the surface of the soil profile, the size and percentage. Surface rockiness was not observed in excess of the criteria, '<10% coarse surface gravel (>6 cm dia) and rock outcrop' in all of the SMUs within the Project area.

Microrelief (g)

Microrelief (commonly referred to as gilgai or melon holes) refers to localised depressions along the land surface (McDonald et al., 1984). In the Project area, only one small area was identified containing normal gilgai. The SMU Sullivan Gilgai phase (SvGp) contains normal gilgai of approximately 0.2 - 0.3m deep and at an average 20% cover of the surface area. All other SMUs did not show signs of microrelief.

It is likely that a greater area was originally gilgaied to some extent prior to development of cropping land however not at levels which constitute a significant limitation to a cropping use.

Susceptibility to Water Erosion (e)

The risk of soil loss from water erosion magnifies with increased water velocity when land is devoid of vegetation for cropping. Such effects are directly proportional to slope gradient. The better soils occur along gently undulating plains generally less than 2% slope but sufficient to increase soil erosion risk under a cropping use.

During this survey, only minor evidence of erosion washout was observed throughout the majority of the site with SMU Sv and Rn. Assessment against the water erosion criteria reported SMUs Ka, Lx, Km, Sv reporting the highest limitations.

Topography (t)

Topography is assessed in terms of slope and micro-relief. Slope may limit the effective and safe use of machinery and contribute to erosion hazard. Topography limitations were only evident in the alluvial flood areas.

Grazing

Class 1 to 3 grazing land is considered suitable for significant pasture improvement, class 4 offers marginal potential for pasture improvement, and class 5 is not suitable for improvement and restricted to grazing of native pastures with low productivity.

The SMUs with gradational, duplex and shallow clays, Tf and Lx may be least productive due to severe limitations from restricted soil water availability. Nutrient deficiency also impacts on SMUs Ka, Km and SvGp however all other land suitability classes were very favourable with no significant limitations to a grazing use.

Agricultural Land Classes and GQAL

GQAL is assessed using the agricultural land classes presented in the Planning Guideline: *The Identification of Good Quality Agricultural Land* (Qld Department of Primary Industries and Department of Housing, Local Government and Planning, 1993). Table 5-7 describes agricultural land classes and their relationship with land suitability classes for grazing and cropping.

Table 5-7 Relationship Between GQAL and Land Suitability Class

Agricultural Land Class	Land Suitability (Cropping)	Land Suitability (Grazing)	Description
A	1-3	1-3	**Crop land** - Land that is suitable for current and potential crops with limitations to production that range from none to moderate levels.
B	4	1-3	**Limited crop land** - Land that is marginal for current and potential crops due to severe limitations; and suitable for pastures. Engineering and/or agronomic improvements may be required before the land is considered suitable for cropping.
C	Sub categories are as follows:		**Pasture land** - Land that is suitable only for improved or native pastures due to limitations which preclude continuous cultivation for crop production; but some areas may tolerate a short period of ground disturbance for pasture establishment.
C1	5	1-2	Land suitable for improved pastures. In some circumstances may be considered as good quality agricultural land.
C2	5	3	Land suitable for native pastures.
C3	5	4	Land suitable for limited grazing of native pastures.
D	5	5	Non-agricultural land - Land not suitable for agricultural uses due to extreme limitations. This may be undisturbed land with significant habitat, conservation and/or catchment values or land that may be unsuitable because of very steep slopes, shallow soils, rock outcrop or poor drainage.

Following the assessment of agricultural land classes within the Project area, Table 5-8 aligns the appropriate GQAL agricultural land classes with the soil mapping units recorded at the Project site.

Table 5-8 GQAL Class and SMUs

GQAL CLASS	DESCRIPTION	SMU
A	**Crop land** – Land suitable for current and potential crops with limitations to production which range from non to moderate levels.	*Rn, Sv, SvGp, Ka*
B	**Limited Crop Land** – Land that is marginal for current and potential crops due to severe limitations; and suitable for pastures. Engineering and/or agronomic improvements may be required before the land is considered suitable for cropping.	*Km*
C1	**Land suitable for improved pastures**. In some circumstances may be considered as good quality agricultural land	*Mv*
C2	**Land suitable for native pastures**.	-
C3	Land suitable for limited grazing of native pastures	*Lx, Tf,*
D	Non-agricultural Land – Land not suitable for agricultural uses due to extreme limitations. This may be undisturbed land with significant habitat, conservation and/or catchment values or land that may be unsuitable because of very steep slopes, shallow soils, rock outcrop or poor drainage	-

Summary of Land Suitability

Table 5-9 summarises the land suitability and GQAL classes present and the area (ha) of each within the Project area.

Table 5-9 Areas for Classes of Cropping, Grazing and GQAL Land presents

Land Suitability – Cropping			Land Suitability – Grazing			GQAL		
Class	SMU	Area (Ha)	Class	SMU	Area (Ha)	ALC	SMU	Area (Ha)
1	-	-	1	-	-	A	*Rn, Sv, SvGp, Ka*	8045
2	*Rn, Sv*	7295	2	*Mv, Rn, Sv, SvGp, Ka,*	9702	B	*Km*	637
3	*Ka, SvGp,*	750	3	*Km*	637	C1	*Mv*	1657
4	*Km*	637	4	*Lx, Tf*	397	C2	-	-
5	*Mv, Lx, Tf*	2054	5	-	-	C3	*Lx, Tf*	397

Land Suitability – Cropping			Land Suitability – Grazing			GQAL		
Class	SMU	Area (Ha)	Class	SMU	Area (Ha)	ALC	SMU	Area (Ha)
-	-	-	-	-	-	D	-	-
TOTAL		**10736**			**10736**			**10736**

Examples of Coexistence between Agriculture and Mining

Agriculture and mining have been demonstrated to coexist in a number of regions. Relevant studies that demonstrate this in Queensland include:

- Effect of Longwall Mine Subsidence on Plant Production on Cropping Land (ACARP 2003); and
- Monitoring The Effect of Longwall Mine Subsidence on Native Vegetation and Agricultural Environments (ACARP 2010).

ACARP (2003) studied the impact of longwall mining subsidence on wheat and soybean production at the Kestrel Mine, Emerald (approximately 90 km north of the present Project). The study measured germination and yield for winter wheat and germination for soybeans. Soil and moisture characteristics were also measured. The impact of subsidence on wheat germination was minimal, however, germinations were slightly higher on the pillar sites than both the subsided and un-subsided sites. There was no significant impact on wheat yield, soybean germination or on any of the soil or moisture characteristics.

In the other ACARP (2010) study, two landscapes were investigated using a whole of mine site technique including remote sensing, ground survey and traditional agricultural monitoring methods. The landscapes were at the Kestrel Mine, Emerald and at Beltana in the Hunter Valley, NSW. The Hunter Valley site includes an irrigated lucerne pasture and an unimproved native pasture. At each site a stratified sampling procedure was undertaken to ensure samples from non-mining, pillar, transition and longwall panel centre zones were collected. Samples were collected via:

- Vegetative field sampling (quadrat based for biomass, plant species, percent vegetative cover, leaf area index, plant height);
- Soil sampling (cores and pits for pH, EC, % moisture);
- Proximal sensors (EM38 for topsoil electrical conductivity, Crop Circle for NDVI); and
- Satellite and airborne imagery (Airborne video, QuickBird and SPOT 5).

The soil sampling taken at the start of the project at Beltana and Kestrel showed minimal variation across all sites. For the sites already mined there were no measureable effects of longwall mining subsidence in the soil properties. There was no significant difference in the available biomass, measured by dry weight between the subsidence zones in the lucerne or native vegetation at Beltana. There was no significant difference in biomass between the mined and unmined areas in the sorghum crop.

The remote sensing data collected at the Beltana site, used to assess change between longwall zones pre- and post-mining in the lucerne and native vegetation indicated there were no trends that indicate longwall mining subsidence had an impact on the vegetative biomass. Remote sensing images were used to determine changes between Kestrel areas which had been mined compared with areas not undermined. There were significant differences between the longwall or contour zones, however, there were no temporal trends that indicate that longwall mining subsidence had an impact on the vegetative biomass. Importantly, throughout the duration of this project, no significant effect on agricultural production was found at either site. Similar results have also been recorded in Illinois (USA) where longwall coal mining has been undertaken beneath cropping and grain growing areas for many years (Bauer 2008).

Of all mining forms, longwall mining is the most suitable for agricultural regions as it does not result in significant disruption to surface activities, requires a relatively small surface footprint, and is predictable in terms of impact timing and magnitude. As such, activities above and below ground can be timed to coincide or avoid key activities. For example, the areas which are to be mined and thus subsided are known well in advance of actually occurring. Agricultural activities and longwall advancements can thus be planned coincidentally to avoid impacts on the former.

Furthermore, the predictability of longwall mining allows for the timing of improvement programs to be aligned with mine planning, such as the timing of laser levelling, leaving fields fallow and erosion bank re-contouring. This ensures that land improvement activities can be undertaken at times which avoid disturbance to agricultural operations. It should be noted that these improvement works would apply similar techniques to those required during mine rehabilitation activities i.e. maintaining and enhancing land form and land use. It should be noted that these maintenance activities are required anyway in order to maintain present agricultural activities occuring within the Project area.

Impacts in relation to subsidence on existing storage infrastructure can also be timed to occur in the same way and similarly repaired or improved.

The Project has been developed with the aim of maintaining and improving SCL which could be impacted by the coal mine. Through the implementation of the Springsure Creek Agricultural Plan, land improvements agreements, land management, coexistence research, reporting and review processes, impacts on cropping land are managed in perpetuity. SCC expects cropping activities to continue on land within the Project area that is not required for the MIA during operations but for these areas to be fully restored following mine closure. No impacts on land suitability are predicted. Similarly, any land effected by the Project temporarily can be restored to its pre-development condition.

All impacts on agricultural activities will be managed through an Agricultural Management Plan developed in consultation with landholders and statutory agencies. It is SCC's objective that land use suitabilities and production yields for areas directly impacted by the Project be maintained or improved. The Project therefore seeks to result in no net loss of agricultural productivity. Research and strategies to achieve this objective will be directed by the Agricultural Coexistence Research Committee.

The Agricultural Coexistence Research Committee is now established and consists of a number of scientists and agricultural experts that have extensive experience working in Queensland Agricultural Systems. The committee will also liaise with expert researchers to develop research programmes for the Project area. It should be noted that the committee has been constituted to steer research

direction - the research itself will be carried out by individual researchers with expertise in specific areas of interest.

Further details of the proposed restoration methodology are presented in the next section.

6.0 MINE RESTORATION

Planning for post-mining land use is already underway as part of the proposed Project concept. Through this early consideration the likelihood of achieving successful post-mining land uses is maximised and the risk of potential legacy issues minimised. This section describes the concept of how the post-mining land use will be achieved with particular reference to SCL.

6.1.1 STATUTORY APPROVAL PROCESS FOR RESTORATION

The review and audit of rehabilitation work throughout the Project's life will be required as part of the Project's environmental authority. More specifically, the Plan of Operations will set out the proposed programme of actions to comply with environmental authority conditions including a programme to rehabilitate any disturbed land. This Plan will also provide for compliance measures obliged by any other legislation including the SCL Act and MR Act.

The Plan of Operations would be approved by EHP prior to any disturbance occurring on the site and would be reviewed by an independently suitability qualified auditor. Approval by EHP to renew the Plan of Operations would take place on a 5 yearly basis at most but more likely annually. EHP could suspend or cancel the environmental authority in the event of any non-compliance of operations in meeting the approved Plan.

More specifically, the Plan of Operation will include:

- Description of all resource activities that will take place onsite during the time frame covered by the Plan (typically 5 years);
- Proposed program of actions to comply with environmental authority conditions;
- Rehabilitation program for disturbed land or land to be disturbed during the time of the Plan;
- Proposed amount of financial assurance; and
- Compliance statement describing how the Project has met with the environmental authority conditions.

The Plan of Operations needs to be amended and submitted for approval if there are any substantial changes to the operations or proposed mitigation works. The Plan of Operations is required to be audited by an independent qualified auditor. For the present Project, the Plan of Operations will operate on a longwall panel by longwall panel and paddock by paddock basis.

The Annual Return will report on the status of the rehabilitation works undertake to date and compliance with the environment authority during the previous year. The fee attached to the Annual Return is determined based on the Environmentally Relevant Activities being carried out as part of the Project.

Lastly, SCC will be required to provide financial security to the Queensland Government to cover any costs or expenses in the unlikely event that the conditions of any environmental authority not be met. This includes, for example, costs to rehabilitate or restore the environment. This financial assurance requirement reflects the current liability to fully rehabilitate the mining works and land disturbed by the Project. Financial assurance in relation to SCL is discussed in section 6.2.

The Project's EIS included a series of management measures presented within the EM Plan which define how the Project will meet the conditions of the environmental authority should it proceed. An environmental authority allows its holder to lawfully operate within a mining tenure providing this occurs within the limits of the approved conditions. Assessment of the Project's environmental authority will take place concurrently with the Project's assessment under the SCL Act.

If approved, the environmental authority and EM Plan will provide for the establishment of a series of subsidiary Management Plans and Procedures. These subsidiary Management Plans and Procedures will detail how the Project will avoid and minimise potential impacts during the subsequent stages of the Project i.e. construction and operation, etc. The preparation, assessment and statutory approval of these subsidiary Management Plans would be required prior to any activities starting onsite, as appropriate to the risk and timing of impacts.

6.1.2 RESTORATION OBJECTIVES

The objectives of the post-mine land use will be to enable:

- A landform with the same or similar land use suitability to that pre-development, unless other beneficial land uses are pre-determined and agreed with key stakeholders;
- Land use that will be not require any maintenance associated with the mine's legacy in terms of safety, pollution and stability; and
- Water coming into contact with the Project area, either at the surface or underground, to not be degraded in terms of quality or quantity and will be acceptable to existing users.

6.1.3 RESTORATION MANAGEMENT STRATEGY

The preferred option is to fully decommission and remove all infrastructure not required for post-mining land use. This includes the coal handling plant, fuel storage facilities, and conveyors. The post-mining fate of buildings, demountable administration buildings and workshops will be assessed at the time of closure. They may potentially be re-deployed at another site.

The Project's Environmental Management Strategy and Plan of Operations will outline in detail the criteria and performance indicators that will demonstrate that the proposed decommissioning and rehabilitation strategies have been undertaken successfully and that the desired outcomes have been accomplished. Indicative rehabilitation indicators and completion criteria are provided in Table 6-1. These outcomes represent SCC's public commitments for the closure of the Project and have been written to be as clear and measurable as possible, and will form the basis for review and audit conditions as well as eventual lease relinquishment.

The outcomes and criteria will be reviewed and revised as necessary during the closure planning process, taking into consideration:

- The results of trials and investigations;
- Changes in mine planning; and
- Feedback from stakeholders.

Table 6-1 Restoration Objectives

Domain	Outcome	Objective	Completion criteria
General			
All site components	Community and future generations are left with no residual liability for site rehabilitation or maintenance	To ensure that progressive rehabilitation and site decommissioning leave the area safe, fit for purpose, and non-polluting	Government acceptance of mine completion report which demonstrates achievement of all completion criteria
Undisturbed land			
Cropping land	Land made available for continuation of cropping and application of precision agriculture	To ensure that cropping land is maintained and enhanced where possible.	Audit shows that farm manager has continued cropping unimpeded.
Native vegetation and habitat	Habitat areas revegetated if disturbed, supporting native biodiversity	To enhance the environmental values of remnant native vegetation and habitat	Ecological monitoring determines adequate native plant growth and habitat quality
Cropping land (subject to subsidence)			
Irrigated cropping land	Cropping land retains productive capacity	To ensure that subsidence does not affect post mining agricultural productivity	Audit shows that agricultural productivity has been maintained and rehabilitation has been undertaken in accordance with EA conditions
Non-irrigated cropping land	Cropping land retains productive capacity	To ensure that subsidence does not affect post mining agricultural productivity	Audit shows that agricultural productivity has been maintained and rehabilitation has been undertaken in accordance with EA conditions

Domain	Outcome	Objective	Completion criteria
Mine Infrastructure Areas (MIA)			
Administration offices	All infrastructure removed	To leave the MIA in a condition fit for agricultural or environmental land use	Audit of domain against final closure plan to confirm the administration offices and related infrastructure do not remain on-site
Coal Handling Plant	All infrastructure removed	To leave the MIA in a condition fit for agricultural or environmental land use	Audit of domain against final closure plan to confirm the Coal Handling Plant and related infrastructure do not remain on-site
Sewage, water treatment plant	All infrastructure removed; no pollution	To leave the MIA in a condition fit for agricultural or environmental land use	Audit of domain against final closure plan to confirm the sewage and water treatment infrastructure does not remain on-site
Access tracks			
Access tracks	Access tracks rehabilitated unless required for end land use by post-mine landowner	To leave the MIA in a condition fit for agricultural or environmental land use	Audit shows all access track infrastructure no longer required is decommissioned and rehabilitated
Mine entrance			
Mine entrance tunnel	Entrance to mine is securely closed, with no access available by humans or animals	To securely close the mine entrance to access by humans or animals	Audit shows that mine entrance tunnel is securely closed
Water storage and management dams			
Dams	All dam structures remaining in place are	To leave dam structures in a	Audit confirms the structural stability and

Domain	Outcome	Objective	Completion criteria
	stable and safe for humans, wildlife and stock	condition fit for agricultural or environmental land use	safety of remaining dam structures
Erosion control	All erosion control structures for channelling or dispersing water are functional, stable and safe	To ensure that erosion at former mine areas is minimised	Geotechnical assessment shows that all retained erosion control structures functional, stable and safe

Cropping Land Restoration

The fundamental rehabilitation objective for SCL areas subject to active surface disturbance is the return to the pre-mining land suitability class. In areas deemed to be SCL, measurable attributes will be nominated to confirm that all zonal SCL criteria meet requirements of the SCL Guidelines. In particular, soil profiles will be reinstated which have an adequate soil depth (>0.6 m) and a water storage potential >100 mm.

The dominant soils within the Project area are described as dark clays (Vertisols and Dermosols), including loamy duplex soils and moderately deep dark clays, and brown, thin surfaced loamy soils (Chromosols) associated with cracking clays. Soil studies undertaken as part of the EIS have been assessed to determine their suitability for stripping and reuse in rehabilitation. The studies have identified that the volumes of topsoil and subsoil available from within the Project's disturbance area significantly exceed expected soil volume requirements for complete rehabilitation.

Prior to any activities taking place on SCL, a record of existing and historical cultivations that have taken place within the Project area will be documented. This will include the following:

- Dates of planting and harvesting;
- Crop variety, seed mix, sowing rate and fertiliser dose;
- Whether crops were drilled or sown;
- Watering rate and method;
- Machinery used; and
- Ground and weather conditions.

In addition, each existing paddock will be accurately mapped and given a clear field reference number from which any future changes to paddock layout can be retraced.

During mine operations, it is likely that re-contouring of the land surface will be required to restore drainage and irrigation. Recontouring will be carried out having regard to depth of topsoil and characteristics of subsoil. The level of topsoil as identified in the soil mapping will be maintained, which may mean stripping of topsoil, removal of subsoil and reinstating topsoil. Any newly cut contour banks, especially in restored ground, will be designed with care to minimise erosion and

slippage through consideration of likely flows and provision of sufficient freeboard and batters depending on the location and aspect. Steep gradients, sharp bends and numerous changes of direction would be avoided to reduce erosion risk. Irrigation methods in some areas may need to be altered from flood irrigation to pivot irrigators that can move over variable topography.

Subsidence may also give rise to localised surface tension cracking due to tensile strain on the ground surface. Remediation of subsidence cracks is necessary to reduce erosion and ensure a productive post-mining land use. Tension cracks as a result of mining activities may be rehabilitated through deep ripping, infilling with clay, or compaction. Alternative treatments such as bentonite injection will be available as fall-back contingency measure in the event that cracks re-occur. Tension cracking and subsidence in general will be monitored both during and post-mining.

Restoration works will be commensurate with the re-introduction of normal agricultural operations using standard agricultural equipment. Restoration works will acknowledge this fact and leave land fit for such operations to be carried out without hindrance. Thus, restoration will not only consider the land surface but also the shape of the restored area. Irregular paddock shapes can be extremely difficult to manage in terms of cultivation, fertilising, spraying and harvesting and the costs of doing so will reflect these difficulties.

It is recommended that approval of completed restoration work is provided on a paddock by paddock basis rather than any smaller area of land. A paddock provides a suitable unit of approval as it is capable of being managed as an agricultural enclosure of its own. This avoids potential practical problems which might arise where only a small area is restored re-use for agriculture cannot begin until adjoining areas are also restored.

Permit to Restore SCL

Contractors are to be in possession of a Permit to Restore SCL prior to works commencing to establish clear roles and responsibilities to ensure restoration activities are well coordinated and planned, for example:

- The working area will be confirmed as available to commence restoration;
- Soil will be moved from the correct part of the site to the correct restoration area; and
- Soil restoration will be timed, where practicable, to be available for crop planting through sensitive timing of around agricultural operations.

An inventory of available soils will be maintained to ensure adequate materials are available for planned rehabilitation activities and to ensure soils are sourced from the correct locations for us in restoriation.

Soil Restoration

The soil restoration processes will be carried out as follows:

- Remove any stones or foreign objects which may have contaminated the soils;
- Replace soils in correct sequence;
- Careful removal of soils from stockpiles to minimise structural degradation;
- Selective placement of more erodible soils on flatter areas and not on steeper slopes to minimise erosion;

- Spread of soil in even layers at a thickness appropriate for the intended land use;
- Contour ripping to encourage rainfall infiltration and minimise runoff;
- Reseeding with crops or grasses as soon possible after respreading to establish vegetation cover and reduce erosion;
- Installation of slope drainage control to limit slope lengths and runoff velocities;
- Installation of collection drains and catch dams to collect runoff and remove suspended sediment from restored areas;
- Contingency planning for adverse weather conditions and allowance for drying of ground for a full day;
- In the event the whole soil profile is not replaced e.g. subsoil replaced but no topsoil, still attempt to establish vegetation to minimise soil erosion; and
- Exclusion of vehicles and livestock on restored soils.

Mining Infrastructure Area Restoration

As part of advance works before construction commences the soils within the MIA footprint will be translocated to an equivalent area of Class 4 Cropping Land for the life of the mine (refer Figure 6-1). Only two soil management units occur within this disturbance footprint: Kilmore SMU and Sullivan SMU. This will enhance the topsoil quality and depth of this adjacent land for the duration of the mine and is a preferable management option to stockpiling these affected soils for a period of 40 years.

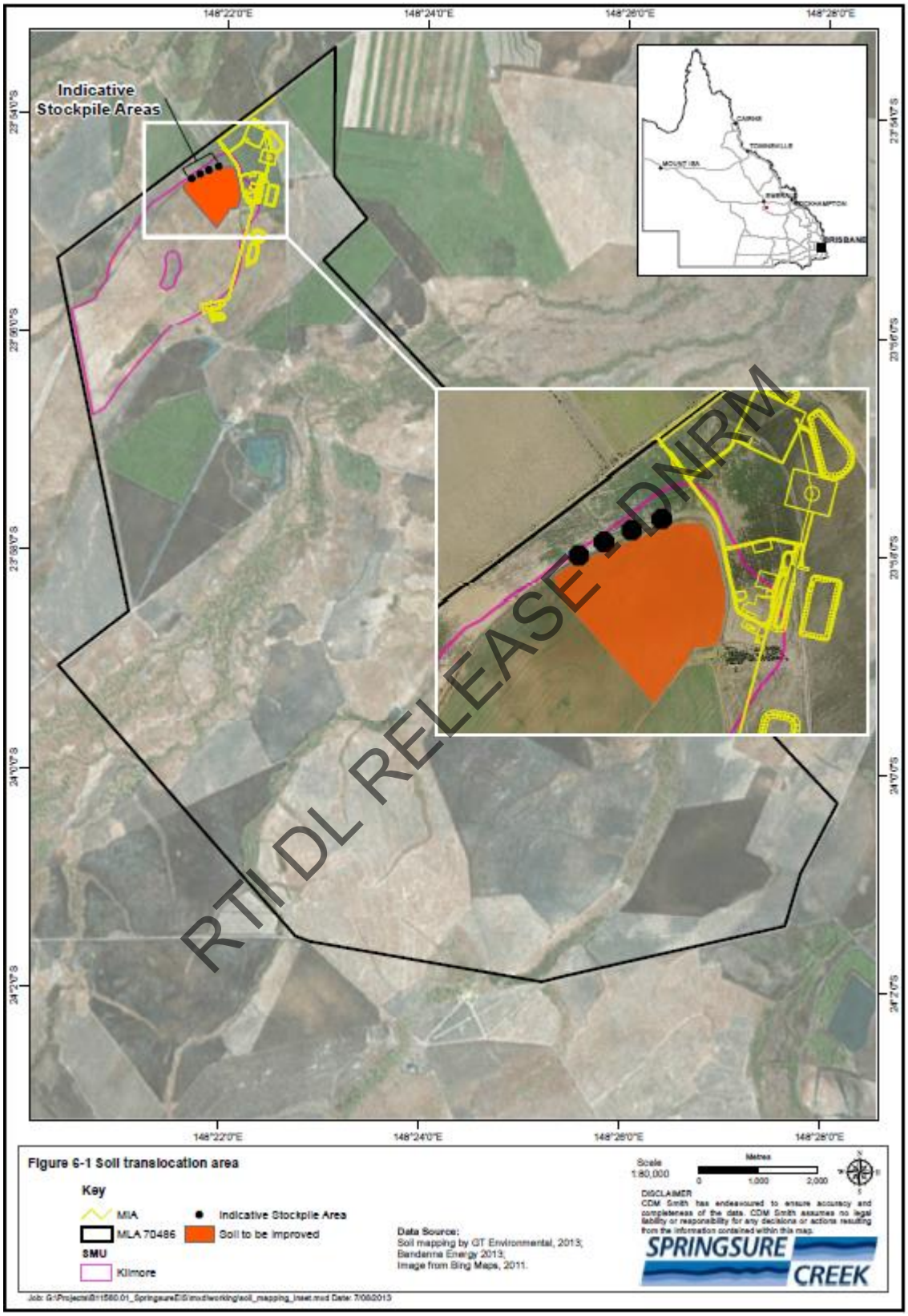
The recommended stripping depths for these SMUs are presented in Table 6-2. Translocated soils would be placed directed on top of the receptor site soils.

Table 6-2 Recommended Stripping Depths of Soils within disturbance footprint

SMU	Recommended topsoil stripping depth (mbgl)	Recommended subsoil stripping depth	Proposed disturbance area (ha)	Approximate topsoil area (m3)	Approximate subsoil area (m3)
Kilmore	0.3	0.3-0.6	7	21,000	21,000
Sullivan	0.3	0.3-0.7	53	159,000	212,000

On completion of the Project, these soils would be stripped from the translocation area and returned to the footprint of the MIA to restore cropping land. It is acknowledged that whilst in use for cropping at the translocation site there would be some soil mixing as part of agricultural activities, for example preparations for planting. When that specific topsoil is stripped and replaced on the restored MIA (on top of restored subsoil) there will be some mixing of soil type. This mixing is not considered likely to affect the status of the restored soils in terms of cropping potential or its status as SCL.

Figure 6-1 Indicative Temporary Soil Improvement Area



The MIA will be returned to the pre-mining landform where practicable. Minor re-shaping may be required post-mining in this area. Reshaping will involve regrading and trimming of the surface to make the landform consistent with the surrounding topography and pre-mining land suitability. Compacted areas will be deep ripped to facilitate water inflows, and topsoil will be added and areas seeded or planted with required species. Deep ripping may be required several times to achieve desired soil profiles. Drainage control through ripping, re-profiling, targeted groundcover plantings or provision of erosion control structures will also be undertaken.

On-site Access Tracks Restoration

The future of onsite access tracks will be determined in consultation with the landowners and managers, as some of these may be beneficial to future agricultural land use. Similarly, some of these may be required for access to monitor rehabilitated sites.

Access tracks that are to remain will require sediment containment or erosion control structures to be maintained. Onsite access tracks that are not required will be returned as closely as possible to the pre-mining landform and land use or to the land use required. Again, deep ripping will remove any compaction of the soil profile beneath access tracks.

Restoration of Drifts

Drifts will be sealed and closed to ensure no access or future risk of subsidence or water inflows.

Restoration of Water Storage and Management Dams

The post-mining options for water storage dams include retaining all dams or decommissioning them. Dams may be required during final restoration works as a temporary water management measure.

Dams not required for use by the post-mine land owner will be decommissioned and in-filled to ground level and either revegetated or returned to agricultural production. Dams will be dewatered and any saline sediment or sludge will be excavated, treated and disposed of in an appropriate manner according to sediment quality, assuming in situ management is not appropriate.

Restoration of Quarry Area

Basalt used during construction of hardstanding and the dam walls, for example, will be recycled during removal of the dams and used to fill in the remaining quarry area within MLA 70486. (Up until this point, any quarry excavated for the extraction of basalt would have been progressively restored during the life of the mine. Once filled in, the soil profile above the quarry will be restored and returned to cropping land using soils removed from the quarry area prior to excavations commencing and stockpiled appropriately.

Stockpiled Subsoils

Some soil will be removed from the area of the initial cut to access the underground drifts. That material will be salvaged and stored appropriately along with subsoils stripped elsewhere on the MIA that could not be reused at the translocation site.

Subsoils will be stripped, handled and stored following industry practice to prevent excessive soil deterioration.

6.1.4 SCL COMPLETION CRITERIA AND AFTERCARE

Completion criteria for SCL will include:

- Landform;
- Replacement of basalt;
- Replacement of subsoil;
- Replacement of topsoil; and
- Provision of surface features (e.g. water supplies, contour banks, fencing, etc.).

DNRM will need to be satisfied that all relevant conditions have been satisfactorily completed before the land is approved as being restored and can commence aftercare. For SCL areas this will require the demonstration that all zonal criteria pass the SCL requirements of DERM (2011).

Monitoring of constructed soil profiles will confirm that land suitability objectives are being achieved and areas are stable and self-sustaining. Annual aftercare reports will be provided to DNRM for five years following completion of SCL restoration. SCC recognises that in order for the land to be fully restored, it needs not only the replacement of topsoil and subsoil, but also needs cultivation and treatment in order to improve the stability of the soil and bring it to a satisfactory standard. Annual aftercare meetings are proposed to discuss progress to date with key stakeholders and agree any remedial actions to be carried out as required. Formal records of these meetings would be taken and circulated to parties engaged.

The completion criteria for each paddock will be based on site studies. Soil studies will be carried out immediately after soil replacement and repeated every two years throughout the aftercare period. Soil surveys will be carried out by an appropriately trained person and rely on up to date analyses.

Samples should be collected representatively across paddocks and submitted to an accredited laboratory in the standard manner. Sampling should follow the methodology set out in DERM (2011) *Guidelines for applying the Strategic Cropping Land Criteria*, as presented in section 4.0 above. The study should include information regarding any application of fertiliser made to the land (including organic fertilisers) as well as current and proposed cropping details.

For each soil mapping unit identified within the Project area, information should be reported on landform, soil profile and soil chemistry as per Table 6-3, Table 6-4 and

Table 6-5. Data provided through this assessment should then be related to the SCL Criteria for the Western Cropping Zone to confirm the land remains classified as SCL (Table 6-6).

Table 6-3 Template Land Summary Monitoring Results

Representative site number	**Paddock Reference:** **Soil survey site:**		
Details of Restoration Works	**Date:** **Subsoil treatment and replacement depth:** **Topsoil treatment and replacement depth:** **Drainage works:** **Other Comments:**		
Site type		Main vegetation	
Location		Disturbance	
Landform element and pattern		Micro relief	
		Permeability	
Slope		Drainage	
Surface coarse fragments		Surface condition	
ASC Order (s) present in SMU		Land use	
Land System (Story et al (1967)		Substrate	
AMU (Bourne and Tuck (1993)		Soil Type of Story et al (1967)	
Land suitability summary	**Effective soil depth** **Est. soil water storage:** **Rain fed Cropping class:** **Beef Cattle Grazing class:** **Agricultural Land Class**:		
Erosion potential (Bourne and Tuck 2003)			
Land condition			
Total area (ha)			

Table 6-4 Template Soil Profile Morphology Results

Site #	HORIZON NAME AND DEPTH (m) BOUNDARY	COLOUR MOTTLES BLEACH	MOISTURE FIELD pH DRAINAGE	TEXTURE STRUCTURE CONSISTENCE	COARSE FRAGMENTS, SEGREGATIONS ROOTS
Insert Photo					

Table 6-5 Template Soil Chemistry Monitoring Results

Site, Horizon, Sample Depth (m)	Depth 1	Depth 2	Depth 3	Depth 3
Analysis (Unit)				
Lab pH (1:5 water)				
EC (uS/cm)				
PSA-Clay (%)				
PSA-Silt (%)				
PSA-Sand (%)				
PSA-Gravel (%)				
PSA-Cobbles (%)				
Exch. Ca (meq/100g)				
Exch. Mg (meq/100g)				
Exch. K (meq/100g)				
Exch. Na (meq/100g)				
CEC (meq/100g)				
ESP (%Na/CEC)				
Ca/Mg (ratio)				
Sulfur – Total as S (%)				
Chloride (mg/kg)				
Boron (mg/kg)				
Copper (mg/kg)				
Iron (mg/kg)				
Manganese (mg/kg)				
Zinc (mg/kg)				
Nitrite N (mg/kg)				
Nitrate N (mg/kg)				
Nitrite + Nitrate as N (mg/kg)				
Total Kjeldahl Nitrogen as N(mg/kg)				
Total Nitrogen as N (mg/kg)				
Bicarbonate Extractable P (Olsen) (mg/kg)				
Organic Matter (%)				

Table 6-6 SCL Criteria for the Western Cropping Zone

SCL Criteria	Limitations
• Slope	Slope is 3% or less.
• Rockiness	Less than 20% surface rocks larger than 60 millimetres (mm).
• Gilgai micro-relief	The average density of gilgai microrelief depressions deeper than 500 mm is less than 50% of the land surface.
• Soil depth	Soil depth is equal to or greater than 600 mm.
• Drainage	The land has favourable drainage (no waterlogged layers within 300 mm of the ground surface).
• Soil pH	Rigid soils (not shrink/swell clays): soil pH at 300 mm and 600 mm is between pH 5.1 and pH 8.9 inclusive.
	Non-rigid soils: soil pH at 300 mm and 600 mm is greater than pH 5.0.
• Salinity	Chloride content is less than 800 milligrams per kilogram (mg/kg) from the surface to 600 mm depth.
• Soil water storage	The land's soil water storage is equal to or greater than 100 mm to a soil depth or soils physico-chemical limitation of equal to or less than 1000 mm.

6.2 FINANCIAL ASSURANCE

Financial assurance comprises the security of a bond paid by SCC to the Department of Natural Resources and Mines to cover the cost of restoring land within the Project area to its pre-development condition in the event of any non-compliance with the SCL Act or the SCL protection conditions imposed under section 100 of the SCL Act. This security is required to be deposited before any activities take place on SCL. The financial assurance may be kept by the Department until it is satisfied no claim is likely to be made against it. Where financial assurance has been calculated under the EP Act to cover any non-compliance with an environmental authority the component covering the rehabilitation costs for the Project on SCL or potential SCL may be deducted from the SCL financial assurance, thus avoiding any double up.

Financial assurance will therefore provide compensation for any unexpected and highly unlikely residual impacts of the Project on SCL. This measure is therefore a buffer against any residual risk of the mitigation measures proposed by the Project being ineffective. The likelihood of the mitigation measures being ineffective is extremely low because the operational or environmental management processes proposed by the Project are widely applied and demonstrated in the region as well as elsewhere within Australia. No novel or untested processes are proposed by the Project.

SCC expects to pay financial assurance for any rehabilitation liability as a condition of its environmental authority. It is also likely that financial assurance will be required as part of its lease under the MR Act (section 277).

These considerations should be taken into account by the Department of Natural Resource and Mines in calculating the attributable financial assurance.

7.0 IMPACT ASSESSMENT CONCLUSIONS

This Report has assessed the potential impacts of the Project on SCL to determine the nature of any impacts in terms of their nature, extent and reversibility. A number of measures are described which will avoid and minimise any impacts on SCL such that there will be no permanent impacts on SCL. These measures are to be delivered through a combination of pathways, including the Project's layout, considerate construction and operational processes and through restorative measures applied following extraction of the coal resource.

In addition to these strict legislative controls, SCC has established the Springsure Creek Agricultural Coexistence Research Committee with the aim of maintaining and, where practicable, improving SCL which could be impacted by the coal mine. Through the implementation of the Springsure Creek Agricultural Plan, land improvements agreements, land management, coexistence research and reporting and review processes would seek to ensure that impacts on cropping land are managed in perpetuity.

Notwithstanding the above, the present Project is excluded from the permanent impact restriction under chapter 9, part 3, section 289 of the SCL Act. The exemption applies to any environmental authority application and any resource application for resource activities described under the EIS relating to EPC 891 (which MLA 70486 is wholly within). This exception means that SCC does not have to demonstrate exceptional circumstances for any activity that will result in a permanent impact on SCL within EPC 891.

Project Activity / Feature	Description of Potential Impact & Duration without Mitigation	Effected Soil Unit(s)	Impact Avoidance, Reduction & Management Measures	Description of Residual Impact
Advance / preparatory works ahead of construction i.e. site access, site drainage and soil stripping	Digging, movement and handling of soils to level land ready for construction Soil compaction by site vehicle movements Increased soil erosion **Duration as long as Project life (40 years + restoration phase) but potentially permanent without management**	Kilmore Sullivan	Magnitude and extent of Project footprint reduced to 60 ha (0.5% of Project area) Topsoils and subsoils to be salvaged as part of advance works and stockpiled appropriately for future restoration works. Soil stripping to follow approved Management Plan to ensure appropriate methods used Site vehicles to use defined roads and workforce trained to behave responsibly Erosion and Sediment Control Plan to reduce risk of soil losses	**Full restoration to pre-development condition expected.** **Based on present Project timeframes, impacts will be temporary and limited to the footprint of above ground infrastructure. No permanent impacts**
Construction of above ground infrastructure i.e. mine infrastructure area, coal handling plant and water infrastructure	Disturbance or spread of existing contaminated soils Acid rock drainage arising from excavated overburden Inappropriate waste management Spread of weeds and pests **Majority of impacts would be of a temporary duration**	Kilmore Sullivan	EIS studies identified no existing soil contamination requiring management. Soil stripping to follow approved Management Plan to ensure any risks of handling or mixing soil types is minimised Geotechnical studies identified overburden is of low acid forming potential, contains low salt concentration and is of low erosion potential. All excavated rock to be recycled in construction of above ground infrastructure Wastes to be managed according to an approved Waste Management Plan. Wastes to be managed in	**No temporary or permanent impacts expected on existing land condition** **Potential enhancement of class 4 cropping land adjacent to MIA through translocation of Kilmore and Sullivan soils for life of mine**

Project Activity / Feature	Description of Potential Impact & Duration without Mitigation	Effected Soil Unit(s)	Impact Avoidance, Reduction & Management Measures	Description of Residual Impact
	although potentially polluting activities could have permanent effects (> 50 years) without management		following order of preference: minimise, re-use and recycle, improve efficiency, or dispose Weed and Pest Management Plan to be approved to control any potential spread of invasive species or vermin Management Plan to restore soils and maintain agricultural production Translocation of Kilmore and Sullivan soils to Kilmore soils located adjacent to MIA for life of mine	
Quarrying of basalt	Digging, movement and handling of soils to level land ready for construction Increased soil erosion **Impacts would be of a temporary duration although could have permanent effects (> 50 years) without management**	Kilmore Sullivan	Quarrying during construction to be located in areas already disturbed by excavations Additional requirements to be sourced elsewhere in SCL. Soils to be removed and stored for future restoration. Erosion and sediment controls to be provided to reduce runoff Quarry areas to be progressively restored Final quarry to be filled in using rock from decommissioning of dams and infrastructure areas	**Impacts would be of a temporary duration. Full restoration expected within life of mine. No permanent impacts**
Longwall mining operations – Subsidence	Altered soil drainage, soil wetness and soil water content	Minerva	Development and approval of an Agricultural Management Plan to deliver land management and,	**Based on present Project timeframes, impacts will be temporary. Whilst the c. 65% of the Project area will be**

Project Activity / Feature	Description of Potential Impact & Duration without Mitigation	Effected Soil Unit(s)	Impact Avoidance, Reduction & Management Measures	Description of Residual Impact
	Altered slope and flood irrigation practices Damage or loss of farm infrastructure such as road and crop storage **Duration as long as Project life (40 years + restoration phase) but potentially permanent without management**	Ronnoc Kammel Lexington Talafa Kilmore Sullivan Sullivan gilgai phase	where practicable, improvement Coordinated timing of subsidence, agriculture and restoration activities to minimise disruption on farming Progressive restoration methods to utilise similar techniques as those required by agriculture to continually maintain land and cropping efficiencies Inclusion of pre-emptive measures to minimise impacts of subsidence before they occur Disturbed land to be progressively rehabilitated Final land form to be physically safe, geotechnically stable and non-polluting	**subsided during the life of the mine the extent subsidence at any one time will be limited due to progressive rehabilitation.** **No permanent impacts predicted**
Longwall mining operations – use and storage of potentially polluting materials	Contamination of land as a result of spills or leaks **Any spill is likely to be limited in volume and extent. Duration of any harm caused is probably temporary**	Kilmore Sullivan	The Project will be required to operate according to *AS 1940:2004 The Storage and Handling of Flammable and Combustible Liquids*	**No permanent impact on SCL** **Possible temporary and localised impact**

Project Activity / Feature	Description of Potential Impact & Duration without Mitigation	Effected Soil Unit(s)	Impact Avoidance, Reduction & Management Measures	Description of Residual Impact
Longwall mining operations – Changes to the quantity or quality of surface water resources	Altered peak and annual flows downstream of Project area Subsidence beneath farm dams **Duration as long as Project life (40 years + restoration phase) but potentially permanent without management**	e.g. Minerva	No controlled releases will occur to surrounding areas with overflows from the above ground infrastructure occurring only during extreme rainfall events Management of land to ameliorate impacts to include: • Excavation through pillar areas of longwall panels • Bank stabilisation works to reduce erosion • Reinstate and repair dam walls affected by subsidence • Re-contour and level land to maintain drainage channels • Monitor and report results to regulatory agencies	**No permanent impact on SCL** **Possible temporary and localised impact**
Longwall mining operations – Changes to the quantity or quality of groundwater resources	Drawdown on water table Damage to bores **Duration as long as Project life (40 years + restoration phase) but potentially permanent without management**	N.A.	Groundwater Management Plan to be approved. Will provide for risk based approach to impact management of drawdown, including e.g. • Modification of dimensions of longwall panels or the order of panel extraction • Installation of water retention devices to allow some goaf areas to refill • Grout injection to seal goaf fractures and reduce connectivity	**No permanent impact on SCL** **Possible temporary and localised impact**

Project Activity / Feature	Description of Potential Impact & Duration without Mitigation	Effected Soil Unit(s)	Impact Avoidance, Reduction & Management Measures	Description of Residual Impact
			All landholder bores to replaced or deepened if experience inability or reduction in water availability. Where this is nt feasible then supplementary bores could be provided elsewhere on properties with water conveying infrastructure to provide water where needed Impact monitoring and verification studies to be ongoing	
Longwall mining operations – emissions of air pollutants	Dust from stockpiles, vehicle movements on unsealed roads Emissions from engine exhausts **Duration for the life of the Project**	Kilmore Sullivan	Air Quality Management Plan to be approved. Will include measures such as: • Water or use suppression sprays on any unsealed areas and coal stockpiles • Align temporary topsoil and subsoil stockpiles with prevailing wind direction to reduce dust releases	**No permanent or temporary impacts expected**
Longwall mining operations – changes to tenure or access	Landholder loss of property and land neglected from farming Land neglected due to loss of access to, or fragmentation of, paddocks Increased traffic on local road	Minerva Ronnoc Kammel Lexington Talafa	SCC will maintain and, where practicable, improve agricultural productivity as part of the Project Springsure Creek Agricultural Coexistence Research Committee to share findings with willing landholders and seek to assist in the maintenance and improvement of production on properties Upgrades to local roads used by Project vehicles	**No permanent impacts are predicted as a result of changes to tenure or access to land**

Project Activity / Feature	Description of Potential Impact & Duration without Mitigation	Effected Soil Unit(s)	Impact Avoidance, Reduction & Management Measures	Description of Residual Impact
	network **Impacts of land loss or fragmentation are potentially permanent. Traffic impacts will endure as long as the Project life (40 years)**	Kilmore Sullivan Sullivan gilgai phase	including sealing and widening Coordination and advance warning of any over-dimension vehicle movements expected by the Project	
Longwall mining operations – changed land suitability	Land disturbance Land degradation Loss or reduction of supporting agricultural infrastructure and services **Duration potentially permanent if not managed**	Minerva Ronnoc Kammel Lexington Talafa Kilmore Sullivan Sullivan gilgai phase	Soils to be stripped, stored and replaced according to approved Management Plans. Restoration work to comply with completion criteria, assessed through ongoing soil studies with results reported to stakeholders SCC financial contribution to agricultural research in the Project area and sharing of results gained	**No permanent impact to land suitability**

8.0 PROPOSED SCL PROTECTION CONDITIONS

This section sets out the SCL protection conditions sought by SCC for the Project under section 290 the SCL Act. The proposed conditions are intended to form the starting point of discussions regarding protection conditions with the Department of Mines and Natural Resources. The proposed SCL protection conditions include those already provided under section 290, sub-sections (2) and (3) and offer additional conditions as provided by sub-section 290 (5). The conditions are intended to complement the outcome based conditions provided by the environmental authority and the resource authority.

SCC proposes that the rehabilitation and management measures will be developed in consultation with the administering authority but will include the rehabilitation and management measures referred to in Sections 2.2.2 and 6.0 of this report.

8.1 GENERAL

A. Subject to compliance with these conditions this SCL Protection Decision authorises impacts on SCL for mining activities within MLA 70486.
B. Notwithstanding condition (A), SCC is to maintain and, where practicable, enhance the existing productive capacity of the land within MLA 70486 in accordance with:
    - these conditions;
    - the conditions of Mining Lease 70486; and
    - any environmental authority applying to Mining Lease 70486.

8.2 IMPACT AVOIDANCE

C. No open cut mining can be carried out under the lease.
D. No permanent storage of hazardous mine wastes above ground, including for example, tailings dams, overburden or waste rock dumps can be carried out under the lease.

8.3 IMPACT MINIMISATION

E. SCC must prepare a topsoil management plan 3 months prior to disturbing SCL which must include:
    - A description of the existing soil resource within the area to be impacted, including location, physical and chemical analyses and SCL criteria;
    - Stripping depths and volumes;
    - Handling equipment;
    - Stockpiling process;
    - Stockpile maintenance and management measures; and
    - Map of final stockpile location.
F. SCC must provide a copy of the topsoil management plan to the administering authority 3 months prior to disturbing SCL.
G. SCC must conduct its topsoil disturbance and stockpiling activities in accordance with the topsoil management plan.
H. The administering authority must be notified of the outcome of the topsoil disturbance and stockpiling activities within 30 days of completion of those activities.

8.4 RESTORATION AND AFTERCARE

I. SCC must use all reasonable endeavours, including those rehabilitation and management measures outlined in the Springsure Creek Coal Mine Project SCL Development Impact Report, to rehabilitate all impacts on the land from underground coal mining carried out under Mining Lease 70486.

J. The fundamental rehabilitation objective for areas subject to active surface disturbance is the return to the pre-mining land suitability class. In areas deemed to be SCL, measurable attributes will be nominated to confirm that all zonal SCL criteria meet requirements of the SCL Guidelines. In particular, soil profiles will be reinstated which have an adequate soil depth (>0.6m) and a water storage potential >100mm.

K. SCC must prepare an SCL Completion and Aftercare Plan 3 months prior to commencing any rehabilitation works to be undertaken to return any areas disturbed by any activities carried out under the authority of Mining Lease 70486 to its pre-mining land suitability class. The SCL Completion and Aftercare Plan may be included as part of the Plan of Operations submitted for approval to the administering authority at the appropriate time.

L. The SCL Completion and Aftercare Plan must include, as a minimum:
   - A description of the land prior to restoration works including the nature and result of mining activities carried out;
   - The planned objectives and completion criteria for the land;
   - The restoration methodology including source material, stockpiling history, timing, equipment, re-spreading depths and volumes; and
   - Aftercare measures.

M. The administering authority must have approved the SCL Completion and Aftercare Plan prior to any rehabilitation works commencing.

N. Rehabilitation must commence progressively in accordance with the Plan of Operations and the SCL Completion and Aftercare Plan if the SCL Completion and Aftercare Plan is not included in the Plan of Operations.

O. SCC must conduct rehabilitation works to return any areas disturbed by any activities carried out under the authority of Mining Lease 70486 to its pre-mining land suitability class in accordance with the SCL Completion and Aftercare Plan.

P. SCC must submit an annual report to the administering authority with details of works undertaken on SCL, the area of SCL disturbed, the area of SCL restored or undergoing restoration, and monitoring results of productivity on restored land compared to pre-development conditions.

Q. SCC shall monitor the topsoil of any areas disturbed by any activities carried out under the authority of Mining Lease 70486 which has been rehabilitated pursuant to the SCL Completion and Aftercare Plan.

R. Monitoring must take place immediately following the replacement of topsoil and every two years thereafter.

S. SCC shall engage an appropriately qualified and experienced third part to prepare a monitoring report. The report shall include results of chemical analyses and evaluation of the data obtained from monitoring against land suitability classes and zonal SCL criteria. SCC shall submit the monitoring reports to the administering authority.

T. All monitoring reports required by this Protection Decision must be kept for a period of not less than 5 years.

End of Conditions.

9.0 REFERENCES

Bourne, G.F. and Tuck, G.A. (1993) *Understanding and Managing Soils in the Central Highlands. QDPI QE93002. Brisbane*.

Burgess, J.W. (2003) *Land Resource Assessment of the Windeyers Hill Area, Isaac–Connors and Mackenzie River Catchments, Central Queensland,* Queensland Department of Natural Resources & Mines. Report QNRM02189.

DERM (September 2011) *Draft Guidelines for applying the proposed strategic cropping land criteria*.

Department of Mines and Energy (1995), *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland – Land Suitability Assessment Techniques*, Environmental Protection Agency, Brisbane.

Gunn, R.H, Beattie, J.A., Reid, R.E. and van de Graff, R. (1988). *Australian Soil and Land Survey: Guidelines for Conducting Surveys*. Inkata Press. Melb.

Isbell, R.F. (2002), *The Australian Soil Classification*, CSIRO Publishing, Collingwood VIC.

Irvine, S.A. (1999) *Site Characterisation Report Gindie Group, 'Juanita'*. Sustainable Farming Systems Publication no.13. DNR, Queensland.

McDonald, R.C., Isbell, R.F., Speight, J.G., Walker, J. and Hopkins, M.S. (1990). *Australian Soil and Land Survey: Field Handbook*, 2nd Edition. Inkata Press, Melbourne.

McKenzie, N.J., Grundy,M.J., Webster. R. Ringrose-Voase. A.J. (2008) *Guidelines for Surveying Soils and Land Resources*. Second Edition. CSIRO Publishing.

National Committee on Soil and Terrain (2009), *Australian Soil and Land Survey: Field Handbook* (Third Edition), CSIRO Publishing, Melbourne.

Qld Department of Primary Industries and Department of Housing, Local Government and Planning (1993), *Planning Guidelines: The Identification of Good Quality Agricultural Land*.

Shields and Williams (1991) *Soils and Land Suitability for the Kilcummin Area, Central Queensland*. QDPI Brisbane.

Springsure Creek Coal (2013) *Springsure Creek Coal Mine Project Final Environmental Impact Statement*.

Story, R., Galloway, R.W., Gunn, R.H. and Fitzpatrick, E.A. (1967), *Lands of the Isaac-Comet Area, Queensland*, CSIRO Publishing, Melbourne.

Tuck, G.A. (1993 unpublished). *Major Soils of the Raingrown Cropping Areas at Emerald*. QDPI, Brisbane.

10.0 APPENDIX 1

Form

***Strategic Cropping Land Act 2011* (sections 95 and 116)**

Application for a strategic cropping land protection decision or compliance certificate

OFFICIAL USE ONLY

DATE RECEIVED

FILE REF

PROJECT REF

COMPLETE FORM ☐ CORRECT AA ☐

COMPLETE FEE ☐

ADMINISTERING DISTRICT

ENTERED BY [SIGNATURE]

DATE

This form is to be used to apply for a strategic cropping land (SCL):

- protection decision (section 95); or
- compliance certificate (section 116)

for resource activities located on SCL or potential SCL pursuant to the *Strategic Cropping Land Act 2011*.

This form is relevant to proposed resource activities under the *Mineral Resources Act 1989*, *Petroleum and Gas (Production and Safety) Act 2004*, *Petroleum Act 1923*, *Geothermal Energy Act 2010*, *Geothermal Exploration Act 2004* and *Greenhouse Gas Storage Act 2009*.

Use this form when:

- Applying for an environmental authority or amendment to an environmental authority which relates to a resource activity that will be located on SCL or potential SCL. This is the case even where a compliance certificate or protection decision already exists as a result of a previous environmental authority (or amendment to an environmental authority) application.

Do not use this form when:

- Applying for an environmental authority or amendment to an environmental authority which does NOT relate to resource activity that will be located on SCL or potential SCL.
- The environmental authority application is excluded from all of the SCL Act (see Chapter 9, Division 2).

An environmental authority for resource activities that will be located on SCL or potential SCL cannot be issued until an SCL compliance certificate has been given, or an SCL protection decision has been made, where applicable.

Part A – General

Question 1

Resource activities include entry on land that is SCL or potential SCL.

Any future applications to amend the environmental authority that results in resource activities being located on SCL or potential SCL will need to meet the requirements of the SCL Act. This may include the need to make an application under the SCL Act for an SCL assessment.

1. Will any resource activities proposed under the related environmental authority application be located on SCL or potential SCL?

☒ Yes → Go to Question 2
☐ No → Do not complete this form. No SCL application is required.

Question 2

The applicant must be a person or entity that has applied for, or may apply for, a resource authority or an environmental authority for the resource activities.

2. Applicant details

NAME	ABN/ACN
Springsure Creek Coal Pty Ltd	ACN 119 713 601
ADDRESS	
Level 4, 260 Queen Street	
SUBURB	POSTCODE
Brisbane	4000

☐ There is more than one applicant for this application and the additional applicant(s) details have been identified in Appendix 1 of this form.

Question 3

The contact person may be a consultant or some other person acting on behalf of the applicant. If a contact person is nominated, all dealings and correspondence with the applicant will be through the contact person.

3. Contact person

TITLE	NAME	
Mr	Pete Jones	
COMPANY		ABN/ACN
Bandanna Energy Limited		ABN 34 009 356 665
ADDRESS		
Level 4, 260 Queen Street		
SUBURB		POSTCODE
Brisbane		4000
PHONE	FAX	EMAIL
07 3041 4434	07 3041 4444	petejones@bandannaenergy.com.au

Question 4

For resource authorities that are under application, attach information that identifies the resource authority boundaries (provided in the resource authority application).

4. Resource authorities

List all resource authorities subject to this application:

RESOURCE AUTHORITY TYPE	NUMBER (IF KNOWN)	STATUS (APPLICATION/ GRANTED)
Mining Lease	70486	Application

☒ For any resource authority application listed above, attach information that identifies the boundaries of the resource authority (e.g. blocks and sub-blocks, metes and bounds or real property description (lots on plans).

Question 5

The description of the land may include a street address or property name and locale descriptor (e.g. 15 km NE of Dalby).

5. Description of the land

The land is located approximately 45km SE of Emerald, Central Queensland.

The mining lease application covers the whole or part of the following parcels of land:

Lot 2 on DSN856 (Den-Lo Park)

Lot 5 on DSN856 (Springton)

Lot 2 on SP141314 (Springton)

Lot 6 on DSN708 (Cowley)

Lot 7 on RP620355 (Arcturus Downs)

Lot 8 on RP620355 (Arcturus Downs)

Lot 11 on RP619636 (Cedar Park)

The area of the mining lease application is more fully described in Attachment 1 "Mining Lease Abandonment Application - ML 70486 "Springsure Creek"Metes & Bounds Description".

Question 6

For a new environmental authority (application), provide a reference number and date the application was lodged.

For an existing environmental authority, provide the environmental authority number.

6. Environmental authority

Provide details of the relevant environmental authority for the resource activities.

The Environmental Authority (EA) application was received by DEHP on 24 October 2012. The EA reference number is EPML00961613

Question 7

The strategic cropping land (SCL) trigger map is a statutory map under the *Strategic Cropping Land Act 2011* (SCL Act) that identifies the location and extent of SCL and potential SCL and the protection/management areas. It can be found on the Department of Natural Resources and Mines (DNRM) website at **www.dnrm.qld.gov.au** and navigating to the strategic cropping land webpage. The Interactive Resource Tenure Mapping (IRTM) software also includes an SCL map layer.

The decision register, which lists the outcome of validation applications, can also be found on the DNRM website.

By electing to treat potential SCL as SCL in this application, the land is taken to be SCL for deciding this application only. This election does not make the land SCL under the SCL Act and the land continues to be potential SCL for any other person (s. 84 SCL Act).

7. Status of the land (tick all that apply)

(a) The tenure(s) is located in:

- ☒ a protection area:
  - ☐ southern
  - ☒ central
- ☐ the management area

(b) The tenure(s) contains:

- ☒ Potential SCL as shown on the SCL trigger map → By ticking this box you elect to treat this part of the land as if the land were SCL.
- ☐ SCL → You must attach one of the following for each lot on plan that is decided SCL:
  - ☐ the validation information notice(s)
  - ☐ the registry record(s) (SCL)

Question 8

Provide as much detail as possible about the specific resource activities proposed under the application. For example, ten exploration wells, five production wells, 20 km of access tracks etc.

8. What resource activities will be located on SCL or potential SCL?

See section 2 of the SCL Development Impact Report at Attachment 2

Question 9

The development footprint includes infrastructure or proposed infrastructure relating to the resource activity, in addition to the items listed in section 85(2) of the SCL Act, which includes, among other things, buildings and structures.

Where the exact location of the development or resource activities is unknown, a map(s) that identifies the resource authority boundaries and the SCL and potential SCL within those boundaries is the minimum amount of information that can be supplied for this requirement.

You should provide the specific locations of major infrastructure located on SCL or potential SCL.

Question 10

The SCL standard conditions code can be found on www.dnrm.qld.gov.au by searching for the strategic cropping land web page.

You must be able to comply with the SCL code to apply for an SCL compliance certificate.

If you cannot fully comply with the code, you must apply for an SCL protection decision.

Note: Not all resource activities provided for under a Code of Environmental Compliance (e.g. Exploration and Mineral Development projects) made under the Environmental Protection Regulation 2008 are able to comply with the SCL code.

Question 11

Refer to the SCL code for the list of resource activities and conditions to determine which part of the code you may be able to comply with.

The SCL code does not allow for permanent impacts in a protection area.

Question 12

9. Map

Provide a map that identifies or describes:

- ☒ the location of all SCL or potential SCL
- ☒ where the development is proposed to be carried out on SCL or potential SCL
- ☒ all of the footprint of the development
- ☒ the boundaries of the resource authorities

10. Are you able to comply with the SCL standard conditions code for resource activities (SCL code) for the resource activities proposed on SCL or potential SCL?

- ☐ Yes → I am applying for an SCL compliance certificate. Go to Question 11.
- ☒ No → I am applying for an SCL protection decision. Go to Part B (Question 14).

11. Which part of the SCL code are you electing to comply with?

By answering this question, you certify that you will comply with the part of the code that you selected.

- ☐ Part 1 – no additional impact → Go to Question 12
- ☐ Part 2 – minimal impact → Go to Question 13
- ☐ Part 3 – low impact → Go to Question 13

12. Provide evidence as to why the resource activities proposed

No additional impact means:
A resource activity approved under an environmental authority is subject to amendment but the amendment will not result in any additional impact to SCL or potential SCL. There must not be a change to what the activity is, or an increase in the footprint size or impact to SCL or potential SCL. An example of no additional impact would be where the location of a resource activity is changing.

What evidence is required to demonstrate that there will be no additional impact to SCL or potential SCL:

- Details of, and a copy of, the relevant environmental authority highlighting where the activity has received prior approval.
- Details of why the amendment to the resource activity will not result in additional impacts to SCL or potential SCL, beyond what was previously authorised in the environmental authority.

Note: Part 1 or any other part of the SCL code does not authorise permanent impacts on SCL or potential SCL in a protection area.

Question 13

The SCL code is divided into three parts.

The same part of the SCL code means:
(a) for part 3–part 3
(b) for part 2–part 2
(c) for part 1–part 1

The relevant part of the SCL code means:
(a) for part 3– parts 1 and
(b) for part 2– part 1.

For more information, refer to section 6 of the Strategic Cropping Land Regulation 2011.

For the purposes of a reissue of a compliance certificate, Version 1 (December 2011) of the SCL code is equivalent to Part 3 of the SCL code (December 2012)

on SCL or potential SCL will have no additional impact on that land.

☐

13. Reissue of compliance certificate

Does this application meet ALL of the following criteria:

(a) This application relates to an application for amendment of an environmental authority; and

(b) A compliance certificate already exists for the above mentioned environmental authority; and

(c) The activities proposed under this application can comply with the same part or a relevant part of the code as the existing compliance certificate.

☐ Yes → this application is subject to the lower 'reissue' fee

☐ No → this application is not subject to the lower 'reissue' fee.

Go to Part C (Question 17).

Part B – Protection decision only

Question 14
Carrying out development on SCL or potential SCL has a permanent impact on the land if–

- The carrying out impedes the

14. Permanent impacts (protection decision only)

If, in question 7(a) you answered that the resource activity subject of this application is in a protection area, answer the following

land from being cropped for at least 50 years (legal or physical impediment); or
- Because of the carrying out, the land can not be restored to its pre-development condition; or
- The activity involves open cut mining or storing hazardous mine wastes, including, for example, tailings dams, overburden or waste rock dumps.

Important: If the outcome of the SCL protection decision application is that a resource activity will have a permanent impact on SCL or potential SCL in a protection area, the development will not be permitted to proceed without an exceptional circumstances determination or transitional status (see question 15).

question, otherwise, go to Question 16.

Will any resource activities proposed under this application have a permanent impact on SCL or potential SCL in a protection area?

☐ Yes → Go to Question 15

☒ No → Go to Question 16

Question 15

If you are eligible for exclusion of the permanent impact restriction, you do not need an exceptional circumstances determination to have a permanent impact in a protection area. However, you must attach evidence to your application which demonstrates your eligibility. Refer to sections 286 – 289 of the SCL Act for full details.

15. Is the development in exceptional circumstances?

☐ Yes → You must attach one of the following:

☐ evidence that the development is prescribed to be in exceptional circumstances pursuant to the Strategic Cropping Land Regulation 2011; or

☐ a copy of the relevant exceptional circumstances decision.

☐ An application for exceptional circumstances will be or has been lodged and a decision is pending. Provide application reference details:

☐

☒ No → I am eligible for exclusion of the permanent impact restriction under Chapter 9, Division 3 of the *Strategic Cropping Land Act 2011*. Supporting evidence is attached.

Question 16

A report is required that assesses the extent of the development's impacts on all SCL or potential SCL on the land; and identifies any constraints on the configuration or operation of the development. It should include the following information:
- What is the resource activity
- How you have avoided and minimised the impacts to SCL or potential SCL (both permanent and temporary impacts), drawing on any constraints on the configuration or operation of the development.

16. Development impact report (protection decision only)

Provide a report that:

☒ assesses the development's impact on all SCL or potential SCL

☒ identifies any constraints on the configuration or operation of the development.

Go to Part C (Question 17).

- How will the resource activity be conducted (construction, operation and decommissioning phases)
- The period of time that the resource activity will be conducted
- The potential impacts from the resource activity on SCL or potential SCL (construction and operation)
- Whether the impacts will be temporary or permanent and why.
- If the activity will be temporary, what is the pre-development condition of the land and how will it be restored to pre-development condition within 50 years.
- If the activity will have a permanent impact, what are the reasons why the activity cannot be conducted in a way that it would have a temporary impact.

Part C – Financial assurance, application fee and declaration

Question 17
Compliance certificates:
Financial assurance is only required for certain resource activities under Part 3 of the Code.

It is a condition of the code that the required amount of financial assurance is submitted to the administering authority prior to carrying out any resource activities on SCL or potential SCL.

The proposed financial assurance should be calculated using Schedule 1 of the code.

Protection decisions:
This requirement for financial assurance is provided for under the SCL Act (s. 100).

The proposed financial assurance should be based on the costs for a third party to restore the temporary impacts on SCL or potential SCL to pre-development condition.

You do not need to pay financial assurance at the time of lodging your application; however, if you are required to pay financial assurance, this requirement must be met prior to undertaking the activities on SCL or potential SCL.

Financial assurance for SCL purposes is separate to financial assurance/security required for the environmental authority/resource authority. The final amount of SCL financial assurance can take into account the amount of financial assurance paid for the environmental

17. Financial assurance for SCL

Financial assurance is required for certain resource activities that will have a temporary impact on SCL or potential SCL. Refer to guidance material for more information.

☐ Financial assurance calculation attached →

SCL financial assurance required $ _____

☒ No financial assurance required.

authority for those resource activities that are proposed on SCL or potential SCL.

The Department of Natural Resources and Mines will provide information on how to meet your financial assurance requirements (i.e. acceptable forms of financial assurance, lodgement).

Question 18
The applicable SCL fee can be found at **www.dnrm.qld.gov.au** or in the Strategic Cropping Land Regulation 2011.

The fee amount depends on what type of application you are making:

1. Compliance certificate
   a) Part 1
   b) Part 2
   c) Part 3
   d) Reissue
2. Protection decision

18. SCL application fee

Type of SCL application: Protection decision

The application fee is $ 29,194.00

You may pay your application fee via cheque, money order or credit card.

Select the payment method below:

☒ Payment by cheque or money order made payable to the Department of Natural Resources and Mines (attached); or

☐ Please contact me (the applicant) for credit card payment

Phone number: ____

Question 19
Where the applicant is a company, this form is to be signed by a person authorised (in writing) to sign for that company and in doing so declares that the corporation will be bound by the conditions associated with the granting of a licence or permit.

19. Declaration

I declare that the information contained in this document, including all appendices and attachments, is true and correct to the best of my knowledge, information and belief. I understand that it is an offence under section 229 of the *Strategic Cropping Land Act 2011* to give an authorised person information, or a document containing information that I know is false or misleading in a material particular.

APPLICANT'S SIGNATURE	
APPLICANT'S NAME: Michael John Gray	APPLICANT'S POSITION & COMPANY: Managing Director, Springsure Creek Coal Pty Ltd
DATE: 8 August 2013	

Privacy statement

The Department of Natural Resources and Mines is collecting the information on this form for the purposes of assessing an application and any personal information provided will be managed in accordance with the

Privacy Information Act 2009. The collection of this information is required under the *Strategic Cropping Land Act 2011*. All information supplied on or with this application form may be disclosed publicly in accordance with the *Strategic Cropping Land Act 2011*, *Right to Information Act 2009* and the *Evidence Act 1977*. Information may be given to the Department of Environment and Heritage Protection for the purposes of processing an environmental authority application. Your personal details will not be disclosed to any other third party without your consent unless required to do so by law.

Applicant checklist

- ☒ Application form(s) completed
- ☒ Question 4 – details of resource authorities (if applicable)
- ☐ Question 7 (b) – validation decision notices or registry records (SCL) (if applicable)
- ☒ Question 9 – map
- ☒ Question 15 - exceptional circumstances decision or evidence of transitional status(if applicable)
- ☒ Question 16 – development impact report (protection decision only)
- ☐ Question 17 – financial assurance calculation (if applicable)
- ☒ Application fee payment details
- ☐ Appendix 1 – additional applicants (if applicable)

Please return your completed application form, together with all required information to:

Strategic Cropping Land Unit
Department of Natural Resources and Mines

Note: Applications for land north/north-west of (but not including) the Wide Bay-Burnett area are to be sent to SCL North

SCL North (Central Region and North Region)	**SCL South** (South Region)
Email: SCLNorth@dnrm.qld.gov.au	Email: SCLSouth@dnrm.qld.gov.au
Regular Post: PO Box 63 MACKAY QLD 4740	Regular Post: PO Box 318 TOOWOOMBA QLD 4350
Courier or Registered Post: Level 1, 22-30 Wood Street MACKAY QLD 4740 (*Hours: 8:30 am – 4:30 pm business days*)	Courier or Registered Post: 203 Tor Street TOOWOOMBA QLD 4350 (*Hours: 8:30 am – 4:30 pm business days*)
Phone: **(07) 4999 6962** Facsimile: (07) 4999 6904	Phone: **(07) 4529 1400** Facsimile: (07) 4529 1532

Appendix 1—Additional applicants

COMPANY:		ABN/ACN:
ADDRESS:		
SUBURB:		POSTCODE:
PHONE:	FAX:	EMAIL:
APPLICANT'S SIGNATURE:		DATE:

COMPANY:		ABN/ACN:
ADDRESS:		
SUBURB:		POSTCODE:
PHONE:	FAX:	EMAIL:
APPLICANT'S SIGNATURE:		DATE:

COMPANY:		ABN/ACN:
ADDRESS:		
SUBURB:		POSTCODE:
PHONE:	FAX:	EMAIL:
APPLICANT'S SIGNATURE:		DATE:

COMPANY:		ABN/ACN:
ADDRESS:		
SUBURB:		POSTCODE:
PHONE:	FAX:	EMAIL:
APPLICANT'S SIGNATURE:		DATE: