

To: Dr Brett Heyward
 Director-General, Natural Resources and Mines

From: Darren Moor
 ED Central Region

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| Approved / Not Approved / Noted uired |
| 49-Sch4 - Personal Information |
| Director-General |
| Dated ... 26 / ... 2 / ... 14 |

25 February 2014

Recommendations for the Strategic Cropping Land Protection Decision for the Springsure Creek Coal Mine.

Recommendation

1. It is recommended that the Director-General:
 - **note** Bandanna Energy (Bandanna) have been provided the draft conditions.
 - **note** that there is strong community and industry interest in this decision and is likely to be seen as precedent setting for the underground mine component for both the current SCL framework and future regional planning interests framework.
 - **make a decision** under section 101 of the *Strategic Cropping Land Act 2011* and **sign** the:
 - i. Information Notice for Strategic Cropping Land Protection Decision SCLRD 2013/000146 (Attachment 3)
 - ii. Protection Conditions (Attachment 4)
 - iii. Reasons for Decision (Attachment 5)
2. **note** a further decision is required for the haul road component of the project.

Timing

3. Decision required by 27 February 2014 as an Environmental Authority (EA) and Mining Lease (ML) cannot be issued prior to the decision being made on the strategic cropping land (SCL) decision. The proponent has indicated to DNRM and DEHP that it wishes to advertise the Draft EA and ML on 24 February 2014.

Background

4. The Department of Natural Resources and Mines (the department) has received two protection decision applications from Bandanna in relation to their Springsure Creek Coal Mine Project. The first relates to the underground coal mine and surface mining infrastructure area for mining lease application (MLA) 70486. The second relates to the transport corridor for MLA70502 and will be subject to a subsequent brief and decision.
5. Further background is contained within Attachment 1.
6. MLA70486 is subject to transitional provisions under the SCL Act, allowing permanent impacts to occur on SCL (subject to conditions).
7. Departmental officers met with a number of affected landholders on 15 and 17 October 2013 to gain an appreciation of potential impacts of subsidence on their cropping systems.
8. A cross-agency workshop was held by the department on 26 November 2013 to discuss potential SCL conditions to ensure compatibility and consistency with conditions applied under other legislation. Other agencies represented included the Department of State Development, Infrastructure and Planning, the Department of Agriculture, Fisheries and Forestry, the Department of Environment and Heritage Protection, and DNRM – Mining and Petroleum Operations.
9. The Springsure Creek project has very strong community and industry interest, and the department regularly receives correspondence and Right to Information requests from stakeholders. Affected landholders and Bandanna each had deputations with multiple ministers at the Emerald Community Cabinet on 20-21 October 2013.
10. Department assessment officers have assessed the application in accordance with its existing interpretation the provisions of the SCL Act. A detailed assessment report of the impacts to SCL is attached as Attachment 2.
11. The key component of the SCL protection decision is whether the impacts to SCL are temporary or permanent. The SCL act defines temporary impacts as those where the land

will be restored to its pre-development condition, and all introduced impediments to cropping are removed within 50 years. If both criteria cannot be met, the impact is permanent.

12. The decision components regarding the area of impact, whether SCL has been avoided to the greatest extent practicable, and the impact minimised where SCL cannot be avoided, remain relevant irrespective of the impact being decided permanent or temporary. However, additional SCL conditions would be required for a temporary impact conditioning land to be restored to pre-development condition and all impediments to cropping removed.
13. The applications focus on remediation of the land and managing the impacts of the mining operation to achieve no change in land suitability or SCL status of the land, based on the minimum requires for the criteria used in a validation assessment.
14. This interpretation differs to full restoration to pre-development condition and removal of all impediments to cropping. There is little detail on how remediation will be done, and in lieu of the detail, the applications rely on the future investigations and findings of an agricultural research committee established and funded by Bandanna.
15. There is no certainty, from the information presented in the application, nor other comparable underground mine examples, that pre-development condition can be fully restored and all impediments to cropping removed. Any conditions requiring that outcome to be achieved are highly likely to be unachievable.
16. A draft version of the conditions contained in Attachment 4 was provided to Bandanna on 15 January 2014 as a courtesy and to allow for minor adjustments to be made informally. Bandanna suggested a number of changes to which DNRM agreed to the majority. Additionally, as a result of the draft conditions, Bandana requested a slight adjustment to the areas identified for the underground and surface infrastructure components.

Attachments

17. **Attachment 1:** Further background information
18. **Attachment 2:** Detailed assessment report
19. **Attachment 3:** Draft Information Notice
20. **Attachment 4:** Draft Protection Conditions
21. **Attachment 5:** Draft Reasons for Decision

Clearance

22. Lands and Resource Policy, DSDIP regional planning team, DAFF, and EHP assessment staff have been consulted through the assessment process
23. Does this have an impact for Service Delivery or any other area in DNRM? **NO**

Next Steps

24. Once a decision has been made, return signed documents to Errol Sander, Project Manager, Central Region.

49-Sch4 - Personal Information

Darren Moor

Action Officer: Errol Sander
 Telephone: 4999 6969

Director-General - Natural Resources and Mines

Comments:

DNRM - RTI DL RELEASE

Additional Background Information for CTS 04641/14 – Recommendation for the strategic cropping land protection decisions for the Springsure creek coal mine.

1. The Springsure Creek project is located approximately 40km south of Emerald, within the Central Protection Area under the strategic cropping land (SCL) framework.
2. Under the *Strategic Cropping Land Act 2011* (SCL Act), land that is confirmed as SCL in a Protection Area cannot be permanently impacted by a development (except in limited exceptional circumstances).
3. The previous government included specific transitional provisions in the SCL Act for a mining lease arising from Bandanna's exploration permit for coal number 891 (EPC891).
4. Specifically, the transitional provisions allow the Springsure Creek coal project to proceed (and permanently impact SCL) subject to conditions. The conditions include that no open-cut mining can be carried out under the lease, and the environmental authority holder must use all reasonable endeavours to rehabilitate all impacts on the land from underground coal mining.
5. Bandanna lodged an SCL protection decision application for Mining Lease Application (MLA) 70486 on 9 August 2013 for assessment under the SCL Act by DNRM. DNRM SCL assessment staff (Central region) undertook a preliminary assessment of the SCL protection decision application and issued Bandanna a requisition notice seeking further information, which Bandanna responded to on 18 October 2013.
6. The Department of Environment and Heritage Protection (DEHP) issued the EIS assessment report on 7 November 2013. The report includes requests for further information in relation to a Subsidence Management Plan, Groundwater Management Plan and amended Environmental Management Plan. A draft EA is likely to be issued in February 2014, should Bandanna address the additional requirements expediently.
7. Bandanna also requires mining leases under the *Mineral Resources Act 1989* to transport coal from the mine project area to a rail load out facility. Separate MLA's for a transport corridor (MLA70502) and rail load out facility (MLA70501) were lodged on 16 May 2013.
8. No SCL application is required for the rail load out facility as it is not proposed to be located on potential SCL.
9. An SCL application has been made for the transport corridor which is proposed to be located partly on potential SCL. This application is not subject to transitional provisions under the SCL Act, and has therefore been assessed against the full requirements of the SCL Act.
10. DNRM considers:
 - MLA70486 (mine project area) meets the requirements of section 289 of the SCL Act for transitional status and is therefore exempt from the permanent impact restriction – that is, permanent impacts on SCL is permitted for a mining lease that results from MLA70486.
 - MLA70502 (transport corridor) is not eligible for transitional status under the SCL Act, and must therefore be assessed against the full requirements of the SCL Act. Bandanna has indicated in meetings with DNRM that they hold the same view.

Springsure Creek mine project area MLA70486

11. Areas of the underground mining (long wall) and related surface infrastructure will be located on SCL. An SCL protection decision is required to be made under the SCL Act for the mining project prior to the issue of both the mining lease (ML) by DNRM and environmental authority (EA) by DEHP.
12. The SCL protection decision application lodged by Bandanna has been assessed in accordance with the SCL Act. Bandanna was required to demonstrate: the nature of

the impacts; that SCL has been avoided or minimised; whether the impacts are temporary or permanent; for temporary impacts, how the SCL will be restored to its pre-development condition; and for permanent impacts, mitigation measures in accordance with the SCL Act.

13. The SCL protection decision application lodged by Bandanna states the predicted maximum subsidence will be 2.2 metres over the longwall panels, and 1.4 metres over the pillars. Subsidence and the surface mining infrastructure will result in a range of impacts on SCL including:
- permanent increases in slope and landform irregularity;
 - redirection and disruption of overland flow;
 - increased erosion hazard on cropping land (due to landform irregularities and increased slopes) and the subsequent need for intensified soil conservation management and erosion control structures to be imposed on cropped land to manage these hazards;
 - changes to soil profile characteristics and soil depths through both natural and mechanical soil redistribution in response to landform irregularities as the land subsides;
 - scouring, ponding and sediment deposition as a result of redirected and captured overland flows above collapsed longwall panels;
 - enduring practical and economic impediments to cultivation and harvesting on deformed cropping land due the closer spacing and irregular shape of contour banks needed to conserve soil within the deformed landscape;
 - the exclusion of flood irrigated cropping systems from areas developed and utilised for this purpose; the potential abandonment of cropping in some locations due to the constraints of the altered landform;
 - potential soil loss, compaction and contamination associated with surface infrastructure, mine waste storage and coal handling.
14. Whether subsidence from underground mining results in permanent or temporary impacts on SCL will be determined by whether Bandanna can demonstrate the land affected by subsidence can be restored to its 'pre-development condition' and is not impeded from being cropped for at least 50 years. .

Transport corridor (MLA 70502)

15. The transport corridor does not have an exemption from the permanent impact restriction; therefore any resource activities permanently impacting SCL will need to be decided as being in Exceptional Circumstances under Chapter 4 of the SCL Act.
16. If an EC application under the SCL Act is lodged by Bandanna, it must be decided by the Minister for Natural Resources and Mines. This decision is not delegated.
17. Should the decision be that the transport corridor is not deemed Exceptional Circumstances under the SCL Act, and the impacts of the transport corridor on SCL assessed to be permanent, then section 94 of the SCL Act provides that the environmental authority for the resource activities cannot be issued.
18. This situation would result in the mining lease not being issued. However, there are other options Bandanna could consider, such as transporting the coal by road if this situation arises.

Release of the SCL review and Statutory Regional Plan for Central Queensland – Implications

19. On 24 October 2013, the final Statutory Regional Plans for Central Queensland and the Darling Downs was released by the Deputy Premier and Minister for State Development, Infrastructure and Planning Jeff Seeney. The SCL review was also released on 24 October 2013 by the Minister for Natural Resources and Mines, Andrew Cripps.

20. The new Statutory Regional Plans will identify and map Priority Agricultural Areas for protection (of which the Springsure Creek project lies within). New legislation will be needed to implement the regional plans, and the Queensland Government have introduced the *Regional Planning Interests Bill 2013* into Parliament on 20 November 2013. It is likely this new Act will commence late in the first quarter of 2014.
21. SCL will become one of the regional planning interests under the new Act, and the outcomes of the SCL review will be incorporated into the new Act's regulations and codes.
22. Developments triggered by the SCL Act, including Bandanna's Springsure Creek project, will continue to be assessed against the SCL Act until the new Act commences.

DNRM - RTI DL RELEASE

Department of Natural Resources and Mines

Protection Decision Application SCLRD 2013/000146 - Assessment Report

Boxes () are checked for application components confirmed to have been supplied and SCL requirements confirmed to be met.

The assessing officer's entries are in **blue font**

Section headings and relevant statute references are in **black font**

1.0 Confirmation of receipt of specific application components required under the SCL Act.

s. 95 Applicant details and other application and development details required under s.96:

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| Principal Holder of Resource Authority(s): | Springsure Creek Coal Pty Ltd |
| Joint Holder(s) where applicable: | N/A |
| Name of SCL Application Contact: | Pete Jones. Environmental Approvals coordinator (technical) Bandanna Energy Limited Level 4, 260 Queen St Brisbane Qld 4000 |
| SCL Application Contact phone number and email: | PH: 07 3041 4434 Mob: <small>49-Sch4 - Personal Information</small> petejones@bandannaenergy.com.au |
| Details of additional Application Contact (consultant or application author) and short description their role | N/A |
| DEHP Assessment Manager Contact: | Sam.Tarlinton.@ehp.qld.gov.au Ph: 074999 6868 |
| Relevant tenure references: | MLA70486 lodged on 19/10/12 (excluding abandoned area) |
| EA reference: DEHP Assessing Officer Contact: EA Lodgement Date: Proposed EA grant date: | EPML00961613 Tenille.Nielsen@ehp.qld.gov.au Ph: 074987 9341 EIS submitted 24 October 2012. EIS Assessment Report finalised 07 November 2013. Awaiting draft EM Plan, formulation of draft EA conditions and public notification. Projected EA grant date: February/March 2014. |
| SCL Application Date: Date of response to requisition or final amendments to the application (if applicable) | Lodged 09/08/13 (application incomplete) 1 st Requisition issued 02/09/13 and responded to on 19/09/13 The Requisition Response and revised application report did not fully address the issues raised in the requisition and the application requirements under s96-97 of the SCL Act. A follow-up discussion and email request 30/09/13 and 01/10/13 resulted in additional information being provided that enabled the Chief Executive to accept the application as complete on 18/10/13 . |
| DNRM Assessing Officer: | Andrew McLaughlin 07 5480 5336 andrew.mclaughlin@dnrm.qld.gov.au |

- s. 96 Application on the approved form
- List of real property descriptions or resource tenures
- Description of the resource activities to be authorised by the EA
- Prescribed fee paid and receipted by PALM
- s. 84 Confirmation of SCL status of the land for the purposes of SCL application assessment.
- s. 85 Map and/or information identifying clearly:
- Location of all SCL and potential SCL within the tenures to which the application applies;
- Where the development is proposed to be carried out within SCL areas;
- All of the *footprint* of the development.
- s. 86 Exceptional circumstances.
- S285-290 of the SCL Act determines that this application is excluded from the permanent impact restriction and consequently exempt from requiring an *Exceptional Circumstances* designation by the Minister responsible for the SCL Act.
- s. 87 Application Report - assessing the development impacts on SCL and identifying constraints on the configuration or operation of the development
- s. 98 Permitted amendments to the original application.
- Permitted amendments to the application were received on 19/09/13 and 18/10/13 and allowed the application to be accepted as complete. All of the information requested (in particular, detail surrounding the location, extent and description of various forms of land disturbance and the approaches intended to minimise their impacts) were not provided with the applicant proposing that due to the "conceptual" nature of mine planning at this point in the approvals process, it is not possible to provide this level of detail in support of the application.

2.0 Summary of development provided as per s85, s96 and s98 of the SCL Act 2011

The resource activity and status of approvals

Springsure Creek Coal Pty Ltd (SCC) proposes to develop the Springsure Creek Coal Mine Project (SCC Project) which is located approximately 47 km south east of Emerald in Central Queensland.

The SCC Project will occupy the mining lease that is currently under application (MLA) 70486. See **Figure 1** at the end of this report for the geographic context of the SCC Project.

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

As required under s93 of the SCL Act, an environmental authority or resource authority (mining lease) cannot be issued for the SCC Project until an SCL Protection Decision has been made. The Protection Decision application assessment that is the subject of this report has been conducted independently to the EIS process but this [SCL assessment] is a pre-requisite to the issue of an environmental authority.

Transitional provisions under the SCL Act for the SCC Project

The SCC project is located wholly within the SCL central protection area where s 94 of the SCL Act characteristically constrains resource developments from having a permanent impact on the land except in "exceptional circumstances" as defined in Chapter 4 of the SCL Act.

The restrictive effect of s94 of the SCL Act is defined as the *permanent impact restriction*.

The SCC Project however is excluded from the *permanent impact restriction* as described in chapter 9, part 3, section 289 of the SCL Act. The exemption from this restriction applies to any environmental authority application and any resource application for resource activities described under the finalised Project EIS TOR relating to Exploration Permit for Coal (EPC) 891, which MLA 70486 is wholly within. The exclusion means that SCC does not have to seek an exceptional circumstances decision for any

activity that may result in a permanent impact on SCL within EPC 891. Section 290 of the SCL Act defines the scope for SCL protection conditions which may still be imposed on the SCC Project as follows:

- No open cut mining can be carried out under the mining lease; and
- The SCC Project must apply all reasonable endeavours to rehabilitate all impacts on the land from underground coal mining carried out under the lease; and
- The authority under chapter 3, part 4 of the SCL Act to impose additional SCL protection conditions on the SCC Project is not limited unless the imposed conditions are inconsistent with the above scope for conditions.

This means that permanent impacts on SCL resulting from the SCC Project are permissible under an SCL Decision resulting from this assessment. They are permissible to the extent that all reasonable endeavours are undertaken to rehabilitate the land (not necessarily restore the land to its predevelopment condition) and that SCL protection conditions may also be imposed to ensure that the impacts* of development are avoided and minimised where possible and that the unavoidable consequences of any permanent impacts are mitigated.

** In the context of the SCL Act "impacts" on SCL are recognised as any impediment to cropping the land introduced by the development that did not exist prior to the development, or any alteration to the predevelopment condition of the land as per s14 of the SCL Act.*

The subject land

The MLA area is 10,651ha in area of which 8,751 ha (82%) is mapped as potential SCL (See **Figures 1 and 2** at the end of this report).

Note that some figures in this report that illustrate the extent of the lease will either include or lack the triangular section of land in the far north east of the site on "Springton" as being within the MLA. This area was initially included in the Mine Lease Application area but later removed. Figures 4, 5, 6 and 9 within this report illustrate the corrected boundary of the MLA70486.

The MLA70486 is wholly situated within the SCL central protection area.

The applicant has elected to treat all potential SCL as SCL for the purposes of the assessment. This intention is communicated in the response to Q7(b) of the application form and also in various statements contained in the SCL impact assessment report contained in the application.

In the initial application the applicant, in illustrating the extent of affected SCL and also describing the extent of various impacts on SCL, chosen to regard a lesser area of land as being SCL for the purposes of the application. This resulted in the application failing to comply with both s85 of the SCL Act in relation to application requirements and also s87 of the SCL Act in relation to providing a report that "assesses the development's impact on all SCL or potential SCL on the land." The incomplete nature of the application in this regard was addressed through issuing an application requisition on 02/09/13 which was responded to on 19/09/13 and 18/10/13 enabling the application to be accepted by DNRM and for the assessment to progress.

The predevelopment land use across MLA70486, reported in the application, comprises 7370 ha (69% of MLA70486) of land dedicated to irrigated and dryland cropping and 3000ha (28% of MLA) dedicated to grazing (see **Figure 3**). Areas of the SCL located to the north of Springsure Creek which bisects the ML are described as irrigated cropping being the predominant land use while the majority of SCL to the south is dedicated to dryland cropping. Most of the land that is currently dedicated to grazing occurs within the alluvial braided channels of Springsure Creek and other tributaries and is not identified as SCL for the purposes of the assessment.

Springsure Creek Coal Project - planned mining operations

SCC proposes to extract up to 11 Mtpa of thermal coal via underground longwall mining from an approximate 9160ha area illustrated in **Figure 5** at the end of this report and produce approximately

420Mt of thermal coal over the mine life. The operating life of the mine, given the predicted extraction rates and known resource, is estimated to be at least 40 years. However the SCL application proposes that the mine will be decommissioned and rehabilitated within 30 years, being the term of the ML applied for. It is not expected that that mining activity would cease at the end of the 30 year tenure while economic reserves remained unmined. It is expected that the period of tenure would be expected to allow complete extraction prior to mine closure. SCC proposes to establish all of its surface operations including mine industrial area, coal and waste handling (62ha maximum footprint) distributed within a 200ha (approximated) area of “Den-Lo Park” as illustrated in **Figure 4** at the end of this report. A further 70ha (approximated) area of Den-Lo Park directly to the west of the mine industrial area and coal handling facilities is proposed to be utilised for topsoil and subsoil storage for the life the mine operation. The current soil salvage strategy (which explains the sizeable area designated for soil storage) proposes spreading the approximated 413,000m³ stripped topsoils at 300mm depth and continue cropping them as opposed to stockpiling and permanently vegetating them within a secured compound. This strategy is described as being subject to development of an ‘approved’ soil management plan. The area and location of SCL to be impacted by stockpiling salvaged soils is likely to be revised in light of the risks of soil loss over decades of storage if the salvaged soils are spread out across the landscape and cultivated instead of being stockpiled, vegetated and protected within appropriate an appropriate soil conservation reserve. The mine proposal explicitly excludes coal beneficiation (wash plant, fines removal and associated tailings capture and management) and proposes to export “run of mine” coal directly to a rail load out facility that is not located on SCL and is approximately 40km east of the SCC mine site. The 200m wide coal transport corridor that will cross approximately 265ha of potential SCL (see **Figure 7**), is proposed under a separate mine lease application (MLA70502) and is the subject of SCL Protection Decision application SCLRD2013/000152 received 15/10/13.

3.0 Assessment Considerations

s. 101 (1)(a) Criteria for making an SCL Protection Decision:

- Consider the extent of the impact of carrying out the resource activity on SCL

For each assessable resource activity describe the extent of its impact in terms of the location, area, nature of the particular activity or disturbance and its duration.

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| Activity 1: | Mine industrial area, surface disturbances, ancillary mine infrastructure, access and haulage routes. |
| Location: | <p>Within MLA70486 (see Figures 1 and 2) proposed surface infrastructure and disturbances are confined in the main to “Den-Lo Park” (Lot 2/DSN856) with the coal export haul route extending in the North East on to “Springton” (Lot 2/SP141314) as illustrated in Figure 4 and 6 at the end of this report. The application however qualifies the proposed location and extent of surface infrastructure and illustrated disturbances on Den-Lo Park as follows:</p> <p><i>“Disturbance areas presented within the application are based on the feasibility-stage design which is conceptual in nature. Detailed design is yet to be undertaken. Detailed design will occur following receipt of initial project approvals, including the SCL protection decision.”</i></p> <p>With this in mind, the application assessment and conditioning should recognise the possibility for contraction, expansion and re-positioning of these disturbances within the confines of “Den-Lo Park”. The assessment should also consider the resulting opportunities or consequences for SCL impact avoidance and minimisation that may be associated with fine tuning the layout of surface infrastructure and associated disturbances and their remediation.</p> |
| Area: | <p>The dedicated footprint of surface infrastructure (see Figure 6 for detail) which the applicant has determined to impact on 63ha of SCL includes:</p> <ul style="list-style-type: none"> • a cut and cover (an access tunnel; constructed in a shallow trench and |

then covered over by backfilling;

- two drifts (sloping access tunnels) designed to transport mining infrastructure, personnel and product coal between the mine and surface;
- a coal handling infrastructure area (CHIA);
- a mine infrastructure area (MIA); including administration; bathhouse; workshops; warehouse; fuelling facilities; rescue and emergency complex and helipad. The vent fan and mine services are separately located approximately 2km SSW of the central MIA;
- several mine site dams; including dewatering dam, raw water dams and mine surface water management dams;
- a potable water treatment plant (PWTP);
- a sewage treatment plant (STP);
- internal site access roads;
- coal haul route extending from the CHIA to the infrastructure corridor located on MLA70502;
- a (approx. 1ha) quarry established at an existing gravel scrape but with no figure put on the area of its expansion. Note that this proposed quarry is outside of the MIA and within the area proposed to be impacted by subsidence.

Though requested, the applicant has not accounted for any additional areas of surface disturbance and impacts on SCL within and surrounding the illustrated infrastructure footprint that are attributable to construction and earthmoving surrounding work sites, access and construction links between particular elements of infrastructure, waste rock dumps, sediment and erosion control works and overland flow capture and diversion to storages. The applicant has determined that all these associated disturbances will be contained within the maximum **62ha** infrastructure/disturbance footprint as described. This is despite these inevitable sources of disturbance to SCL not being illustrated within the plans and ESRI Shapefiles provided in support of the application.

The application states that run of mine coal will be exported directly to the proposed rail load out facility without any on-site processing or beneficiation and that "no approval is sought for coal beneficiation infrastructure or rejects management. Reflecting this, the conceptual mine plan provided does not contain a coal wash plant, rejects removal or tailings ponds.

The applicant has determined that an additional **19ha** of SCL will be impeded from being cropped over the duration of the mine operation due to its close proximity to mining infrastructure fragmenting and alienating that SCL from adjoining areas of undisturbed SCL (illustrated in **Figures 4 and 6**).

The application claims that all impacts on SCL (alterations to the land and impediments to cropping) as a result of surface infrastructure and disturbance (except soil stockpiling) will be confined to this 82ha extent (62ha infrastructure disturbance footprint +19ha impeded cropping + 1ha quarry).

Note regarding the extent of impacts from surface infrastructure and disturbances applied for:

Following a review of draft conditions prepared by DNRM and provision of a draft plan illustrating the areas of MLA70486 where disturbances to SCL associated with surface infrastructure and facilities may be permitted, the applicant sought to revise the shape and extent of this area without revising the commitment to keep the area of impact to 62ha or less. These requested alterations to the shape of the permissible areas for surface infrastructure and facilities are responsible for any variation between figures in this report that depict the proposed layout of surface infrastructure when compared to the areas in which surface infrastructure and facilities are permitted to be located as depicted in the draft conditions schedule and accompanying plan.

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| | <p>Note regarding the extent of impacts from quarrying applied for:</p> <p>Following a review of draft conditions prepared by DNRM, the applicant informally requested (the application was not formally amended under s98 of the Act) that the Department consider permitting further impacts on SCL within an expanded area for basalt quarrying of up to 40ha (rather than 1ha) and with an operational footprint of up to 5ha at any one time. The application and the proposal for expanding the area originally applied for (to be impacted by quarrying) lacked a demonstrated requirement for quarrying within MLA70486 that was based on knowledge of the quantity and competency of the resource that may be able to be recovered from the mine drift and various other excavations into the regolith that will occur during mine establishment and operation. The application and the proposal also lacks evidence of the existence of a given quantity and competency of basalt material in a given location within the mining lease where quarrying is proposed. Without a demonstrated requirement for any particular volume of quarry rock (not available elsewhere), nor evidence of the existence or suitable quality of any quarry rock resource on ML70486, a decision on the extent of any potential quarry and whether the resultant impact has been avoided and minimised to the greatest extent practicable, cannot be made. The applicant was advised of this assessment and the application remained un-amended in this regard.</p> |
| <p>Nature of activity/disturbance proposed:</p> | <p>The nature and scope of activities that impact* on SCL recognised in the application and by DNRM include:</p> <ul style="list-style-type: none"> • Exclusion of cropping from the land due to occupation by mine infrastructure and mine operations and restrictions on access to fragments of SCL alienated by surrounding infrastructure or mine operations. • Site preparation involving topsoil and subsoil stripping estimated 413,000m³ total volume, cut and fill to create level areas for construction hardstands, storage areas, vehicle parking, levelling for internal roadways, levelled coal handling hardstands, concrete slabs and footings for built infrastructure. • Soil mixing and compaction associated with earthmoving and heavy vehicle traffic during site preparation, construction and operation. • Establishment of sediment and erosion control structures around immediate sites of soil disturbance and construction. • Outdoor hardstands, stockpads and building platforms, dam and road construction including associated drainage systems and run off control. • Bulk excavations to establish access to underground operations and the coal seam yielding an estimated 526,000m³ of overburden and waste rock to be either stored or utilised on the surface during mine construction and operation. • Quarrying over an undefined area to obtain an estimated 20,000m³ of basalt to meet requirements for ongoing maintenance during the mine operation. • Alteration and disruption of predevelopment drainage patterns in order to establish controlled drainage and capture and treat of mine run off over its operational life. • Potential for contamination of soils with foreign material and substances during construction and mine operations. • Potential for soil erosion losses during construction and also during stockpiling of topsoils and subsoils over an expected 40 years. • Potential for compaction and soil structure decline of topsoils during their salvage and stockpiling due to compaction by machinery and being worked when moisture levels are above the soil's plastic limit. |

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| | <p><i>*Impacts on SCL are recognised as any impediment to cropping the land that did not exist predevelopment, or any alteration to the predevelopment condition of the land as per s14 of the SCLA.</i></p> |
| Duration: | <p>The application states that the mine lease will provide for 30 years of tenure which may be extended subject to approval. The operational life of the mine quoted in the EIS assessment report and based on current knowledge of the resource and predicated extraction rates is 40 years. The application states that the mine will be decommissioned and all impacts restored within 30 years. This does not seem a likely duration for the mining activity and particularly the duration of its impacts given the estimated life of the resource extraction, the years required to achieve site rehabilitation following mine closure and also the potential for the mining period to be prolonged as a result of fluctuating market conditions and climatic events. There is also an absence of detailed mine planning and closure plans at this 'conceptual' stage of the mining proposal. Consequently without this information, the duration of mining activity and particularly the enduring impacts on SCL, cannot be established with any certainty.</p> <p>Given the lack of detailed site investigations, mine development and rehabilitation planning that might provide further certainty with respect to the nature and extent of mining activity impacts on SCL and the challenges and likelihood of restoring them, it is not reasonable to presume that on balance, all impacts on SCL of surface infrastructure and disturbance will at some point in time be restored to pre-development condition and all impediments to cropping removed. Hence the duration of impacts on SCL of surface infrastructure and associated disturbances are currently considered to be indefinite and in excess of 50 years.</p> |
| Activity 2: | Coal extraction area – long wall mining and subsidence |
| Location: | Within MLA70486 the full extent of proposed longwall mining panels in addition to surface infrastructure are identified in Figure 5 (extracted from the SCL application) in addition to ESRI shapefiles supplied following their requisition. |
| Area: | <p>The 7064ha area represented in blue in Figure 5 is the area of SCL considered by the applicant that will be impacted by mine subsidence. It includes the areas of SCL within the current layout of longwall panels and Chain Pillars. The SCL overlying the pillar supports for the Main Headings and the intermittent Barrier Pillars is not expected to be impacted by subsidence beyond the convex draw-down of the landform over the pillars and tension cracking or faulting at these locales. There is potential for additional areas of SCL to be impacted by works conducted to remediate and control adverse effects of subsidence, particularly soil erosion and diversion of surface flows. In the absence of subsidence management plans, it is not possible to predict the additional area of SCL that may potentially be affected by such works. However the applicant maintains that the area of alteration to the landscape and introduced impediments to cropping - as a result of subsidence and its remediation - will not exceed 7064ha.</p> <p>The applicant has also requested some flexibility for the realignment of panels and headings at a later date to not be constrained by conditioning a protection decision to specifically comply with the longwall layout provided in the application. This can be accommodated by nominating a larger area of land that may potentially be impacted by underground mining and subsidence but constraining the impacts to no more than 7064ha within that area.</p> |
| Nature of activity/disturbance proposed: | <p>Coal extraction via underground longwall methods is proposed to commence on Den-Lo Park once the construction of mine surface infrastructure and facilities, including the proposed haulage route are completed.</p> <p>Extraction rates are estimated initially to be 5.5Mtpa (100ha per year) by sequentially advancing single longwalls in a Northward orientation underneath Den-Lo Park. After four years it is planned to increase coal extraction to 11Mtpa (200ha per year) by moving to the next phase of dual longwall extraction underneath neighbouring properties within the MLA by extending longwalls NE and</p> |

SW of the central roadway and main headings that run NW-SE across the MLA as depicted in **Figures 5, 7 and 8**.

Longwall panels are planned to be a nominal 300m wide and up to 3.6m high depending on mineable height of coal seam. Each longwall panel is separated from the next by supporting "Chain Pillars" that range in width between 35m and 55m. Sequences of up to 8 parallel panels are bookended by "Barrier Pillars" up to 160m wide. Longwall panels initiate from the "Main Headings" (approx. 210m wide) which are the principle 'arteries' providing safe access and services throughout the mine during its operation, as depicted in Figures 5, 7 and 8.

Topographical changes experienced at the surface as a result of coal extraction from the longwall, generally occurs in the form of a depressive wave, which moves across the ground surface at relatively the same speed as progress of coal extraction from the longwall face - approximately 120m per week. As the coal shearer and hydraulic roof supports progress forward, the overlying rock strata (overburden) collapses in behind. The majority of consequent subsidence experienced at the surface occurs immediately (within a month) of the roof collapsing into the void (GOAF) that is left by the extracted coal seam. A lesser portion of 'residual' subsidence (5-10% of total) due to overburden settling, chain pillar collapse and consolidation is expected over a 12 month period after the a panel is mined and collapsed.

Subsidence does not occur uniformly or smoothly across the landscape. The magnitude of subsidence above a collapsed longwall is relative to the depth and thickness of the extracted coal seam and the structural integrity and behaviour under stress of the overlying rock strata.

At the surface, the greatest increases in slope due to subsidence are experienced at the margins of longwall panels along the edge of support pillars or along the perimeter of unmined land.

The relatively narrow chain pillars that separate individual panels are subject to incremental collapse as parallel panels are mined and the pillars are subjected to increasing load. By contrast the more structurally robust barrier pillars that bookend a series of up to 8 panels and the pillar support structures that protect main headings and the perimeter of unmined land are more resilient and less vulnerable to collapse. These unsubsidised ramparts that stand immediately adjacent to subsided panels, result in more exaggerated and contrasting effects at the surface in terms of tension cracking and abrupt slope increases than the tensions and slope increases likely to be experienced either side of the narrow and less resilient chain pillars that are more vulnerable to collapse.

Figure 7 illustrates, in a generalised form, the predicted depths and extent of 'unmitigated' subsidence if all of the available ore within MLA70486 is extracted as proposed. Because this is a modelled expression of subsidence, it does not reflect the complexity and irregularity in surface conditions on the ground that will be experienced as subsidence engages with the existing (pre-development) landform and drainage systems and also as a result of subsidence variability that is dependent on the depth and thickness of the extracted coal seam and the resilience under load of different pillar support systems and surrounding unmined land.

Overall subsidence predictions vary across the project area ranging from 0.27m to 2.5m with no subsidence occurring beyond the project boundary. Predicted induced tilts from pillar to the subsided base within the longwall are in the order of 1.0% – 3.0%. Depending on where this occurs in relation to existing topography, slopes in areas of existing cropped land may be induced by subsidence to exceed 4% which is the a tipping point for the conservation of soils under cropping.

The nature and scope of impacts* on SCL resulting from the proposed longwall mining and approaches to remediation recognised in the application and by DNRM are detailed below:

Impacts on SCL from subsidence can be considered in several phases of change

brought about by the process of longwall mining and attempts at remediating the impacts of subsidence:

1. Direct physical alteration to original landform and soil properties due to the collapse of mined longwalls and any impediments that this may introduce to cropping those landforms and soils.
2. Secondary physical changes brought about by the natural processes of rainfall, run-off and flood engaging with the altered landform and soils and any impediments to cropping that this may introduce.
3. Further physical changes to the landform and soil properties brought on by human intervention aimed at minimising the adverse consequences of subsidence for soil conservation, agricultural land uses and future production.

The impacts on SCL associated with these phases of change are explored below.

Direct physical alteration to the land experienced as a result of subsidence includes:

- Slope increases due to convex draw-down of the land surface over support pillars and at the margins of the mined area.
- Tension cracking and shearing or faulting on the surface experienced at the margins of longwalls. The severity is dependant on the degree of subsidence in the longwall relative to adjacent unsubsidised land, the original slope of the land and the depth and elasticity of the soil profile that is subject to deformation pressures.
- Lengthwise depression of the overlying predevelopment landform above the centre of extracted longwall panels.
- Obstruction and retardation (or alternatively steepening) of overland sheet flow, existing drainage lines, gullies, watercourses and man-made drainage structures.
- Localised compaction and associated buckling (upheaval) of soils at concave focal points within the margins of the longwall as the longwall extraction face progresses up the panel and residually around the margins of the extracted panel once mining is complete.

Impediments to cropping likely to be introduced by these expected changes in landform and soil properties include:

- ~ increased difficulty and reduced efficiency in operating broad-width agricultural equipment on more irregular and complex slopes.
- ~ Reduced trafficability in locations where surface tension cracking or compression buckling is pronounced.
- ~ Potential for increased soil bulk density and reduced water holding capacity where compression and buckling is pronounced.
- ~ Reduced retention of soil moisture and disruption of pre-development surface and subsoil water movement in areas subject to tension cracking or faulting.
- ~ The rendering of existing soil conservation structures (contour banks, collection drains and disposal systems) as dysfunctional due to alterations in slope and drainage patterns.
- ~ The rendering of existing flood irrigation systems as dysfunctional due to the disruption of the designed even fall across furrows, feeder channels and tailwater collection systems.
- ~ Damage to and resulting dysfunction of existing irrigation infrastructure (designed earthworks for stream and overland flow diversion, collection and water holding) due to alterations in slope and drainage patterns.

Secondary physical impacts resulting from the interaction of rainfall, run-off and flooding with the altered landform include:

- Increased soil erosion hazard on cropped land in areas of increased slope.
- Increased soil erosion hazard due to the unsuitability and dysfunction of retained soil conservation, drainage and irrigation structures and systems that are unsuited to the modified landform.
- Increased soil erosion hazards in areas experiencing re-directed or concentrated overland flow – particularly in relation to gullies and creek lines.
- Increased soil erosion hazard and associated scouring in steepened segments of drainage lines.
- Ponding and sedimentation in lower slope positions where the efficiency of existing drainage systems (natural or man-made) have been impeded due to a reduction in slope or obstruction of surface drainage.

Impediments to cropping likely to result from these impacts include:

- ~ Reduced long term productivity in areas subject to soil loss due to reduced topsoil depth and poorer quality of underlying subsoils.
- ~ Reduced trafficability and crop yields in areas subject to ponding in wet years.
- ~ Increased variability and reduced predictability in soil moisture conditions across paddocks due to greater slope complexity within paddocks which has implications for crop selection, cropping options, disease susceptibility, trafficability and timing of agricultural work.

Additional changes to land form and soil properties resulting from proposed or advisable subsidence remediation and soil conservation measures include:

- Reduced topsoil depth in locations subject to mechanical grading and re-levelling
- Increased topsoil depths in locations subject to infill.
- Soil compaction and soil profile mixing as a result of broadscale landscaping and topsoil redistribution.
- Increased frequency and intensity of necessary soil conservation structures and drainage systems at the paddock scale.
- Necessary introduction of erosion control structures and armouring of relocated drainage lines or existing drainage lines to prevent scouring where flow velocities and shear forces have been increased.

Impediments to cropping likely to result from these impacts include:

- ~ Reduced long term productivity in areas where topsoil depths have been reduced by borrowing topsoil in the processes of remodelling the altered landform or the construction of additional soil conservation structures.
- ~ Reduced area of SCL available for cropping due to increase in the area of paddocks occupied by soil conservation, drainage and erosion control structures and works.
- ~ Alienation of land from cropping where subsidence-induced tilt results in slopes approaching and exceeding 4%, at which soil erosion hazards and the complications and costs of controlling rainfall runoff and soil loss and subsequent reduced productivity may outweigh the returns from cropping that land.
- ~ Localised alienation of land from cropping where the disruptions to the

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| | <p>predevelopment landform makes ongoing cultivation impractical.</p> <ul style="list-style-type: none"> ~ Deferment of cropping on SCL for the number of years that it takes to stabilise the land with a perennial cover crop (pasture), remove existing soil conservation and drainage structures, mine the land, allow for it to fully subside and stabilise, re-design and introduce appropriate soil conservation and drainage structures that are suited to the post-mining landform and re-commence cropping. For some paddocks this period of cropping deferment may be in the order of 5-10 years based on the expected rate of longwall progression underneath the paddock (120m per week). This is currently recognised as best practice for soil conservation on cropped land impacted by mine subsidence. No evidence-based alternative approach has been put forward in the application. ~ Increased costs and inefficiency associated with continuing to crop in a steeper and more complex landform and within the confines of more tightly spaced and erratically aligned contour banks and collection drains. ~ Increased costs, complexity and agronomic difficulties associated with persisting with irrigated cropping using alternative irrigation systems (pivot or travelling overhead sprinklers) in the absence of pre-existing flood irrigation systems. <p><i>*Impacts on SCL are recognised as any impediment to cropping the land that did not exist predevelopment, or any alteration to the predevelopment condition of the land as per s14 of the SCLA.</i></p> |
| <p>Duration:</p> | <p>The SCL application states mining will cease in 30 years though the EIS assessment reports the operating life of the mine to be 40 years.</p> <p>No reliable timeframe has been given for rehabilitating or remediating the impacts of longwall subsidence. A subsidence management plan has not been formulated but has been required as a result of the EIS assessment process.</p> <p>The application puts forward conflicting statements about the intended subsidence remediation process including:</p> <ul style="list-style-type: none"> • reporting that there will be no disruption or suspension of cropping on land as it is mined and subsided, • reporting that soil conservation structures will be modified progressively as longwalls are subsided (progressively across a paddock), • reporting that subsided land will be remodelled and remediated on a paddock by paddock basis, • reporting that following remediation all SCL will be returned to a state where it is zonal criteria compliant including in terms of topsoil depth (>600mm) and slope (<3%) without demonstrating how this will be achieved in terms of earthworks and soil redistribution within the existing site constraints of limited pre-development soil depths, vulnerability of soils to degradation through compaction and mixing and recognition of existing slopes within paddocks and the impacts of subsidence on these existing slopes. <p>It is evident from the impacts recognised in this report that subsidence will result in changes to the pre-development landform and drainage patterns across the MLA that will remain in perpetuity.</p> <p>It is evident from some of the approaches to remediation put forward in the application, that measures taken to minimise adverse impacts of subsidence on the soil resource and agricultural land uses will additionally result in irrevocable changes to the depth and quality of topsoil at particular sites.</p> <p>It is evident that post-mining cropping enterprises will face additional complexities and difficulties that are directly attributable to underground mining and consequent</p> |

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| | <p>subsidence that will remain in perpetuity.</p> <p>It is evident that some areas of SCL that were previously available for cropping will no longer be available for cropping due to the re-engineering of drainage patterns and soil conservation measures that will need to be implemented in order to conserve the soil resource given the increases in erosion hazard attributable to subsidence-led slope increases and landform complexity.</p> <p>Consequently the duration of these alterations to the land and impediments to cropping are expected to exceed 50 years.</p> |
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| Activity 3: | Topsoil and subsoil stockpiling |
| Location: | Den-Lo Park (Lot 2DSN856) See Figure 4 . Centrepont of proposed stockpiling area: E638900 N7354800 (MGA94). |
| Area: | 70 ha (indicative) |
| Nature of activity/disturbance proposed: | <p>The nature and scope of impacts* recognised in the application and by DNRM that may potentially arise from the stockpiling of soils include:</p> <ul style="list-style-type: none"> • Subsoils salvaged from the disturbance footprint for mine surface infrastructure and the various mine site excavations are proposed to be stockpiled indicatively on SCL as shown in Figure 4. In the case of subsoil stockpiling, this will prevent the land from being cropped for the duration of stockpiling. Whether stockpiling of topsoils will result in a similar impact is dependent on the particular strategy chosen and its adequate justification in terms of minimising impact on the SCL soils that have been salvaged and the area of SCL occupied by their storage. • No materials balance has been provided to verify salvaged topsoil and subsoil volumes and requirements for soil stockpile areas. • The application proposes respreading Vertosol topsoils (Sullivan SMU) that have been stripped from the disturbance footprint of surface infrastructure and respreading it at 300mm depth over an indicative 70ha of SCL as shown in Figure 4. The SCL within the indicative stockpiling area is characterised by a disparate soil type (Kilmore SMU) that is described as a red duplex soil in the application report. The intent of this strategy is described as “improving” the productivity of the poorer quality Kilmore soils. This is regarded by the applicant as being in preference to stockpiling the better quality Vertosols for the duration of the mining period and preventing them from being cropped during this time. • No soil conservation plans or sediment and erosion control plans have been developed for the proposed stockpiling strategy or that address the additional risks of soil loss associated with re-spreading the salvaged Vertosols at 300mm depth over land that will continue to be cultivated and cropped as opposed to preserving these high value soils in large stockpiles within an area of controlled drainage that occupies a significantly smaller area as per industry practice. • While no soil management plan has been prepared to justify the strategy for respreading topsoils as opposed to stockpiling, it is suggested in the application report that a suitable strategy will be developed in consultation with DNRM – presumably prior to disturbances on SCL taking place. • The risks to SCL impacted by stockpiling include: <ul style="list-style-type: none"> - Loss of available areas of SCL for cropping while occupied by stockpiles and that lost to necessary sediment and erosion control systems and exclusion zones. - Excavation and drainage associated with necessary sediment and erosion control systems installed in and around the stockpiling area. |

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| | <ul style="list-style-type: none"> - Mixing of insitu topsoils with introduced subsoils and topsoils. - Compaction of insitu topsoils by machinery during stockpiling and retrieval of salvaged soils. - Compaction of insitu topsoils and reduced biological activity as a result of long-term burial at depth. - Erosion of insitu topsoils around stockpile areas due to concentration of runoff and diversion around stockpiles. - Stockpiles can be a source of weeds and pests that impact on surrounding crop land and introduce additional impediments for cropping. <p><i>*Impacts on SCL are recognised as any impediment to cropping the land that did not exist predevelopment, or any alteration to the predevelopment condition of the land as per s14 of the SCLA.</i></p> |
| Duration: | The duration of stockpiling is expected to be at least 40 years. Stockpiling should involve limited disturbance to the soils and landform in the area to be utilised for stockpiling. Potential should exist for the restoration of predevelopment condition and removal of all impediments to cropping areas of SCL within the stockpiling footprint and within 50 years, depending on the applicant's successful development and implementation of appropriate soil salvage and stockpiling management plans. |

s. 101 (1)(b) Criteria for making an SCL Protection Decision:

- Consider nature of the impacts – being temporary or permanent impact on the land

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| Activity 1a: | <p>† Permanent Impact activity:</p> <p>63ha area of material impacts on SCL associated with the mine industrial area, ancillary mine infrastructure, surface disturbances including bulk excavations and quarrying, ROM coal handling, access and haulage routes – all contained on Den-Lo Park (Figures 4 and 6).</p> <p>Note: the area of permanent impact attributable to 1ha of quarrying is removed from the final accounting of the area of permanent impacts associated with surface infrastructure and facilities as the quarry site lies within the 7064ha longwall footprint.</p> <p>† Permanent Impact defined under s.14(1-3).</p> |
| Justification: | <p>Establishment of the surface mine infrastructure, underground access, coal handling facilities and other surface disturbances including site drainage, quarrying and storage or usage of extracted waste rock involves significant material impacts to the soils, landform and drainage patterns across the site. Site plans are at this stage only conceptual in nature and are subject to change as mine planning progresses. The application is unsupported by the benefit of detailed engineering and site plans and is without development of any restoration or rehabilitation plans that could be relied upon to form the basis of deciding that a temporary impact will result from the development. There are no precedents for SCL affected by development of this type being restored to predevelopment condition. In addition, the estimated duration of coal extraction from MLA70486 is estimated to be in the order of 40 years. Whether or not the mine closure and rehabilitation objectives would be able to be completed within 50 years of commencement is also uncertain given the scale of works and levels of disturbance involved. Mine rehabilitation requirements governed by the proposed EA also do not meet standard required for the impact on SCL to be considered as temporary. Based on the lack of documentation of the extent and nature of the construction and disturbance activities required to establish the mine and the lack of any accompanying evidence that the impacts of these activities on the land can and will be restored to its pre-development condition, the impacts of these activities are considered to result in permanent impacts on SCL.</p> |

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| Activity 1b: | <p>ª Temporary Impact activity:</p> <p>19ha area of impeded access to SCL for cropping, associated with the mine industrial area, ancillary mine infrastructure, surface disturbances including bulk excavations. ROM coal handling, access and haulage routes – all contained on Den-Lo Park (Figures 4 and 6).</p> <p>ª Temporary Impact defined under s.14(4).</p> |
| Justification: | <p>The application report sustains that the area of SCL to be alienated from cropping due to its proximity to mine infrastructure and fragmentation will not be materially impacted by any mine activity other than the restriction of access to the land for unimpeded agricultural use. If this land remains undisturbed by mining activities and is protected from soil loss, weed invasion and other forms of land degradation throughout the mining period, its exclusion from being available for cropping should be temporary and able to be restored within 50 years as long as the surrounding areas that are impacted by infrastructure are also able to be returned to cropping within that period.</p> |
| Activity 2: | <p>† Permanent Impact activity:</p> <p>7064ha of material impacts on SCL associated with the longwall mining and subsidence on Den-Lo Park, Springton, Cowley, Cedar Park and Arcturus Downs (Figure 5).</p> <p>† Permanent Impact defined under s.14(1-3).</p> |
| Justification: | <p>The landform and drainage characteristics across the extent of farming systems and SCL impacted by subsidence will be permanently changed as a result of mine subsidence. Additional changes to the soils and landform within the mine footprint will take place as a result of soil erosion and redistribution in the face of diverted runoff and stream flows and the necessary attempts to address the adverse consequences for soil conservation and ongoing agricultural land use. These changes to the landform, soils and drainage characteristics of the landscape are unable to be completely reversed by any conceivable means provided within the application. These changes therefore constitute a permanent impact on SCL. In addition the changes to the landform and drainage characteristics and the necessary revisions in soil conservation and drainage works required to conserve agricultural soils in the modified landscape, will result in enduring complexities and difficulties for cropping enterprises that did not exist prior to the land being subsided. These enduring impediments also constitute a permanent impact on SCL. The underground mining activity proposed and the necessary approaches to remediating and minimising its adverse consequences for the landscape and ongoing agricultural production are therefore considered to result in permanent impacts on SCL.</p> |
| Activity 3: | <p>ª Temporary Impact activity:</p> <p>Potentially 70ha of material impacts on SCL associated with topsoil and subsoil stockpiling on Den-Lo Park (Figure 4).</p> <p>ª Temporary Impact defined under s.14(4).</p> |
| Justification: | <p>Stockpiling of salvaged topsoils and subsoils will only be required during the life of the mine which is expected to be in the order of 40 years, after which the stockpiles should be removed and redistributed as part of mine infrastructure decommissioning, reinstatement of landform and site rehabilitation. After stockpile removal, the land directly impacted should be available to return to cropping use. Given that stockpiling should involve limited disturbance to the soils and landform of the area to be utilised for stockpiling, potential should exist for the restoration of predevelopment condition and removal of all impediments to cropping within the stockpiling footprint. It is recommended that this restoration objective be pursued</p> |

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| | through development and implementation of an appropriate soil salvage and stockpiling management plan. It is also possible, as a result of development of such a plan and in the process exploring the most cost-effective and appropriate strategy for topsoil preservation over an expected 40 year period, the area of SCL to be temporarily impacted by the soil stockpiling activity may be further reduced. This may be achieved by pursuing an alternative topsoil stockpiling strategy to the respreading the soils over a relatively large area that as is proposed in the application. This would effectively reduce and minimise the extent of impacts on SCL resulting from stockpiling. |
| Other Activities | <p>Ⓜ Temporary Impact activity:</p> <p>Potential activities carried out on SCL within the MLA70486 that may be able to comply with Part 2 or Part 3 of the SCL Standard Conditions Code for Resource Activities such as construction of temporary access tracks, soil and geotechnical surveys, laydowns, buried linear infrastructure and temporary accommodation less than 21 EP.</p> <p>Ⓜ <i>Temporary Impact defined under s.14 (4).</i></p> |
| Justification: | The applicant has not directly sought to obtain an SCL Compliance Certificate to enable activities such as those described to be conducted on SCL within the MLA70486. The application does not provide a high level of detail about the component infrastructure and disturbances associated with establishing and operating the mine. However it is conceivable that the Springsure Creek Coal Project will potentially give rise to a need to carry out activities not mentioned in the application that have potential to comply with the SCL Standard Conditions Code for Resource Activities. It is not the intent of this decision to restrict those activities from being conducted on SCL where it has been identified that they cannot be avoided and that their impacts are able to be made temporary in accordance with the code requirements. |

s. 101 (1)(c) Criteria for making an SCL Protection Decision:

- Whether the applicant has demonstrated that the impact have been avoided or minimised to the greatest extent practicable.

Avoidance of SCL

The application accepts the extent of mapped potential SCL within the MLA70486 as providing a reasonably accurate representation of the extent of land that might comply with the relevant SCL Zonal Criteria and has accepted that the extent of potential SCL be taken to be SCL for the purposes of the assessment. Given the pervasive extent of SCL across the MLA70486, there are limited opportunities for the proponent to avoid its surface and underground activities from impacting on SCL.

It is accepted that the extent of SCL to be impacted by mine subsidence is unavoidable if the resource is to be extracted by the proposed extraction methods.

The extents of some activities – particularly coal handling, quarrying, waste rock disposal and soil stockpiling – are however unsubstantiated by any planning detail in terms of material balances and operational requirements. Also given the conceptual nature of the mine layout provided, there is limited justification for the actual areas of SCL to be impacted by various activities. More detailed planning particularly around site layout, controlled drainage and stockpiling activities may present further opportunity to avoid certain impacts on SCL in terms of total area of SCL affected or the degree of fragmentation of SCL by the arrangement of surface infrastructure and associated earthworks.

It is recommended that In order to be fully satisfied that all impacts on SCL have been avoided to the greatest extent practicable, tthe Chief Executive has conditionedseeks the assurance

provision of further detail particularly around soil stockpiling, soil conservation plans, and the design capability of drainage controls and water management infrastructure., The Chief Executive must be satisfied with the further detailed information prior to SCL being impacted. before being satisfied that all impacts on SCL have been avoided to the greatest extent practicable.

Minimisation of impacts on SCL

The application provides limited detail on how potential impacts on SCL documented in the application and this report will be sought to be minimised in terms of severity or extent. The application report does list generalised approaches to remediating impacts, some of which themselves result in impacts which may be better avoided (for example stripping topsoils from cropping land to fill in depressions and reduce the steepness of slopes along panel margins that have been induced by subsidence). The application in the main leaves the detail surrounding SCL impact minimisation and subsidence management to be addressed through further development of the Environmental Management Plan (Environmental Protection Act requirement) and also subsidiary plans for managing subsidence, topsoil, erosion and sedimentation, surface water, mine closure and rehabilitation. This is in addition to the proposed future work of the Springsure Creek Agricultural Coexistence Research Committee on developing cropping systems that can 'co-exist' with the consequences of mine subsidence.

In order to be fully satisfied that all reasonable endeavours will be taken to rehabilitate and minimise the unavoidable impacts of mining on the landscape and its future agricultural use, It is recommended that the Chief Executive has conditioned seeks the assurance provision of further detail particularly in the areas of in-paddock management of subsidence on cropped soils, re-design of soils conservation systems and drainage control works, decommissioning and rehabilitation of surface infrastructure. The Chief Executive must be satisfied with the further detailed prior to SCL being impacted, before being satisfied that all reasonable endeavours will be taken to rehabilitate and minimise the unavoidable impacts of mining on the landscape and its future agricultural use.

s. 101 (2) Criteria for making an SCL Protection Decision:

- In imposing SCL protection conditions, the Chief Executive must consider the SCL Principles: *Protection; Avoidance; Minimisation; Mitigation; Productivity.*

The SCL Principles will be achieved for this development in the following manner and have been taken into consideration when drafting the conditions recommended:

NOTE: the Principles of the SCL Act and their meaning are described in section 11 of the SCL Act.

*Words within conditions printed in **bold font** have specific meaning within the context of the proposed Protection Decision and are proposed to be defined at the end of the Schedule of Conditions.*

Protection

MLA70486 is located within the SCL Central Protection Area. Transitional provisions within the SCL Act however permit the SCC Project to have permanent impacts on SCL without being encumbered by the *permanent impact restriction* as defined in section 94 of the Act.

Section 290 of the SCL Act defines the scope for SCL protection conditions which may be imposed on the SCC Project as follows:

- No open cut mining can be carried out under the mining lease; and
- The SCC Project must apply all reasonable endeavours to rehabilitate all impacts on the land from underground coal mining carried out under the lease; and
- The authority under chapter 3, part 4 of the SCL Act to impose additional SCL protection conditions on the SCC Project is not limited unless the imposed conditions are inconsistent with the above two conditions.

This scope provided for conditioning does not support the application of the protection principle in terms of prohibiting permanent impacts on SCL within the MLA70486 other than prohibiting permanent impacts resulting from the prohibited activities described above.

Subsequently no further conditions are justifiable against serving the protection principle.

Avoidance

The impacts of mining and subsidence on SCL or potential SCL can be avoided to the greatest possible extent by prohibiting open cut mining on the lease in addition to prohibiting stockpiling or storage of hazardous mine wastes including disposal or storage of overburden, waste rock or mine tailings as the application asserts will be the case and restricting the extents of permissible disturbances on SCL or potential SCL to those extents confirmed in the application.

As the layout of mine surface infrastructure and disturbances presented within the application are only “conceptual” and further detailed planning is expected prior to construction, the avoidance principle will be further served by requiring that the proponent progress justification for the area of impacts associated with mine surface infrastructure and facilities on Den-Lo Park through further detailed planning and rationalisation of the area of SCL impacted.

Additional conditions recommended in service of the avoidance principle:

Conditions constraining the extent of impacts on SCL or Potential SCL

Conditions 3 a) – f) including Table 1 and Plan SCLRD2013/000146(1) within the draft Information Notice Conditions Schedule.

Minimisation

The impacts of mining and subsidence on SCL will be minimised to the greatest possible extent by requiring the proponent to develop and implement reasoned and auditable soil conservation and management plans. These plans must demonstrate and regulate how soil losses, structural degradation, contamination and disturbance attributable to mining activities will be managed and minimised and how enduring impediments to cropping will be identified and reduced where possible through applying the findings of the proposed Springsure Creek Agricultural Coexistence Research Committee and application of SCC's co-existence policy as described in the application report.

Impacts of mining-related activities that are accommodated by the SCL Standard Conditions Code (The Code) may be minimised by adherence to the applicable conditions within The Code.

Recommended conditions in service of the minimisation principle:

Permitting SCL SC Code – compliant mining activities within MLA70486.

Condition 4

Soil Conservation and Management Plan

Conditions 5 – 10 within the draft Information Notice Schedule of Conditions.

Soil Striping, Stockpiling and Reinstatement Plan

Conditions 11 – 15 within the draft Information Notice Schedule of Conditions.

Subsidence-related ponding and scouring

Condition 16 within the draft Information Notice Schedule of Conditions.

Reporting

Conditions 17 – 19 within the draft Information Notice Schedule of Conditions.

Attachments

Schedule 1: Glossary providing the specific meaning of highlighted terms used throughout the Schedule of Conditions.

Schedule 2: Requirements and design criteria for soil conservation earthworks and required plans and drawings.

Mitigation

Mitigation for decided permanent impacts on SCL or potential SCL associated with the SCC Project will be achieved by the proponent paying relevant mitigation for 7126ha of permanent impacts on SCL within the Central Highlands Isaac sub zone of the Western Cropping zone.

Recommended advice and condition concerning mitigation:

Mitigation

Where permanent impacts are proposed on SCL or potential SCL, it is taken to be a condition of the authority that its holder must comply with the mitigation requirement.

It is an offence to carry out development without prior mitigation.

You must provide mitigation for 7126 ha of identified permanently impacted land in the Central Highlands Isaac subzone of the Western Cropping zone.

The number of hectares of permanently impacted land is rounded up to the nearest whole hectare, in accordance with section 139 of the SCL Act.

The mitigation rate for the Central Highlands Isaac subzone of Western Cropping zone is \$4750/ha, as per section 10 of the Strategic Cropping Land Regulation 2011.

The mitigation value of the permanently impacted land is determined by multiplying each hectare of the area of identified permanently impacted land by the prescribed rate for the mitigation zone or sub-zone in the Strategic Cropping Land Regulation 2011.

The total mitigation value required is \$33,848,500.

Please contact the Department of Agriculture, Fisheries and Forestry at sclmitigation@daff.qld.gov.au or telephone 13 25 23 for more information on how to meet your mitigation requirements.

Productivity

Productivity will be maintained for the 7126ha of SCL that is to be permanently impacted by the proposed Springsure Creek Coal Project by imposing a Mitigation requirement for 7126ha in the Central Highlands Isaac sub-zone of the Western Cropping zone.

Productivity of other impacted land within MLA70486 will be preserved by ensuring that the impacts are fully restored to predevelopment condition and that all introduced impediments to cropping are removed within 50 years of the impact commencing.

4.0 Recommended Decision

s. 99-103 What must be decided and purpose of conditions:

SCL Protection Decision and conditions are proposed to achieve the following:

- Restrict authorisation of **permanent impacts** on potential SCL to 7126 ha in accordance Condition 3 within the draft Information Notice Schedule of Conditions.
- Restrict authorisation of **temporary impacts** on potential SCL to the minimum possible area within MLA70486 in accordance with Condition 3 and 4 of the draft Information Notice Schedule of Conditions.
- SCL protection conditions are proposed to be imposed on both the Mining tenement ML70486 and the Environmental Authority EPML00961613 in order to give them legal effect under s103 SCL Act.

Mitigation and Financial Assurance

Mitigation requirements for the development have been outlined in the draft Protection Decision Information Notice

Given the relatively limited scope for restoration of the impacts of the proposed mining activities – other than restoration of areas of SCL impacted by soil stockpiling and restoration of impacts attributable to SCL SC Code-compliant activities – it is not considered necessary to levy additional financial assurance on the development given the financial assurance for mine rehabilitation that will be levied under the EA and the SCL conditions governing financial assurance liabilities imposed under the SCL SC Code.

5.0 Recommendation

I, Andrew McLaughlin, Senior Natural Resource Management Officer recommend that the SCL Delegate endorses the supplied draft Protection Decision SCLRD2013/000146 with conditions to be imposed on Environmental Authority EPML00961613 as described in section 3.0 of this report.

- The applicant contact has considered and consented to the proposed condition/s as being practical and appropriate for the activity being authorised by the EA amendment.

A draft Protection Decision and Schedule of Conditions has been prepared for your review located at: <V:\Development Assessment\Protection Decisions\RD2013000146 Springsure Ck\05 - Delegate>

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10 February 2014

List of tables and figures provided in this report

Figure 1

Bandanna Energy's Springsure Creek Coal Mine Lease (70486) application area located midway between Emerald and Rolleston in the Comet River Catchment and Central SCL Protection Area.

Figure 2

Bandanna Energy's Springsure Creek Coal Mine Lease (70486) application area covering approximately 10,736ha of which 8868ha (82%) is characterised by potential Strategic Cropping Land.

Figure 3

Extract from the SCC Project EIS August 2013 Chapter 5 (Land) illustrating pre-development land use across MLA70486.

Figure 4

Illustrated extent of proposed infrastructure and surface disturbance on Den-Lo Park including coal export haul route in the northeast connecting with MLA70502 (proposed haul road / infrastructure corridor).

Figure 5

Extract from the SCL application (Figures 5-1) provides a stylized illustration of the extent of planned mine operations (surface and subsurface) on MLA 70486 and the extent of SCL claimed to be impacted.

Figure 6

Proposed layout of surface infrastructure and adjacent areas of SCL (totalling 19ha) to be left undisturbed but impeded from being cropped for the life of the mine operation.

Figure 7.

Predicted subsidence depths (in metres) prior to any mitigation across the MLA70486 reproduced from the project's EIS Assessment Report.

Figure 8

Comparison between existing slopes on Cedar Park and modelled post subsidence slopes extracted from a report on the modelled effects of subsidence by LRAM, October 2013.

Figure 9

Overview of proposed development on MLA70486 and the proposed infrastructure corridor on MLA70502.

Figure 1

Bandanna Energy's original Springsure Creek Coal Mine Lease (70486) application area located midway between Emerald and Rolleston in the Comet River Catchment and Central SCL Protection Area.

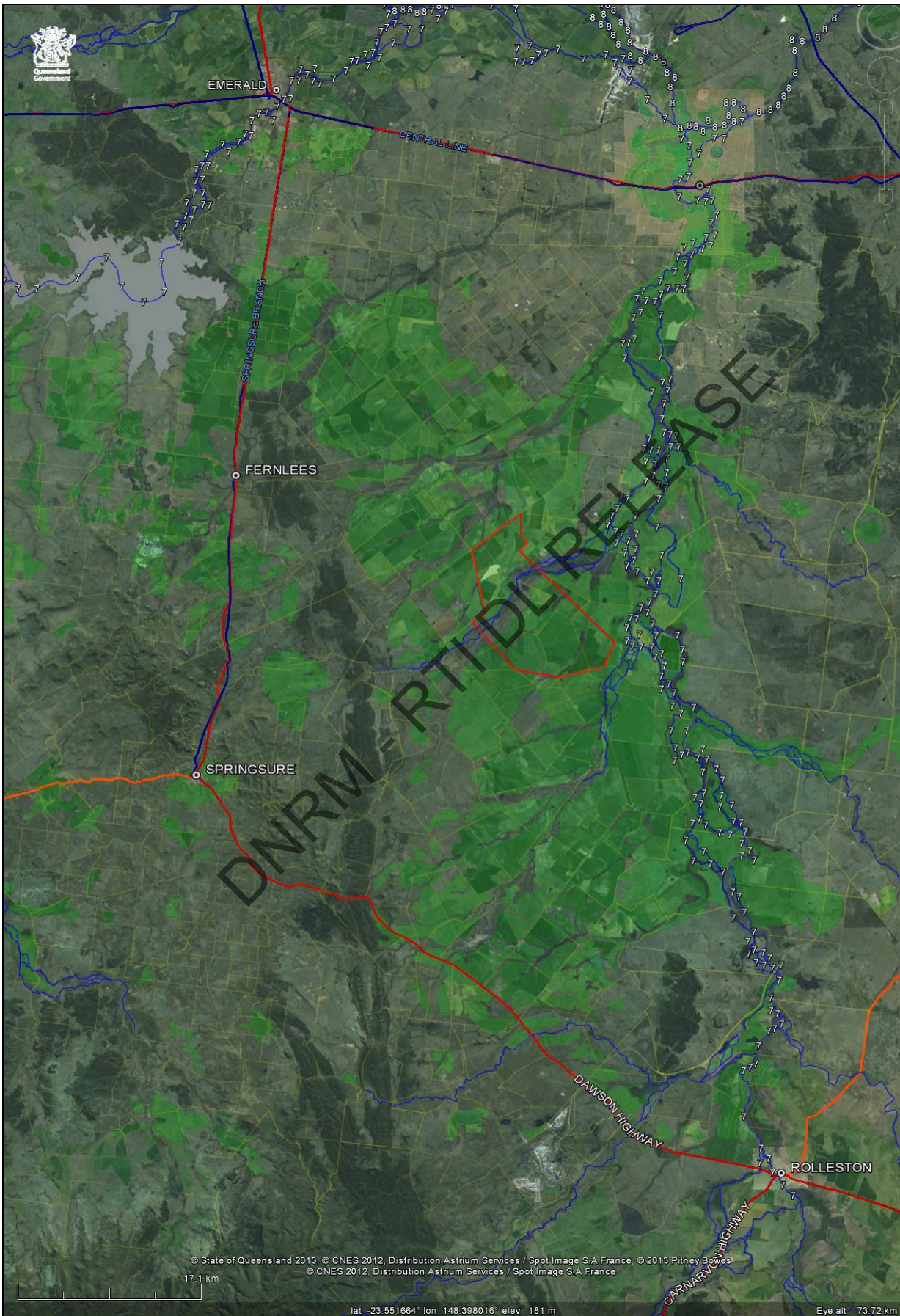


Figure 2

Bandanna Energy's original Springsure Creek Coal Mine Lease (70486) application area covering approximately 10,736ha of which 8868ha (82%) is characterised by potential Strategic Cropping Land.



Figure 3

Extract from the SCC Project EIS August 2013 Chapter 5 (Land) illustrating pre-development land use across MLA70486 comprising of 7370ha (69% of MLA) dedicated to irrigated and dryland cropping and 3000ha (28% of MLA) dedicated to grazing. The majority of the SCL located to the north of Springsure Creek is dedicated to irrigated cropping while the majority of SCL to the south is dedicated to dryland cropping. Most of the land that is dedicated to grazing is not SCL.

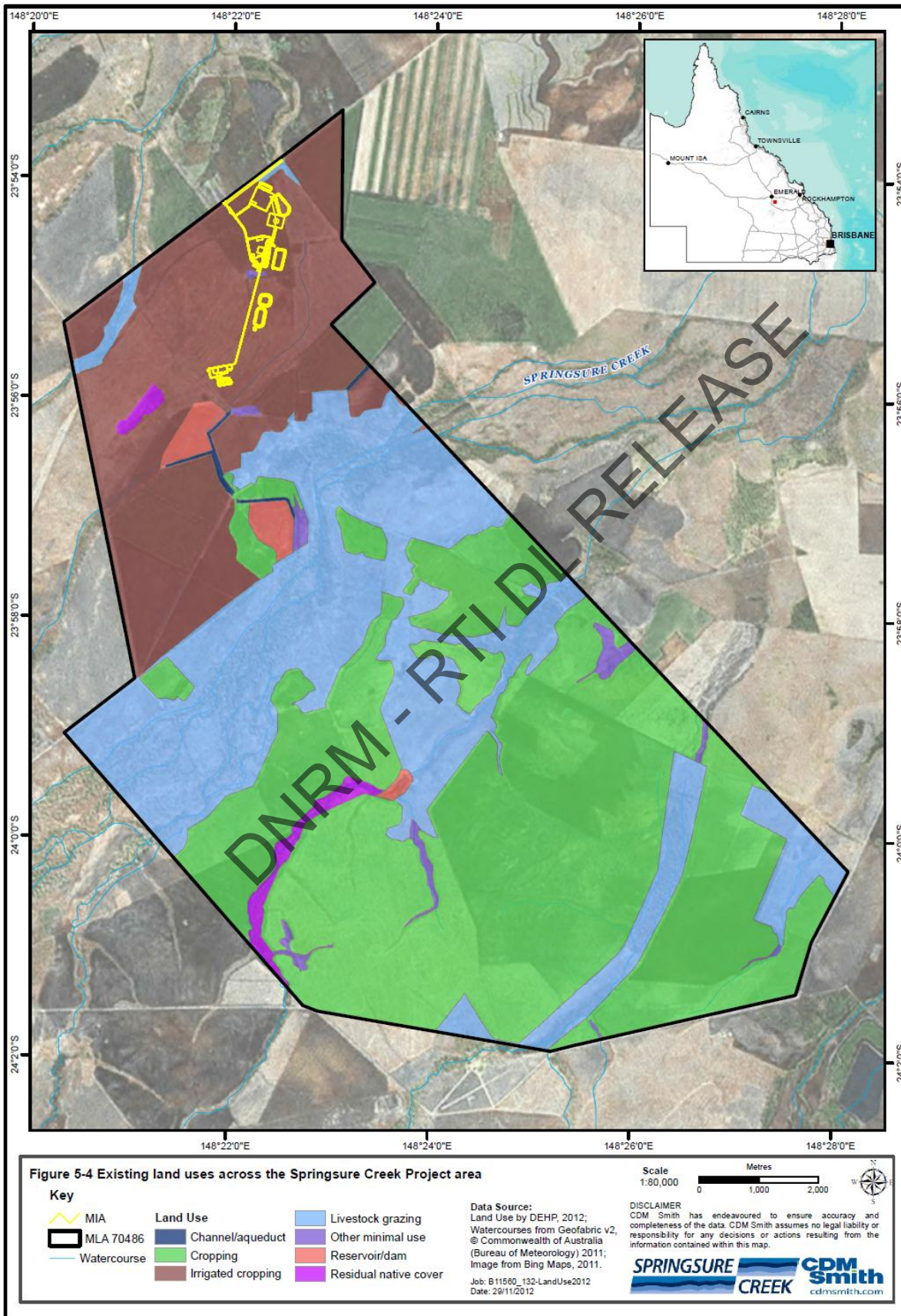


Figure 4

Illustrated extent of proposed infrastructure and surface disturbance on Den-Lo Park including coal export haul route in the northeast connecting with MLA70502 (proposed Infrastructure corridor).

The infrastructure footprint covers just in excess of 60ha with an additional 20ha where access for cropping will be impeded due to fragmentation and isolation by infrastructure components.

Approximately 70ha is impacted by topsoil and subsoil storage.

No estimate or illustration of construction or decommissioning related disturbance was provided despite request. Note that some infrastructure components are inexplicably unconnected by any form of disturbance or infrastructure.

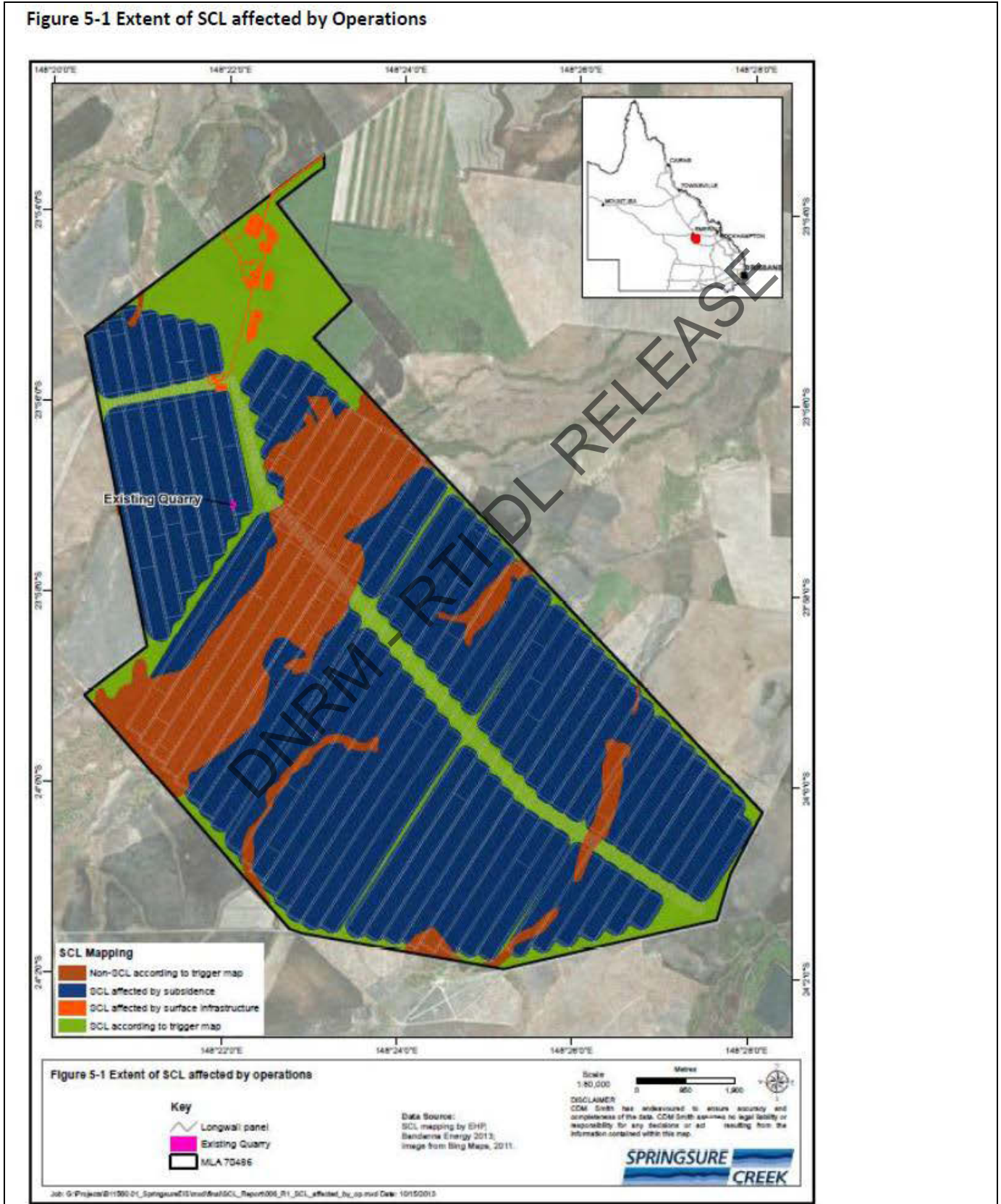
Figure 6 (Figure 5-6 from application report) provides identifying labels for specific infrastructure components.



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Figure 5

Extract from the SCL application (Figures 5-1) provides a stylized illustration of the extent of planned mine operations (surface and subsurface) on MLA 70486 and the extent of SCL claimed to be impacted totalling an approximate 7128ha. Note: This illustration does not include the approximate 70ha of topsoil and subsoil stockpiling areas shown in Figure 4 or the area of likely disturbance associated with controlled drainage around the MIA, CHIA and water storages, construction-related disturbance and erosion and sediment control works.



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Figure 7.

Predicted subsidence depths (in metres) prior to any mitigation across the MLA70486.
Image reproduced from the project's EIS Assessment Report

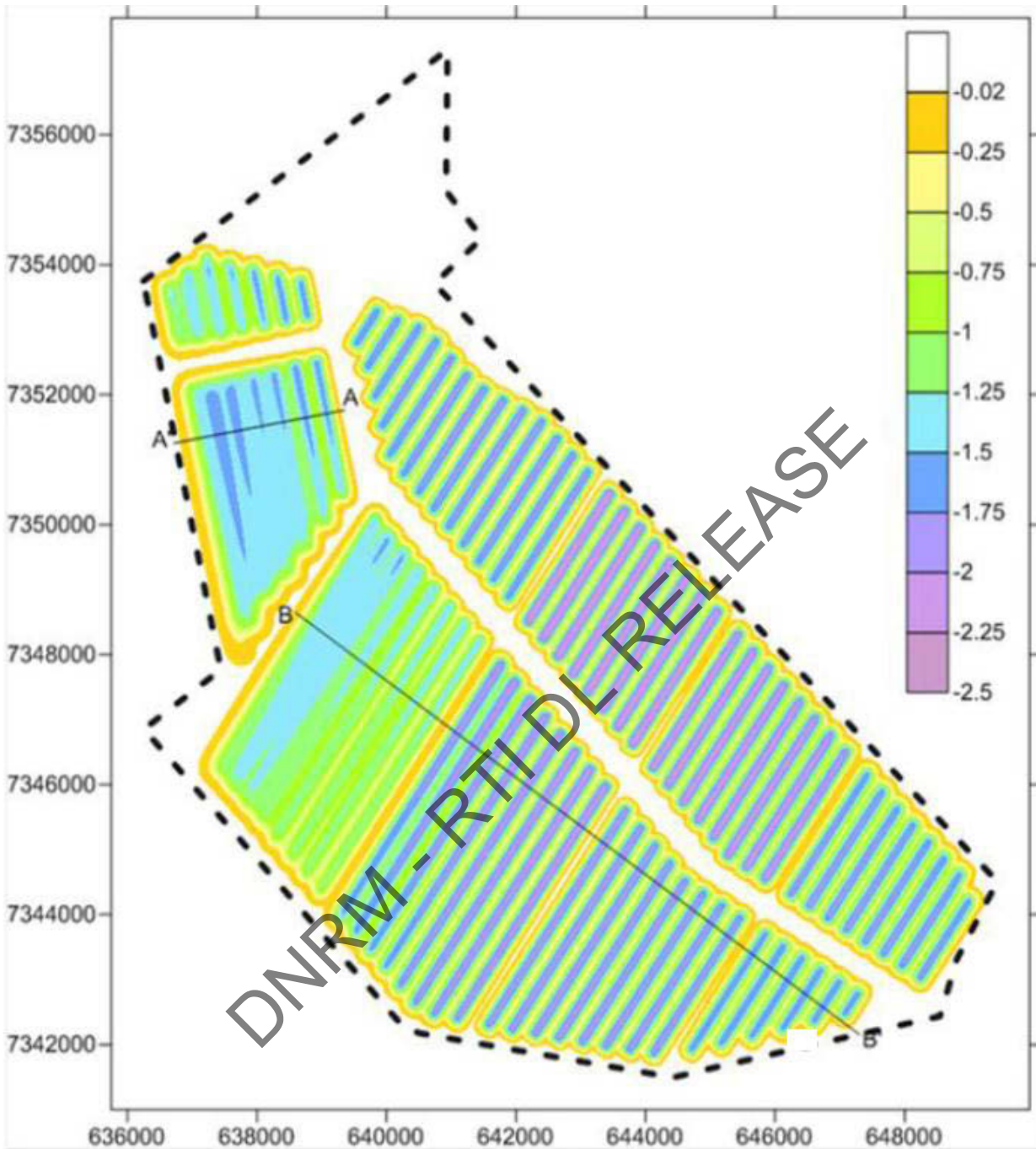


Figure 3 Predicted subsidence contours across the MLA (units in metres).
Figure shows unmitigated subsidence impacts.
(Figure reproduced from the EIS)

Figure 8

Comparison between existing slopes on Cedar Park and modelled post subsidence slopes extracted from a report on the modelled effects of subsidence by LRAM, October 2013. The extent of slopes in excess of 3% are illustrated in red. In the second image, the location of support pillars are outlined in grey.

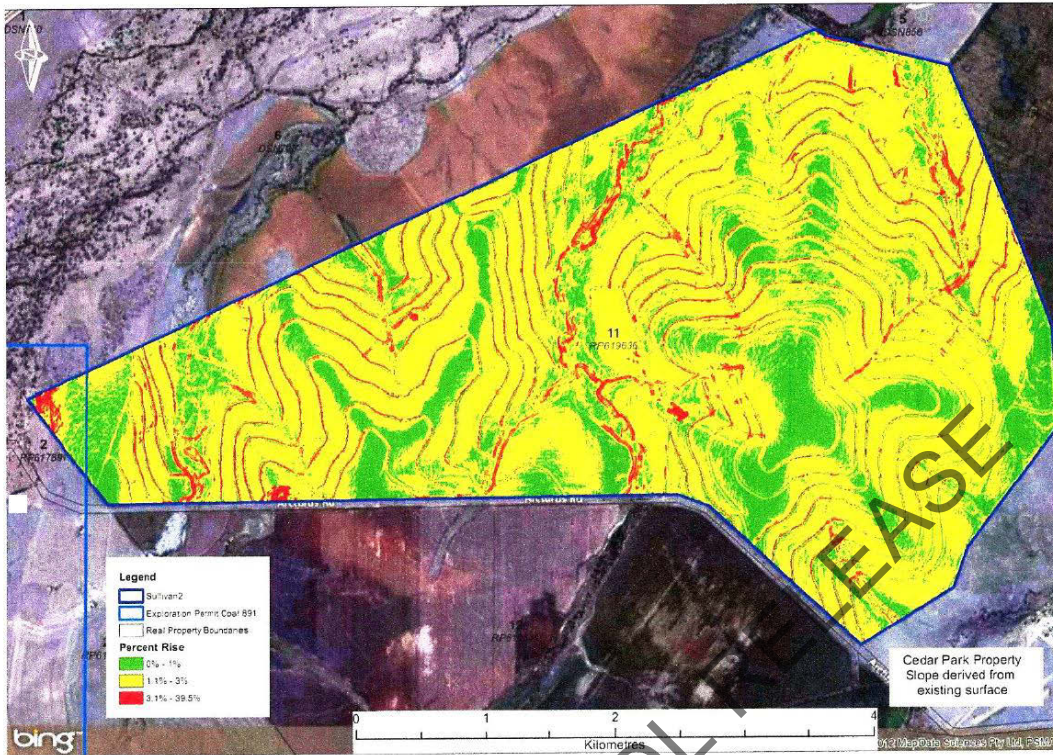


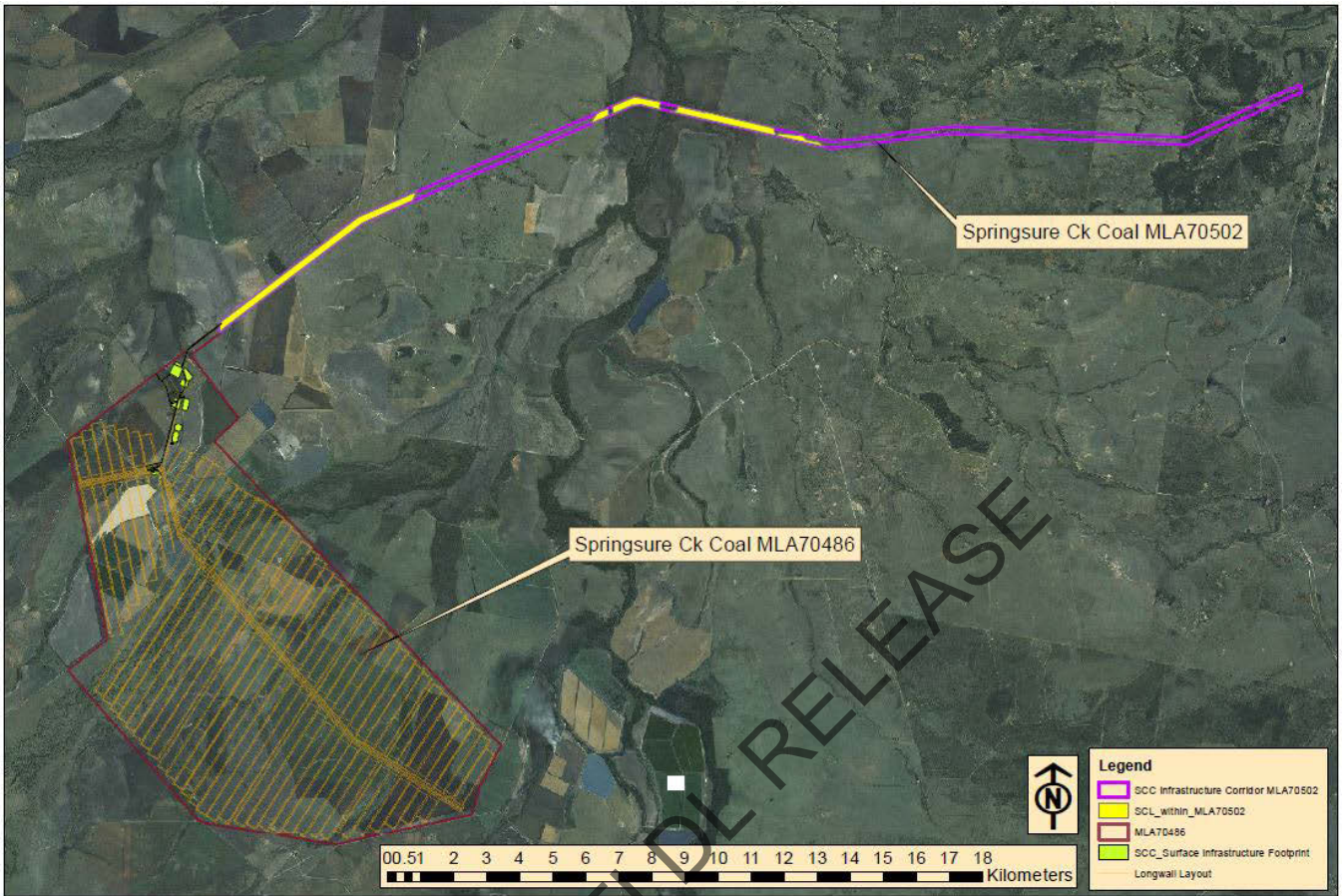
Figure 3. Existing slopes for Cedar Park



Figure 4. Predicted post subsidence slopes (tanB=4) for Cedar Park

Figure 9

Overview of proposed development on MLA70486 and the proposed infrastructure corridor on MLA70502.



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Queensland
Government

Department of
Natural Resources and Mines

Information notice

Strategic Cropping Land Act 2011

Protection decision SCLRD2013/000146

This information notice is issued under s. 102 of the Strategic Cropping Land Act 2011 (SCL Act) to advise of a protection decision under s. 99 of the SCL Act.

Springsure Creek Coal Pty Ltd
C/- Bandanna Energy Limited
Level 4, 260 Queen Street Brisbane QLD 4000

Your reference: Application for a Strategic Cropping Land Protection Decision
Springsure Creek Coal Mine Project – MLA70486

Our reference: SCLRD2013/000146

Attention: Pete Jones

Ph: 07 3041 4434

Mob: 44-Sch4 - Personal Information

Email: petejones@bandannaenergy.com.au

Re: Application for a strategic cropping land protection decision by Springsure Creek Coal Pty Ltd in relation to establishing an underground longwall coal mine within MLA70486 governed by Environmental Authority EPML00961613.

The administering authority received your completed application for an SCL Protection Decision on 18/10/13 and is advising you of the following decision **SCLRD2013/000146** which relates only to activities authorised by Environmental Authority EPML00961613 that are the subject of the SCL application. The reasons for the decisions are contained within Attachment 2: *Reasons for Decision*

The maximum extents of permanent and temporary impacts on SCL or potential SCL as a result of resource activities carried out under the Environmental Authority EPML00961613 must be confined as follows.

| Permanent impacts on SCL or potential SCL | Extent of impact permissible | Unit |
|--|------------------------------|------|
| Disturbances associated with mine surface infrastructure and mine surface facilities confined to Area 'B' on Plan SCLRD2013/000146 | 62.0 | Ha |
| Impacts associated with subsidence confined to area 'A' on Plan SCLRD2013/000146 | 7064.0 | Ha |

| Temporary impacts on SCL or potential SCL | Extent of impact permissible | Unit |
|--|------------------------------|------|
| Areas undisturbed by mining-related activities but impeded from being cropped. | 19.00 | Ha |
| Areas impacted by the stockpiling of topsoils and subsoils. | * | |
| Areas impacted by mining-related activities that comply with the <i>Strategic Cropping Land Standard conditions code for resource activities</i> (The Code). | ** | |

* Area temporarily impacted is to be determined in accordance with Conditions 3, 11, 12 and 13.

** Area temporarily impacted must be in accordance with The Code requirements.

Further SCL protection conditions have been imposed on the enabling Environmental Authority EPML00961613 and Mining Lease ML70486. Refer to the Attachment 1: *Protection Conditions*.

Financial assurance

No financial assurance is required under this protection decision.

Mitigation

Where permanent impacts are proposed on SCL or potential SCL, it is taken to be a condition of the authority that its holder must comply with the mitigation requirement. It is an offence to carry out development without prior mitigation.

You must provide mitigation for 7126 Ha of identified permanently impacted land in the Central Highlands Isaac of the Western Cropping Zone. The number of hectares of permanently impacted land is rounded up to the nearest whole hectare, in accordance with section 139 of the SCL Act.

The mitigation rate for the Central Highlands Isaac of the Western Cropping Zone is \$4750/Ha, as per section 10 of the *Strategic Cropping Land Regulation 2011*.

The mitigation value of the permanently impacted land is determined by multiplying each hectare of the area of identified permanently impacted land by the prescribed rate for the mitigation zone or sub-zone in the *Strategic Cropping Land Regulation 2011*.

The total mitigation value required is \$33,848,500.

Please contact the Department of Agriculture, Fisheries and Forestry at sclmitigation@daff.qld.gov.au or telephone 13 25 23 for more information on how to meet your mitigation requirements.

Rights of Appeal

Details of your right to appeal against this decision to the Land Court are found in the SCL Act Chapter 3, Part 4, Division 6 and Chapter 8, Part 7.

If you have any questions about this notice, please contact Mr Errol Sander, Project Manager, on the telephone number listed below.

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26/2/14

✓ Signature

Date

Dr Brett Heyward
Director-General
Department of Natural Resources and Mines
Chief Executive administering the
Strategic Cropping Land Act 2011

Enquiries:
Mr Errol Sander
Project Manager
PO Box 63 Mackay Qld 4740
Phone: 07 4999 6969
Email: errol.sander@dnrm.qld.gov.au

DNRM - RTI DL RELEASE





Queensland
Government

Department of
Natural Resources and Mines

Attachment 1: Protection conditions

Strategic Cropping Land Act 2011

Protection Decision SCLRD2013/0000146

| Holder(s) | Address |
|-------------------------------|--|
| Springsure Creek Coal Pty Ltd | C/- Bandanna Energy Limited Level 4, 260 Queen Street Brisbane QLD 4000 |

| Resource activities | Environmental authority | Location(s) |
|---|-------------------------|-------------|
| Activities that may impact on SCL or potential SCL: <ul style="list-style-type: none"> Coal extraction and resultant subsidence confined to Area 'A' on Plan SCLRD2013/000146. Quarrying confined in accordance with Condition 3.c). Mine surface infrastructure and mine surface facilities confined to Area 'B' on Plan SCLRD2013/000146. Stockpiling of topsoils and subsoils confined to Area 'C' on Plan SCLRD2013/000146. Mining-related activities that comply with the <i>Strategic Cropping Land Standard conditions code for resource activities</i>. | EPML00961613 | MLA70486 |

Pursuant to ss. 99 and 103 of the *Strategic Cropping Land Act 2011* and only in relation to resource activities conducted within or impacting on areas of SCL or potential SCL, of the following protection conditions:

- condition 1 is taken to be imposed on the relevant Mining Lease ML70486; and
- conditions 2 to 20 are taken to be imposed on the relevant Environmental Authority EPML00961613

Terms in this document that are highlighted in bold and italics are defined in the glossary in Schedule 1.

Other terms are to be defined in preferential order by: any relevant Queensland legislation, The Macquarie Dictionary, and any other widely-recognised English language dictionary published in Australia since 2010.

The rationale for the conditions are contained within Schedule 3

Protection Conditions

Condition imposed on the mining lease by section 290(2) of the *Strategic Cropping Land Act 2011* (SCL Act)

- No open cut mining can be carried out under the lease.

Condition imposed on the environmental authority by section 290(3) of the SCL Act

- The **holder** must use all reasonable endeavours to rehabilitate all impacts on the land from underground coal mining carried out under the lease.

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Other conditions imposed on the environmental authority under chapter 3, part 4 of the SCL Act as provided for by section 290(5).

Limitation of impacts on SCL or Potential SCL

3. The **holder** of the **subject mining tenement** must:
 - a) Observe the respective constraints in Table 1 on **mining-related activities** and apply the respective post-disturbance treatments to the areas identified as **Area 'A'**, **Area 'B'**, and **Area 'C'** and depicted in Plan SCLRD2013/000146;
 - b) Not stockpile or store, or allow the stockpiling and storage, of any **hazardous mine wastes** on **cropping land** outside the area allowed for **mine surface infrastructure** and **mine surface facilities**;
 - c) Only undertake quarrying activities within the **subject mining tenement** that are authorised under an **Environmental Authority**, and limit those activities to land within 60 metres of a centroid located at the GDA94-MGA Zone 55 coordinates of 639 170 mE and 7 350 480 mN;
 - d) Not apply **sewage**, **mine-affected water** or other **wastewater** to **cropping land**;
 - e) Install a synthetic liner that has a permeability of not more than 1×10^{-9} m/sec, and/or a clay liner having a **design permeability** of not more than 1×10^{-9} m/sec¹ to all earthen storages intended to temporarily or permanently store or detain water, **runoff water**, **sewage**, **mine-affected water** or any other **wastewater**; and
 - f) Progressively **restore** or **rehabilitate** any disturbed **cropping land**, with the necessary restoration or rehabilitation works being completed **promptly** following **disturbance**
4. Notwithstanding the limitations in condition 3, the **holder** of the **subject mining tenement** can undertake any resource activity within the **subject mining tenement**, which is fully compliant with the Strategic Cropping Land Standard conditions code for resource activities.

Soil Conservation Management Plan

5. Prior to the commencement of mining operations the **holder** must submit to the **Chief Executive** for endorsement, a Soil Conservation Management Plan (SCMP) that:
 - a) Is to be applied to all land² within the **subject mining tenement**, and
 - b) Has been prepared by **a suitable qualified person**.
6. The objectives of the SCMP are to be:
 - a) No worsening of the existing levels of erosive soil loss from land within or downslope of the **subject mining tenement**;
 - b) Minimise to the greatest practicable extent the **degradation** of soils or land within the **subject mining tenement**;
 - c) No **degradation** of soils or land outside of the **subject mining tenement**;
 - d) No **pollution** of surface water as a result of **soil erosion**, soil **degradation** or changes in hydrology of land on the **subject mining tenement**; and
 - e) To limit the extents and duration of any disruption or obstruction of farming operations to only that necessary to satisfy the above objectives.

¹ The **design permeability** of a clay liner is to be determined by testing undertaken in accordance with Australian Standard AS 1289 using water having an ionic composition analogous to the water or **wastewater** likely to be contained in the storage.

² In a hydrological and soil conservation sense **cropping land** on the **subject mining tenement** cannot be considered in isolation of adjoining areas within the tenement that are not **cropping land** which the SCMP must also consider.

Table 1: Constraints and post-disturbance treatments applicable to Areas 'A', 'B', & 'C'

| Area | Constraints | Post-disturbance treatment |
|------|---|--|
| 'A' | <p><i>Impacts</i> that are a consequence of subsidence must be confined to this area, and the total area impacted must not exceed 7064 hectares.</p> | <ul style="list-style-type: none"> • Promptly rehabilitate all land affected by subsidence once that subsidence has occurred, with the rehabilitation of the affected areas to allow them to permanently support the best possible class of agricultural land; and |
| 'B' | <p>All mine surface infrastructure and mine surface facilities are to be (1) confined to this area, and (2) subject to the following limitations:</p> <ul style="list-style-type: none"> • The total area of disturbance associated with mine surface infrastructure and mine surface facilities must not exceed 62 hectares; and • The total area impeded from being cropped due to access restrictions or fragmentation associated with the presence of mine surface infrastructure and mine surface facilities must not exceed 19 hectares and the impediments to cropping must be removed within 50 years of the impediments commencing. | <ul style="list-style-type: none"> • Following the cessation of mining activities, promptly rehabilitate all land previously covered by the mine surface infrastructure or mine surface facilities, with the rehabilitation of the affected areas to allow them to permanently support the best possible class of agricultural land; and |
| 'C' | <p>All stockpiles of topsoils and subsoils stripped from areas utilised for mine surface infrastructure and mine surface facilities are to be:</p> <ul style="list-style-type: none"> • Confined to this area; and • Affect only the minimum area required to successfully conserve and preserve the stockpiled soils (refer Conditions 11 to 15, below). | <ul style="list-style-type: none"> • Promptly restore any disturbed or affected land to its predevelopment condition, once the associated disturbance has ceased. |

7. The hydrological design of any new soil conservation works that are to be developed, modified or rebuilt to satisfy requirements of the SCMP, must be consistent with the recommended design methods, equations and algorithms in the publication Soil Conservation Measures – Design Manual for Queensland (DNRM, 2004), or alternatives identified as being applicable to Queensland conditions in Australian Rainfall and Runoff (Pilgrim, 2000).
8. The SCMP must, to the satisfaction of the **Chief Executive**:
- a) Be developed in consultation with the owners or occupiers of land within the **subject mining tenement**;
 - b) Establish the baseline conditions of soils and of the land within the **subject mining tenement**, including, but not limited to, ascertaining:
 - i. The predicted **erodibility** of the soils;
 - ii. The **pre-disturbance** severity and extents of **soil erosion** and associated land **degradation**;
 - iii. The location and the design capacity of all '**pre-disturbance**' **soil conservation works**; and
 - iv. The likely **pre-disturbance** rates of **soil erosion** across all significant soil and land units within the **subject mining tenement**.
 - c) Identify and document all activities on the **subject mining tenement** (**mining-related activities** or otherwise) that could increase or affect **soil erosion** and sedimentation;
 - d) Describe in detail the location and design—including through the provision of appropriate plans and drawings made consistent with the relevant requirements in Item III of Schedule 2 (below)—of suitable and effective **soil conservation measures** and **soil conservation works** that will:
 - i. Minimise or reduce **soil erosion** and the potential for the transport of sediment in runoff on or leaving the **subject mining tenement**;
 - ii. Maximise the sediment captured and recovered from sediment control works on the **subject mining lease**;
 - iii. Limit the amount of stormwater run-off that becomes **mine-affected water** to no more and no less than that required to protect the environmental values of land and water outside of the mining infrastructure and coal handling areas; and
 - iv. Satisfy the design criteria set out in Items I and II of Schedule 2 (below);
 - e) Ensure where a **property** associated with the **subject mining lease** is the subject of an **existing soil conservation property plan**, either:
 - i. There is no **change in the discharge** of **run-off water** across the boundary of that property; or
 - ii. Where a **change in the discharge** of **run-off water** across a property boundary is proven to be unavoidable, the change is minimised and only occurs following proper consultation with the owners of any property that receives **run-off water** directly or indirectly from the **subject land**;
 - f) Detail how the integrity and functional efficiency of all **soil conservation measures** and **soil conservation works** will be effectively **monitored**, their performance assessed, and where they are found not to provide the necessary level of control, how any required changes to those measures or works will be implemented;
 - g) Describe how all **soil conservation works** will be maintained over the life of the proposed mine;
 - h) Describe the procedures to be implemented to:
 - i. Respond to any complaints made regarding matters that are the subject of the SCMP;
 - ii. Resolve any disputes with property owners, landholders or other persons affected by the SCMP;
 - iii. Deal with any **impacts** not predicted in the SCMP;
 - iv. Respond to any non-compliance with the SCMP; and

- v. Respond to any emergencies related to matters that are the subject of the SCMP;
 - i) Describe the role, responsibility and accountability of those persons who will be ultimately responsible for the administration of the SCMP; and
 - j) Demonstrate how the objectives of the SCMP listed in item 6 (above) are addressed by the SCMP.
9. The **holder** must comply with the most recent SCMP endorsed by the **Chief Executive**.
10. The **holder** may at any time submit a revised SCMP to the **Chief Executive** for endorsement.

Soil Stripping, Stockpiling and Reinstatement Plan

11. Prior to the commencement of any works associated with the development of mine surface infrastructure and mine surface facilities, the **holder** must submit to the **Chief Executive** for endorsement, a Soil Stripping, Stockpiling and Reinstatement Plan (SSSRP) that:
- a) Will be applied to any such operations within the **subject mining tenement**, and
 - b) Has been prepared by a **suitably qualified person**.
12. The objectives of the SSSRP are to be that the design and operational management of any soil stripping, stockpiling and reinstatement results in:
- a) Minimisation of physical, chemical and biological degradation of the affected soils;
 - b) No **contamination** of the soil by any physical, chemical or biological agent (including weeds and soil-borne diseases);
 - c) The minimisation of any loss of soil through erosion;
 - d) Avoidance of any mixing of soils types or soils from different **soil horizons**;
 - e) The timely re-establishment of biological functionality in the reinstated soil (e.g. the reestablishment of the mycorrhiza), and
 - f) Complete **restoration** of any area of **cropping land** that is impacted by the stockpiling, transport and handling of salvaged soils.
13. The SSSRP must, to the satisfaction of the **Chief Executive**:
- a) Describe in detail the land and soils in those areas of **cropping land** that will be subject to **disturbance** during the stripping and stockpiling of soil, and similarly describe the proposed reinstatement of the stripped soil (N.B. this will also include the soils in those areas in Area 'C' covered by stockpiles, or traversed when hauling the stripped soils to or from the stockpiles);
 - b) Identify and document the threats stripping, stockpiling and reinstatement pose to soil qualities, and in particular those qualities relevant to the **SCL Zonal Criteria**;
 - c) Nominate a set of parameters and any associated analytes that will be used to test soils and **monitor** the success of the SSSRP;
 - d) Provide robust estimates of the volume and mass of the soils in the different horizons associated with the various soil types that will need to be stripped and stockpiled, and describe how **monitoring** data will be used in verifying over the life of the stockpiles both the mass and volume of soil that will ultimately be available for reinstatement;
 - e) Justify in sufficient detail how the SSSRP objectives in Item 12 (above) will be best met by the selection of:
 - i. Stripping methods;
 - ii. The location for and design of soil stockpiles;

- iii. Means of transporting or hauling the stripped material to the stockpile area(s);
 - iv. Methods for placing excavated soil in stockpiles;
 - v. The management practices to be applied to stockpiled soils to minimise **soil erosion** and the physical, chemical and biological degradation of the stockpiled soils, and how sediment resulting from the erosion of stockpiles soils will be captured, harvested and returned to stockpiles;
 - vi. Methods for reclaiming soils from the stockpiles in preparation for their reinstatement;
 - vii. Methods for transporting or hauling soils to and reinstating soils in those areas from which it was originally stripped;
 - viii. Means of making up any potential shortfall in the volume and mass of stockpiled soil available for reinstatement; and
 - ix. Methods of stabilising the reinstated soil and restoring it to its **predevelopment condition**, or where that is proven to be unreasonable, progressively **rehabilitate** the impacted land so it can support the **best possible class of agricultural land** within 50 years of the granting of the **subject mining lease**;
- f) Provide suitably detailed plans, maps and drawings, consistent with the relevant requirements in Item III of Schedule 2 (below); showing:
- i. The areas from which it will be necessary to remove soil, the **soil horizons** affected and depths to which it will need to be stripped;
 - ii. The haul routes by which stripped soil will be transported or hauled to the nominated stockpile areas;
 - iii. The proposed location, form, shape and orientation of stockpiles that can be shown to have sufficient capacity to store the predicted volume of as-stripped soil;
 - iv. The extents and design of a controlled drainage area or areas established to protect stockpile soils from overland flow, and to capture and retain any sediment lost from stockpiles during storage; and
 - v. The routes by which reclaimed soils will be transported or hauled from stockpile areas to the sites where these materials are to be reinstated;
- g) Provide a comprehensive set of 'hand-back' criteria that will demonstrate that the reinstated soils and reformed land have been returned to a condition consistent with that required under item 3.a) (above);
- h) Provide details of a monitoring program able to substantiate compliance with the SSSRP, and in particular Items 13 c) d) and g) (above);
- i) Describe the role, responsibility and accountability of those persons who will be ultimately responsible for the administration of the SSSRP;
- j) Demonstrate how the objectives of the SSSRP listed in item 12 (above) are addressed by the SSSRP.
14. The **holder** must comply with the most recent SSSRP endorsed by the **Chief Executive**.
15. The **holder** may at any time submit a revised SSSRP to the **Chief Executive** for endorsement.

Subsidence-related ponding and scouring

16. The **holder** of the **subject mining tenement** must, without degrading other **cropping land**:

- a) **Monitor** subsidence-related ponding or impediments to cropping caused by soil wetness resulting from subsidence, and investigate any landholder's complaint regarding ponding and/or aggravated soil wetness;
- b) Relieve any ponding or soil wetness identified in complying with Item 16.a) (above);
- c) Ensure that changes in surface water and soil hydrology as a result of subsidence do not materially increase **deep drainage**, cause an abnormal rise in **shallow watertables** or an increased risk of **soil salinisation**; and
- d) Rectify and stabilise any scouring or streambank erosion resulting from subsidence-related changes in the nature of flows in:
 - i. Any first (1st) or higher order watercourse shown on Plan SCLRD2013/000146; or
 - ii. Any man-made waterway on the **subject mining tenement**.

Reporting

17. The **holder** of the **subject mining tenement** must:

- a) Within 12 weeks following the anniversary date for the issuing of the **subject mining lease**, provide the **Chief Executive** with an Annual Report pertaining to the year preceding the anniversary date, which includes the following:
 - i. Details, including the timing, of all relevant **mining-related activities** undertaken in the preceding year and proposed in the current year;
 - ii. The locational and design details of all **soil conservation works**—both new and remedial—undertaken in the preceding year;
 - iii. Details of any changes in practices or expected outcomes regarding the SCMP and SSSRP;
 - iv. Copies of all **monitoring** data and relevant reports;
 - v. **Summary details** of the consultations with landholders affected by **mining-related activities**;
 - vi. **Summary details** of all complaints received regarding soil conservation; soil stripping, stockpiling and reinstatement, and subsidence-related matters; as well as the resolution of those complaints;
 - vii. An interpretation of all **monitoring** data and relevant reports relating to item 1.a)i.iv;
 - viii. Details of all measures proposed to address any underperformance or non-compliance with any SCMP or SSSRP for the **subject mining lease** relevant to the reporting period, and manage any significant, unpredicted **impacts** not addressed by those SCMPs or SSSRPs; and
 - ix. Details of revisions or changes to be made to the SCMP or SSSRP that will address matters detailed in Items 17.a) vi and viii;
- b) Within 10 business days of becoming aware of an **incident**, or the receipt of **monitoring** results demonstrating **serious non-compliance** with the SCMP or SSSRP, provide written advice of the incident of serious non-compliance to the **Chief Executive**, with that advice to include the following:
 - i. Details of the nature of the **incident** or **serious non-compliance**;
 - ii. The results and interpretation of any samples taken and analysed;
 - iii. The outcome of actions taken to rectify the **incident** or **serious non-compliance**, and the associated **impacts**; and
 - iv. Details of the actions proposed to prevent a recurrence of the **incident** or **serious non-compliance**;

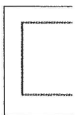


- c) Record and maintain a Complaints Register, detailing of all complaints received regarding soil conservation, soil stripping, stockpiling and reinstatement, management of surface water and overland flows, water ponding and subsidence-related matters including:
- i. Name and any contact details of the complainant;
 - ii. Time and date of complaint;
 - iii. The nature and details of the complaint;
 - iv. Any investigations undertaken and/or conclusions formed regarding the complaint; and
 - v. Actions taken to resolve the complaint and any measures implemented to avoid a reoccurrence;
- d) When requested by the **Chief Executive** provide to the **Chief Executive** or their delegate, within the timeframe nominated by the **Chief Executive**, one or more of the following:
- i. A copy of any calculations, workings and modelling, and a list all assumptions, used in designing any **soil conservation measures** or **soil conservation works**;
 - ii. A copy of any calculations pertaining to any stripping, stockpiling and reinstatement of soils;
 - iii. Copies of all relevant **monitoring** data or information compiled to address the request; and/or
 - iv. An analysis and interpretation of the **monitoring** results.
18. Concurrent with the submission to the **Chief Executive** of the annual report and revised SCMP, the **holder** of the **subject mining tenement** must provide all property owners, landholders or persons affected by the SCMP with either physical copies, or unfettered access to an electronic copies (e.g. by downloading from an internet webpage), of the Annual Report and revised SCMP described in Item 17.a) (above).
19. The **holder** of the **subject mining tenement** must keep and have available for inspection, for the life of the mining tenement, all monitoring data or reports that are required to satisfy the conditions of this SCL Protection Decision.

Mitigation

20. Prior to an area of strategic cropping land, shown as '**Cropping Land**' on the 'Protection Decision Plan SCLRD 2013/000146', being permanently impacted **mitigation** must be provided for that area.

49-Sch4 - Personal Information



Signature

Dr Brett Heyward
 Director-General
 Department of Natural Resources and Mines
 Chief Executive administering the
Strategic Cropping Land Act 2011

26/2/14
 Date

Enquiries:

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Schedule 1: Glossary

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| 'A' horizon or horizons | The surface layer or upper layers of the soil where organic matter accumulation will generally have resulted in darker colouration, compared to deeper layers in the soil profile, and in which the major proportion of biological activity in a soil is concentrated. |
| Area 'A' | The 7065 hectare area identified as ' <i>SCL affected by subsidence</i> ' in Figure 5.1 (page 45) in the document <i>Springsure Creek Coal Mine Project: Development Impact Report</i> , and depicted as Area 'A' in the attached Plan SCLRD2013/000146 |
| Area 'B' | The ~300 hectare area representing a buffer of ~100 metres drawn around areas identified as the proposed location of surface infrastructure in Figure 2.1 (page 8) in the document <i>Springsure Creek Coal Mine Project: Development Impact Report</i> , and depicted as Area 'B' in the attached Plan SCLRD2013/000146 |
| Area 'C' | The land depicted as Area 'C' in the attached Plan SCLRD2013/000146, which represents the balance of the <i>cropping land</i> on land currently identified as Lot 2 on Plan DSN856 that is not included in <i>Areas 'A'</i> and <i>'B'</i> , and; if there was to be a future realignment of lot boundaries, that same land |
| Best possible [in reference to the rehabilitation of land] class of agricultural land | <p>When rehabilitating <i>cropping land</i>, all reasonable measures must be applied to return that land to a <i>class of agricultural land</i> equivalent to that prior to the subject development taking place.</p> <p>The applicable predevelopment <i>class of agricultural land</i> are analogous to the GQAL classes (A, B, C1 & C2) depicted in Figure 6 of the <i>Springsure Creek Coal Mine Project Soils and Land Suitability Assessment</i> (GT Environmental Services, June 2013), which was provided as Appendix 1 of <i>Springsure Creek Coal Mine Project: Development Impact Report</i>.</p> |
| Change in the discharge [at a property boundary] | <p>A change in the discharge of run-off at a property boundary is any of the following:</p> <ul style="list-style-type: none">• A change of more than 10% in the area contributing <i>run-off water</i> discharged at any point on a property boundary; or• A change in the location of points where any discharge of <i>run-off water</i> occurs at a property boundary; or• An increased risk of damage to the land downslope of a property in the event of failure of any <i>soil conservation works</i> on that property. |
| Chief Executive | The chief executive of the department administering the <i>Strategic Cropping Land Act 2011</i> or any future legislation that supersedes the SCL Act. |

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| Class of agricultural land | Agricultural land class and subclass are as defined in Table 7 (page 42) of the <i>Guidelines for Agricultural Land Evaluation in Queensland</i> (DNRM & DSITIA, 2013) or a future edition of that publication. |
| Contaminant | As defined in s11 of the <i>Environmental Protection Act 1994</i> , or else anything that is not present naturally, and the anthropic introduction or release of which deleteriously alters the environmental value of soil, water or air, or represents an unintended threat to biota. |
| Contaminate | The introduction or release of a contaminant . |
| Cropping land | The land identified as 'cropping land' in the attached Plan SCLRD2013/000146. This represents land currently identified as SCL or potential SCL under the <i>Strategic Cropping Land Act 2011</i> , and subsequently, that same land |
| Decision register | As defined in s248 the <i>Strategic Cropping Land Act 2011</i> . |
| Deep drainage | Soil water that migrates to a depth beyond the root zone of the plants growing in that soil, and is thus unavailable for plant uptake. |
| Degradation [of soil or land] | Anything, including but not limited to soil erosion , compaction, subsidence, waterlogging, salinisation, sodification, acidification, contamination or earthmoving, which causes a deleterious change in the relative status of land or a soil in terms the SCL Zonal Criteria . In particular, degradation is still considered to have occurred even when a deleterious effect on a soil or land is not large enough to make that soil or land non-compliant with one or more of the SCL Zonal Criteria . For example, the following are considered as degradation: <ul style="list-style-type: none"> • An increase in the slope gradient of land where the final gradient is still less than the applicable zonal threshold value; • Earthworks that reduce the depth of a soil in the Western Cropping Zone from for instance 1.0 to 0.65 metres, even though the applicable zonal threshold is 0.6 metres; and • Soil compaction that reduces the magnitude of the difference in soil moisture content between the drained upper limit and the permanent wilting point of a soil, despite the Soil Water Storage value determined in accordance with Schedule 1 of the <i>Strategic Cropping Land Act 2011</i> still exceeding the applicable zonal threshold value. |

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Design permeability

A clay lining material is considered to provide a design permeability consistent with that obtained in laboratory testing to *Australian Standard AS 1289: Methods for testing soils for engineering purposes*, where the same clay lining material is:

- Conditioned to provide a moisture content within $\pm 2\%$ of the optimum moisture content required to produce the maximum dry density in accordance with Method 5.1.1 of AS 1289; and
- Compacted to produce a field dry density of at least 95% of the standard maximum laboratory dry density determined in accordance with Method 5.4.1 of AS 1289.

Compliance with the design permeability criteria is determined by compaction testing of the *in-situ* materials to verify the second dot point above.

Disturbance [of land or soil]

Includes but is not limited to the following:

- Compacting, removing, covering, exposing or stockpiling of earth;
- Removal or destruction of vegetation or **topsoil** or both to an extent where the land has been made susceptible to erosion;
- Subsidence of land;
- Submersion of areas resulting from the capture or holding of water or other liquids in storages, dams, tanks, impoundments, etc., or any ponding associated with the subsidence of land;
- Earthworks associated with the construction, maintenance or removal of any **mine surface infrastructure** or **mine surface facilities**; or
- Releasing of **contaminants** into the soil or land.

Environmental Authority

As defined in Schedule 4 of the *Environmental Protection Act 1994*.

Erodibility [of soil]

For the purposes of satisfying these conditions, the erodibility of a soil is to be assessed by determining the applicable value of 'K' factor in the Universal Soil Loss Equation (USLE) or Revised Universal Soil Loss Equation (RUSLE), or any other means agreed to by the **Chief Executive**.

Existing soil conservation property plan

A soil conservation property plan previously made for 'Denlo Park' (plan BH-A1-2889); 'Springton' (plan EM-A0-4274); 'Cedar Park' (plan BH-K1-1523); 'Cowley' (plan BH-K1-2066) or 'Arcturus Downs' (plan EM-A0-4277), including but not limited to those plans approved under the *Soil Conservation Act 1986*.

Footprint

The surface of the land permanently or temporarily modified or affected by an authorised mining-related activity, including **mine surface infrastructure** and activities associated with the construction, maintenance or removal of that infrastructure.

Hazardous mine wastes

As defined in s14(c)(ii) of the *Strategic Cropping Land Act 2011*, including, for example, tailings, overburden, waste rock, and reject mined material.

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| Holder [of a mining tenement] | As defined in Schedule 2 of <i>Mineral Resources Act 1989</i> , and is the person (including officer, employee, contractor or agent) in whose name a permit, claim, licence or lease is recorded. |
| Impact | An influence or effect, either direct or indirect, resulting from a change, whether adverse or beneficial, in the previous condition or state of the environment. |
| Incident | An event or occurrence involving the degradation of soil or land, that the Chief Executive would reasonably consider a serious or material impact on the affected soil or land (N.B. the impact may be an indirect one, and not necessarily take place on SCL or potential SCL .) |
| Mine surface infrastructure and mine surface facilities | Surface structures and/or facilities intended for or to support mining-related activities , including but not limited to: <ul style="list-style-type: none"> • Mine portals, drifts, shafts and adits; • Coal and waste rock handling and processing facilities; • Water and waste management facilities, • Ventilation shafts and dewatering bores; • Roads, tracks, railways, conveyors and other transport structures; • Buildings, and other fixed structures and machinery; • Hardstand areas; • Airstrips and helipads; and • Sediment, erosion and run-off control structures and works. |
| Mine-affected water | Means the following types of water: <ul style="list-style-type: none"> • Mine and pit water, tailings dam water, processing plant water and workshop water; • Water contaminated by a mining activity which would have been an environmentally relevant activity under Schedule 2 of the <i>Environmental Protection Regulation 2008</i> if it had not formed part of the mining activity; • Run-off which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated, excluding run-off discharging through release points associated with soil conservation structures that have been installed in accordance with the standards and requirements of the Soil Conservation Management Plan or an approved Erosion and Sedimentation Control Plan, provided that this water has not been mixed with mine and pit water, tailings dam water, processing plant water and workshop water; • Groundwater which has been in contact with any areas disturbed by mining activities, or generated through the mine's dewatering activities; and • A mix of mine-affected water—as defined under any of the preceding dot points in this definition—and any other water. |

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| Mining tenement | As defined in Schedule 2 of the <i>Mineral Resources Act 1989</i> , and includes: <ul style="list-style-type: none"> • A prospecting permit; • A mining claim; • An exploration permit; • A mineral development licence; or • A mining lease. |
| Mining-related activities | Operational and support activities related to mining undertaken under the <i>Mineral Resources Act 1989</i> or another Act relating to mining, including those activities undertaken on a contract or fee basis by those other than the holder of the subject mining tenement . |
| Mitigation | As defined in section 138 of the <i>Strategic Cropping Land Act 2011</i> |
| Monitor [in reference to a management plan or managed activity] | The collection of information and data on parameters that characterise the nature or condition of something of relevance or potential relevance to a management plan or activity |
| Pollution [as a direct or indirect consequence of soil erosion] | The intentional or unintentional release of a material that alters the environmental value of soil, water or air (e.g. an increase in surface water turbidity or an increase in sediment loads as a consequence of soil erosion) |
| Potential SCL | As defined in s10 of the <i>Strategic Cropping Land Act 2011</i> , that being land shown on the Trigger Map as being potential strategic cropping land |
| Predevelopment condition | As defined under Schedule 2 of the <i>Strategic Cropping Land Act 2011</i> , in particular: <ul style="list-style-type: none"> • Its condition before the development started; or • If the prior condition cannot be ascertained, a condition consistent with analogous SCL or potential SCL contiguous with or most proximate to the subject land. |
| Pre-disturbance | A point in time preceding disturbance by a mining-related activity and reasonably close to its occurrence. |
| Promptly [in reference to restoration or rehabilitation of land] | Without unnecessary delay, or as soon as possible. So as to minimise the amount of time land is out of production or not in a suitably stable form, restoration or rehabilitation must commence as soon as it safe and practical to do so after the causative disturbance has ceased, and once there are no further physical or biological impediments to the successful restoration or rehabilitation of the subject area of land. Restoration or rehabilitation work is (1) to be progressive, and (2) must be completed within 50 years of the granting of the Environmental Authority for the subject mine. |

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| Rehabilitate [SCL or potential SCL] | The return of disturbed SCL or potential SCL to a stable, productive and self-sustaining condition that supports the best possible class of agricultural land . |
| Restore [SCL or potential SCL] | To return SCL or potential SCL that is altered or disturbed by a mining-related activity to its physical, chemical and biological condition prior that alteration or disturbance . |
| Run-off water | Water which accumulates on the soil surface as a result of rainfall or other natural inflows and flows over the soil surface from higher to lower land. |
| SCL | As defined in s9 of the <i>Strategic Cropping Land Act 2011</i> , that being land recorded in the Decision Register as being strategic cropping land, SCL or Decided SCL. |
| SCL Compliance Certificate | As defined in s116 of the <i>Strategic Cropping Land Act 2011</i> . |
| SCL Protection Decision | As defined in s91 of the <i>Strategic Cropping Land Act 2011</i> . |
| SCL Zonal Criteria | As detailed in Schedule 1 of the <i>Strategic Cropping Land Act 2011</i> . |
| Serious non-compliance | Non-compliance with a management plan that would also represent non-compliance or probable non-compliance with a condition imposed by an SCL Protection Decision . |
| Sewage | Domestic and/or commercial wastewater that contains, or may contain, faecal, urinary or other human waste, or a wastewater defined as sewage under the <i>Plumbing and Drainage Act 2002</i> . |
| Shallow watertables | The piezometric surface of the groundwater in an aquifer that has the potential to intercept, or interact by way of capillary action, with the root zone of crops growing on SCL or potential SCL on or downslope of the subject land . |
| Soil conservation measures | Works, land management practices, undertakings, acts, proposals and prohibitions designed, built or proposed to be carried out for the purpose of controlling soil erosion , soil conservation, capture of sediment, or controlling or directing the flow of run-off water . |
| Soil conservation works | Structures intended for soil conservation and sediment control. |
| Soil erosion | The natural or accelerated removal or deposition of soil which may be detrimental to agricultural, pastoral, or forestry activities, or public or private structures, works or infrastructure. |
| Soil horizon | As defined in National Committee on Soil and Terrain (NCST) (2009) Australian soil and land survey field handbook, third edition. CSIRO Publishing. |

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| Soil salinisation | An abnormal increase in the concentration of dissolved ions in the soil – whether or not that increase poses an immediate phytotoxic risk to plants growing in that soil. |
| Springsure Creek Coal Mine Project: Development Impact Report | Issue revision 2 (dated 16/10/2013) of the report provided by Springsure Creek Coal Pty Ltd to support the application for a Strategic Cropping Land Protection Decision made on 9/08/2013, which pertained to the proposed Springsure Creek Coal Mine Project on MLA 70486, and that was subsequently identified by the departmental application reference number SCLRD2013/000146 |
| Subject land | All land, including SCL and potential SCL , within the subject mining tenement . |
| Subject mining lease | ML70486 as depicted in the registered survey plan. |
| Subject mining tenement | That part of ECP891 that is presently subject to the application for ML70486, and any mining lease or tenement subsequently granted over any land within the boundaries of ML70486 as depicted in the registered survey plan of ML70486. |
| Subsoil | Soil material from below the ' A ' horizon or horizons of a soil profile but above bedrock, weathered rock, a hard pan or continuous gravel layer. |
| Suitably qualified person | A person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and who can give a competent assessment, advice and analysis of pertinent data and information using protocols, standards, guidelines, methods and literature that are acceptable to the Chief Executive . |
| Summary details [as pertains to Reporting conditions] | The provision of sufficient information to identify the nature of any consultations, complaints or similar interactions, but not sufficient to identify the persons involved in those interactions or making any complaints. |
| Topsoil | Soil from the ' A ' horizon or horizons of a soil profile. |
| Wastewater | An aqueous waste, including contaminated stormwater, as defined under <i>Environmental Protection (Water) Policy 2009</i> . |

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Schedule 2: Soil conservation earthworks design criteria and drawings

I. Embankments, drains, waterways, channels and other run-off conveyancing structures

- Drains and waterways are to be designed such that they can safely carry the peak flow in a design storm with an average recurrence interval (ARI) of 10 years.
- The duration of the 10-year ARI design storm must be equal to the time of concentration of the associated catchment (the time taken for water to flow from the most remote point of the catchment to the catchment outlet).
- Estimates of peak run-off during a design storm that are made using the Rational Method, should use the run-off coefficients provided in Table 6.1 and 6.2 in *Soil Conservation Measures – Design Manual for Queensland* (DNRM, 2004).
- Design flow rates in drains and waterways during the 10-year ARI design storm must be greater than 0.45 m/s in order to minimise risk of sedimentation.
- Flow rates in drains, waterways, channels and other run-off conveyancing structures must not induce scouring in those structures.

II. Sedimentation and detention basins, ponds and other particulate settling systems and structures

- Sedimentation systems must be designed to cater for peak flow from a design storm having an ARI of 20 years.
- Estimates of peak inflows into sedimentation systems during a design storm that are made using the Rational Method, should use the run-off coefficients provided in Table 6.1 and 6.2 in *Soil Conservation Measures – Design Manual for Queensland* (DNRM, 2004).
- The maximum flow velocity in the sedimentation system must be 0.005 m/s.
- Outflow from the sedimentation system must be regulated by a control weir.
- The control weir must be capable of safely discharging the peak flow from a 50-year ARI design storm without the sedimentation system embankment overtopping.
- A minimum freeboard of 0.9 m must be provided between the weir crest and the crest of the sedimentation system embankment.
- Sedimentation basins and terraces must be free-draining down to bed level, and have a bed slope of at least 0.1% towards the control weir to facilitate that drainage and the subsequent timely harvesting of captured sediment.

III. Plans and drawings

- A north point, plan scale, legend and issued plan number and version and issue release date;
- Resource tenement and cadastral boundaries (including roadways);
- Locations of mine panels, pillar rows, headers, conveyor and access drifts; vent shafts and any other underground works;
- Location of all existing and proposed temporary and permanent access roads and tracks, including construction stage access points for vehicles entering and leaving the site;
- Limits of all soil **disturbance** and subsidence associated with the development;
- Existing elevation contours;
- Location of all existing **soil conservation works** (including 'contour' banks, diversion drains; channels and artificial and natural waterways);
- Final (post-mining) elevation contours;

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- Suitable scaled full design drawings and works details (cross and longitudinal sections, dimensions, gradients, lining and construction materials; material placement and treatment details) for all **soil conservation works** (i.e. banks, drains, channels, basins, etc.);
- Technical specification and calculation sheets detailing the engineering design of all **soil conservation works**;
- Location of all proposed **soil conservation works** (including 'contour' banks, diversion drains; channels; artificial and natural waterways; and detention and sedimentation basins);
- Pre-mining land use (including remnant vegetation);
- Flood-affected areas (2-year ARI) both pre and post subsidence;
- Area restoration requirements; and
- Location of all **monitoring** points.

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Schedule 3: Rationale for conditions

| Condition number | Condition | Rationale |
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| 1 | No open cut mining can be carried out under the lease | <ul style="list-style-type: none"> • Provided for by s290(2) of the SCL Act |
| 2 | The holder must use all reasonable endeavours to rehabilitate all impacts on the land from underground coal mining carried out under the lease. | <ul style="list-style-type: none"> • Provided for by s290(3) of the SCL Act |
| 3 a) & table 1 | Observe the respective constraints in Table 1 on mining-related activities and apply the respective post-disturbance treatments to the areas identified as Area 'A', Area 'B', and Area 'C' depicted in Plan SCLRD2013/000146; | <ul style="list-style-type: none"> • The avoidance and minimisation SCL principles (s11 SCL Act). • Reflects the areas (size) and the location of mining activities as applied for in the application. • Post-disturbance treatments are in order to minimise the impact to SCL for permanent impacts, and to restore the land to its pre-development condition for temporary impacts. |
| 3 b) | Not stockpile or store, or allow the stockpiling and storage, of any hazardous mine wastes on cropping land outside the area allowed for mine surface infrastructure and mine surface facilities ; | <ul style="list-style-type: none"> • The avoidance and minimisation SCL principles (s11 SCL Act). • allows for the use of waste rock in the construction of dams and roads as noted in the application. |
| 3 c) | Only undertake quarrying activities within the subject mining tenement that are authorised under an Environmental Authority , and limit those activities to land within 60 metres of a centroid located at the GDA94-MGA Zone 55 coordinates of 639 170 mE and 7 350 480 mN; | <ul style="list-style-type: none"> • The avoidance and minimisation SCL principles. • Constrains the areas (size) and the location of quarrying activities as applied for in the application. |
| 3 d) | Not apply sewage, mine-affected water or other wastewater to cropping land . | <ul style="list-style-type: none"> • The avoidance SCL principle. • Activity not proposed in application |
| 3 e) | Install a synthetic liner that has a permeability of not more than 1×10^{-9} m/sec, and/or a clay liner having a design permeability of not more than 1×10^{-9} m/sec to all earthen storages intended to temporarily or permanently store or detain water, runoff water, sewage, mine-affected water or any other wastewater ; and | <ul style="list-style-type: none"> • The avoidance and minimisation SCL principles. • Reduce the risk of impacts to adjacent/offsite SCL from seepage |
| 3 f) | Progressively restore or rehabilitate any disturbed cropping land , with the necessary restoration or rehabilitation works being completed promptly following disturbance . | <ul style="list-style-type: none"> • The minimisation SCL principle • Minimises the duration of disturbance |
| 4 | Notwithstanding the limitations in condition 3, the holder of the subject mining tenement can undertake any resource activity within the subject mining tenement , which is fully compliant with the Strategic Cropping Land Standard conditions code for resource activities. | <ul style="list-style-type: none"> • If required, allows the holder to conduct activities under the SCL standard conditions code without having to apply for a compliance certificate. |
| 5 | Prior to the commencement of mining operations the applicant submit to the Chief | <ul style="list-style-type: none"> • The minimisation SCL principle • Conditions the commitment in the |

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| Condition number | Condition | Rationale |
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| | Executive for endorsement, a Soil Conservation Management Plan (SCMP) that... | application that plans of this nature will be provided to the chief executive for endorsement prior to commencing works. |
| 6 | The objectives of the SCMP are to be... | <ul style="list-style-type: none"> The minimisation SCL principle |
| 7 | The hydrological design of any new soil conservation works... | <ul style="list-style-type: none"> Identifies standard design criteria the plan must be consistent with. |
| 8 | The SCMP must, to the satisfaction of the Chief Executive ... | <ul style="list-style-type: none"> The minimisation SCL principle Outlines minimum requirements that the plan must address |
| 9 | The holder must comply with the most recent SCMP endorsed by the Chief Executive | <ul style="list-style-type: none"> over the life of the mining lease, there will be a number of "endorsed" plans, this conditions the holder to comply with the most up to date one. |
| 10 | The holder may at any time submit a revised SCMP to the Chief Executive for endorsement | <ul style="list-style-type: none"> allows for the holder to submit a revised plan at any time |
| 11 | Prior to the commencement of any works associated with..... | <ul style="list-style-type: none"> Conditions the commitment in the application that plans of this nature will be provided to the chief executive for endorsement prior to commencing works. |
| 12 | The objectives of the SSSRP are to be that... | <ul style="list-style-type: none"> The avoidance and minimisation SCL principles |
| 13 | The SSSRP must, to the satisfaction of the Chief Executive ... | <ul style="list-style-type: none"> The avoidance and minimisation SCL principles Outlines minimum requirements that the plan must address |
| 14 | The holder must comply with the most recent SSSRP endorsed by the Chief Executive | <ul style="list-style-type: none"> over the life of the mining lease, there will be a number of "endorsed" plans, this conditions the holder to comply with the most up to date one. |
| 15 | The holder may at any time submit a revised SSSRP to the Chief Executive for endorsement | <ul style="list-style-type: none"> allows for the holder to submit a revised plan at any time |
| 16 | The holder of the subject mining tenement must, without degrading other cropping land ... | <ul style="list-style-type: none"> The minimisation SCL principle |
| 17 | The holder of the subject mining tenement must... | <ul style="list-style-type: none"> Minimisation SCL principle Standard reporting requirements |
| 18 | Concurrent with the submission to the Chief Executive of the annual report and revised SCMP... | <ul style="list-style-type: none"> Minimisation SCL principle Standard reporting requirements |
| 19 | The holder of the subject mining tenement must keep and have available for inspection... | <ul style="list-style-type: none"> Minimisation SCL principle Standard reporting requirements |
| 20 | Prior to an area of strategic cropping land, as shown as 'Cropping Land' on the 'Protection Decision Plan SCLRD 2013/000146', being permanently impacted, mitigation must be provided for that area. | <ul style="list-style-type: none"> chapter 5 of the SCL Act section 114(4) of the SCL Act |

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Queensland
Government

Department of
Natural Resources and Mines

Attachment 2: Reasons for Decision

Reasons for SCL Protection Decision SCLRD 2013/000146

Strategic Cropping Land Act 2011 provisions

General provisions relating to SCL protection decisions

Section 99 of the SCL Act provides for what must be decided in making a protection decision, including:

- as to whether the development activity has a temporary or permanent impact on the land,
- the extent of the impacts,
- whether or not to impose SCL protection conditions on either or both of the proposed authorities.

Section 100 of the SCL Act provides additional scope and clarification for imposing SCL protection conditions.

Section 101 of the SCL Act provides criteria that the chief executive must consider in making a SCL protection decision and imposing conditions including the SCL principles.

Particular transitional provisions of the SCL Act related to application SCLRD2013/000146

The Springsure Creek Coal (SCC) Mine project is located wholly within the SCL central protection area where s 94 of the SCL Act characteristically constrains resource developments from having a permanent impact on the land except in "exceptional circumstances" as defined in Chapter 4 of the SCL Act. The restrictive effect of s94 of the SCL Act is defined as the *permanent impact restriction*.

The SCC Mine Project however is excluded from the *permanent impact restriction* as described in chapter 9, part 3, section 289 of the SCL Act. The exemption relates to Exploration Permit for Coal (EPC) 891 and applies to any environmental authority application and any resource application for a related mining lease, but only for resource activities described under the finalised Project EIS TOR published on 2 June 2011. MLA 70486 is wholly within EPC 891 and the activities applied for result from the EIS that resulted from the TOR published on 2 June 2011. The EIS assessment report was issued by the Department of Environment and Heritage protection on 7 November 2013. The exclusion means that the SCC Mine Project does not require an exceptional circumstances decision for any activity that may result in a permanent impact on SCL within MLA70486.

Section 290 of the SCL Act provides for two protection conditions that must be imposed on the Mining Lease and Environmental Authority respectively:

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

Section 290 also provides scope for additional SCL protection conditions which may be imposed on the SCC Project as follows:

- The authority under chapter 3, part 4 of the SCL Act to impose additional SCL protection conditions on the SCC Project is not limited unless the imposed conditions are inconsistent with the above conditions relating to the prohibition of open cut mining and undertaking reasonable measures to rehabilitate land impacted by mining.

This means that permanent impacts on SCL resulting from the SCC Project are potentially permissible under an SCL Protection Decision resulting from this assessment.

They are permissible to the extent that:

- open cut mining does not occur on the MLA70486;

- all reasonable endeavours are undertaken to rehabilitate all impacts on the land from underground mining (not necessarily restore the land impacted by underground mining to its predevelopment condition);
- impacts of all resource activities are avoided or minimised to the greatest extent practicable;
- any unavoidable permanent impacts on the land are mitigated; and
- the SCL principles are considered when applying conditions.

Reasons for decision

s. 101 (1)(a) Consider the extent of the impact of carrying out the resource activity on SCL

In considering "extent" DNRM has considered, for each assessable resource activity, its impact in terms of the location, area, nature of the particular activity or disturbance, and its duration.

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| Activity 1: | Mine industrial area, surface disturbances, ancillary mine infrastructure, access and haulage routes. |
| Location: | <p>Within MLA70486 proposed surface infrastructure and disturbances are confined in the main to "Den-Lo Park" (Lot 2/DSN856) with the coal export haul route extending in the North East on to "Springton" (Lot 2/SP141314). The application however qualifies the proposed location and extent of surface infrastructure and illustrated disturbances on Den-Lo Park as follows:</p> <p><i>"Disturbance areas presented within the application are based on the feasibility-stage design which is conceptual in nature. Detailed design is yet to be undertaken. Detailed design will occur following receipt of initial project approvals, including the SCL protection decision."</i></p> <p>With this in mind, the application assessment and conditioning recognised the possibility for contraction, expansion and re-positioning of these disturbances within the confines of "Den-Lo Park". The assessment also considered the resulting opportunities or consequences for SCL impact avoidance and minimisation that may be associated with fine tuning the layout of surface infrastructure and associated disturbances and their remediation.</p> |
| Area: | <p>The dedicated footprint of surface which the applicant has determined to impact on 63ha of SCL includes:</p> <ul style="list-style-type: none"> • a cut and cover (an access tunnel; constructed in a shallow trench and then covered over by backfilling); • two drifts (sloping access tunnels) designed to transport mining infrastructure, personnel and product coal between the mine and surface; • a coal handling infrastructure area (CHIA); • a mine infrastructure area (MIA); including administration; bathhouse; workshops; warehouse; fuelling facilities; rescue and emergency complex and helipad. The vent fan and mine services are separately located approximately 2km SSW of the central MIA; • several mine site dams; including dewatering dam, raw water dams and mine surface water management dams; • a potable water treatment plant (PWTP); • a sewage treatment plant (STP); • internal site access roads; • coal haul route extending from the CHIA to the infrastructure corridor located on MLA70502; • a (approx. 1ha) quarry established at an existing gravel scrape but |

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| | <p>with no figure put on the area of its expansion. Note that this proposed quarry is outside of the MIA and within the area proposed to be impacted by subsidence.</p> <p>The applicant has determined that associated surface disturbance and impacts on SCL within and surrounding the illustrated infrastructure footprint that are attributable to construction and earthmoving surrounding work sites, access and construction links between particular elements of infrastructure, waste rock dumps, sediment and erosion control works and overland flow capture and diversion to storages will be contained within the maximum 62ha infrastructure/disturbance footprint (excluding quarrying) as described. This is despite these inevitable sources of disturbance to SCL not being illustrated within the plans and ESRI Shapefiles provided in support of the application.</p> <p>The application states that run of mine coal will be exported directly to the proposed rail load out facility without any on-site processing or beneficiation and that “no approval is sought for coal beneficiation infrastructure or rejects management.” Reflecting this, the conceptual mine plan provided does not contain a coal wash plant, rejects removal or tailings ponds.</p> <p>The applicant has determined that an additional 19ha of SCL will be impeded from being cropped over the duration of the mine operation due to its close proximity to mining infrastructure fragmenting and alienating that SCL from adjoining areas of undisturbed SCL.</p> <p>The application claims that all impacts on SCL (alterations to the land and impediments to cropping) as a result of surface infrastructure and disturbance (except soil stockpiling) will be confined to this 82ha extent (62ha infrastructure disturbance footprint + 19ha impeded cropping + 1ha quarry).</p> <p><i>Note regarding the extent of impacts from quarrying applied for:</i></p> <p>Following a review of draft conditions prepared by DNRM, the applicant informally requested (the application was not formally amended under s98 of the Act) that the Department consider permitting further impacts on SCL within an expanded area for basalt quarrying of up to 40ha (rather than 1ha) and with an operational footprint of up to 5ha at any one time. The application and the proposal for expanding the area originally applied for (to be impacted by quarrying) lacked a demonstrated requirement for quarrying within MLA70486 that was based on knowledge of the quantity and competency of the resource that may be able to be recovered from the mine drift and various other excavations into the regolith that will occur during mine establishment and operation. The application and the proposal also lacks evidence of the existence of a given quantity and competency of basalt material in a given location within the mining lease where quarrying is proposed. Without a demonstrated requirement for any particular volume of quarry rock (not available elsewhere), nor evidence of the existence or suitable quality of any quarry rock resource on ML70486, a decision on the extent of any potential quarry and whether the resultant impact has been avoided and minimised to the greatest extent practicable, cannot be made. The applicant was advised of this assessment and the application remained un-amended in this regard.</p> |
| <p>Nature of activity/disturbance proposed:</p> | <p>The nature and scope of activities that impact* on SCL recognised in the application and by DNRM include:</p> <ul style="list-style-type: none"> • Exclusion of cropping from the land due to occupation by mine infrastructure and mine operations and restrictions on access to fragments of SCL alienated by surrounding infrastructure or mine operations. • Site preparation involving topsoil and subsoil stripping estimated 413,000m³ total volume, cut and fill to create level areas for construction hardstands, storage areas, vehicle parking, levelling for |



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| | <p>internal roadways, levelled coal handling hardstands, concrete slabs and footings for built infrastructure.</p> <ul style="list-style-type: none"> • Soil mixing and compaction associated with earthmoving and heavy vehicle traffic during site preparation, construction and operation. • Establishment of sediment and erosion control structures around immediate sites of soil disturbance and construction. • Outdoor hardstands, stockpads and building platforms, dam and road construction including associated drainage systems and run off control. • Bulk excavations to establish access to underground operations and the coal seam yielding an estimated 526,000m³ of overburden and waste rock to be either stored or utilised on the surface during mine construction and operation. • Quarrying over an undefined area to obtain an estimated 20,000m³ of basalt to meet requirements for ongoing maintenance during the mine operation. • Alteration and disruption of predevelopment drainage patterns in order to establish controlled drainage and capture and treat of mine run off over its operational life. • Potential for contamination of soils with foreign material and substances during construction and mine operations. • Potential for soil erosion losses during construction and also during stockpiling of topsoils and subsoils over an expected 40 years. • Potential for compaction and soil structure decline of topsoils during their salvage and stockpiling due to compaction by machinery and being worked when moisture levels are above the soil's plastic limit. <p><i>*Impacts on SCL are recognised as any impediment to cropping the land that did not exist predevelopment, or any alteration to the predevelopment condition of the land as per s14 of the SCLA.</i></p> |
| Duration: | <p>The application states that the mine lease will provide for 30 years of tenure which may be extended subject to approval. The operational life of the mine quoted in the EIS assessment report and based on current knowledge of the resource and predicated extraction rates is 40 years. The application states that the mine will be decommissioned and all impacts restored within 30 years. This does not seem a likely duration for the mining activity and particularly the duration of its impacts given the estimated life of the resource extraction, the years required to achieve site rehabilitation following mine closure and also the potential for the mining period to be prolonged as a result of fluctuating market conditions and climatic events. There is also an absence of detailed mine planning and closure plans at this conceptual stage of the mining proposal. Consequently without this information, the duration of mining activity and particularly the enduring impacts on SCL, cannot be established with any certainty.</p> <p>Given the lack of detailed site investigations, mine development and rehabilitation planning that might provide further certainty with respect to the nature and extent of mining activity impacts on SCL and the challenges and likelihood of restoring them, it is not reasonable to presume that on balance, all impacts on SCL of surface infrastructure and disturbance will at some point in time be restored to pre-development condition and all impediments to cropping removed. Hence the duration of impacts on SCL of surface infrastructure and associated disturbances are currently considered to be indefinite and in excess of 50 years.</p> |

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| Activity 2: | Coal extraction area – long wall mining and subsidence |
| Location: | Within MLA70486 the full extent of proposed longwall mining panels in addition to surface infrastructure are identified in within various figures provided and by way of ESRI Shapefiles provided following their requisition. |
| Area: | <p>An illustrated 7064ha area representing the arrangement of longwall panels, excluding barrier pillars and main headings, is the area of SCL considered by the applicant that will be impacted by mine subsidence. It includes the areas of SCL within the current layout of longwall panels and Chain Pillars. The SCL overlying the pillar supports for the Main Headings and the intermittent Barrier Pillars is not expected to be impacted by subsidence beyond the convex draw-down of the landform over the pillars and tension cracking or faulting at these locales. There is potential for additional areas of SCL to be impacted by works conducted to remediate and control adverse effects of subsidence, particularly soil erosion and diversion of surface flows. In the absence of subsidence management plans, it is not possible to predict the additional area of SCL that may potentially be affected by such works. However the applicant maintains that the area of alteration to the landscape and introduced impediments to cropping - as a result of subsidence and its remediation - will not exceed 7064ha.</p> <p>The applicant has also requested a degree of flexibility for the realignment of panels and headings at a later date to not be constrained by conditioning a protection decision to specifically comply with the longwall layout provided in the application. This can be accommodated by nominating a larger area of land that may potentially be impacted by underground mining and subsidence but constraining the impacts to no more than 7064ha within that area.</p> |
| Nature of activity/disturbance proposed: | <p>Coal extraction via underground longwall methods is proposed to commence on Den-Lo Park once the construction of mine surface infrastructure and facilities, including the proposed haulage route are complete.</p> <p>Extraction rates are estimated initially to be 5.5Mtpa (100ha per year) by sequentially advancing single longwalls in a Northward orientation underneath Den-Lo Park. After four years it is planned to increase coal extraction to 11Mtpa (200ha per year) by moving to the next phase of dual longwall extraction underneath neighbouring properties within the MLA by extending longwalls NE and SW of the central roadway and main headings that run NW-SE across the MLA as depicted in figures and shapefiles provided in support of the application.</p> <p>Longwall panels are planned to be a nominal 300m wide and up to 3.6m high depending on mineable height of coal seam. Each longwall panel is separated from the next by supporting "Chain Pillars" that range in width between 35m and 55m. Sequences of up to 8 parallel panels are bookended by "Barrier Pillars" up to 160m wide. Longwall panels initiate from the "Main Headings" (approx. 210m wide) which are the principle 'arteries' providing safe access and services throughout the mine during its operation.</p> <p>Topographical changes experienced at the surface as a result of coal extraction from the longwall, generally occurs in the form of a depressive wave, which moves across the ground surface at relatively the same speed as progress of coal extraction from the longwall face - approximately 120m per week. As the coal shearer and hydraulic roof supports progress forward, the overlying rock strata (overburden) collapses in behind. The majority of consequent subsidence experienced at the surface occurs immediately (within a month) of the roof collapsing into the void (GOAF) that is left by the extracted coal seam. A lesser portion of 'residual' subsidence (5-10% of total) due to overburden settling, chain pillar collapse and consolidation is expected over a 12 month period after the a panel is mined and collapsed.</p> <p>Subsidence does not occur uniformly or smoothly across the landscape. The</p> |



magnitude of subsidence above a collapsed longwall is relative to the depth and thickness of the extracted coal seam and the structural integrity and behaviour under stress of the overlying rock strata.

At the surface, the greatest increases in slope due to subsidence are experienced at the margins of longwall panels along the edge of support pillars or along the perimeter of unmined land.

The relatively narrow chain pillars that separate individual panels are subject to incremental collapse as parallel panels are mined and the pillars are subjected to increasing load. By contrast the more structurally robust barrier pillars that bookend a series of up to 8 panels and the pillar support structures that protect main headings and the perimeter of unmined land are more resilient and less vulnerable to collapse. These unsubsidised ramparts that stand immediately adjacent to subsided panels, result in more exaggerated and contrasting effects at the surface in terms of tension cracking and abrupt slope increases than the tensions and slope increases likely to be experienced either side of the narrow and less resilient chain pillars that are more vulnerable to collapse.

The application provides generalised illustration of the predicted depths and extent of 'unmitigated' subsidence if all of the available coal within MLA70486 is extracted as proposed. Because this is a modelled expression of subsidence, it does not reflect the complexity and irregularity in surface conditions on the ground that will be experienced as subsidence engages with the existing (pre-development) landform and drainage systems and also as a result of subsidence variability that is dependent on the depth and thickness of the extracted coal seam and the resilience under load of different pillar support systems and surrounding unmined land.

Overall subsidence predictions vary across the project area ranging from 0.27m to 2.5m with no subsidence occurring beyond the project boundary. Predicted induced tilts from pillar to the subsided base within the longwall are in the order of 1.0% – 3.0%. Depending on where this occurs in relation to existing topography, slopes in areas of existing cropped land may be induced by subsidence to exceed 4% which is the a tipping point for the conservation of soils under cropping.

The nature and scope of impacts* on SCL resulting from the proposed longwall mining and approaches to remediation recognised in the application and by DNRM are detailed below:

Impacts on SCL from subsidence can be considered in several phases of change brought about by the process of longwall mining and attempts at remediating the impacts of subsidence:

1. Direct physical alteration to original landform and soil properties due to the collapse of mined longwalls and any impediments that this may introduce to cropping those landforms and soils.
2. Secondary physical changes brought about by the natural processes of rainfall, run-off and flood engaging with the altered landform and soils and any impediments to cropping that this may introduce.
3. Further physical changes to the landform and soil properties brought on by human intervention aimed at minimising the adverse consequences of subsidence for soil conservation, agricultural land uses and future production.

The impacts on SCL associated with these phases of change are explored below.

Direct physical alteration to the land experienced as a result of subsidence includes:

- Slope increases due to convex draw-down of the land surface over

support pillars and at the margins of the mined area.

- Tension cracking and shearing or faulting on the surface experienced at the margins of longwalls. The severity is dependant on the degree of subsidence in the longwall relative to adjacent unsubsidised land, the original slope of the land and the depth and elasticity of the soil profile that is subject to deformation pressures.
- Lengthwise depression of the (overlying) predevelopment landform above the centre of extracted longwall panels.
- Obstruction and retardation (or alternatively steepening) of overland sheet flow, drainage lines, gullies, watercourses and man-made drainage structures.
- Localised compaction and associated buckling (upheaval) of soils at concave focal points within the margins of the longwall as the longwall extraction face progresses up the panel and residually around the margins of the extracted panel once mining is complete.

Impediments to cropping likely to be introduced by these expected changes in landform and soil properties include:

- ~ increased difficulty and reduced efficiency in operating broad-width agricultural equipment on more irregular and complex slopes.
- ~ Reduced trafficability in locations where surface tension cracking or compression buckling is pronounced.
- ~ Potential for increased soil bulk density and reduced water holding capacity where compression and buckling is pronounced.
- ~ Reduced retention of soil moisture and disruption of pre-development surface and subsoil water movement in areas subject to tension cracking or faulting.
- ~ The rendering of existing soil conservation structures (contour banks, collection drains and disposal systems) as dysfunctional due to alterations in slope and drainage patterns.
- ~ The rendering of existing flood irrigation systems as dysfunctional due to the disruption of the designed even fall across furrows, feeder channels and tailwater collection systems.

Damage to and resulting dysfunction of existing irrigation infrastructure (designed earthworks for stream and overland flow diversion, collection and water holding) due to alterations in slope and drainage patterns.

Secondary physical impacts resulting from the interaction of rainfall, run-off and flooding with the altered landform include:

- Increased soil erosion hazard on cropped land in areas of increased slope.
- Increased soil erosion hazard due to the unsuitability and dysfunction of retained soil conservation, drainage and irrigation structures and systems that are unsuited to the modified landform.
- Increased soil erosion hazards in areas experiencing re-directed or concentrated overland flow – particularly in relation to gullies and creek lines.
- Increased soil erosion hazard and associated scouring in steepened segments of drainage lines.
- Ponding and sedimentation in lower slope positions where the efficiency of existing drainage systems (natural or man-made) have been impeded due to a reduction in slope or obstruction of surface

drainage.

Impediments to cropping likely to result from these impacts include:

- ~ Reduced long term productivity in areas subject to soil loss due to reduced topsoil depth and poorer quality of underlying subsoils.
- ~ Reduced trafficability and crop yields in areas subject to ponding in wet years.
- ~ Increased variability and reduced predictability in soil moisture conditions across paddocks due to greater slope complexity within paddocks which has implications for crop selection, cropping options, disease susceptibility, trafficability and timing of agricultural work.

Additional changes to land form and soil properties resulting from proposed or advisable subsidence remediation and soil conservation measures include:

- Reduced topsoil depth in locations subject to mechanical grading and re-levelling
- Increased topsoil depths in locations subject to infill.
- Soil compaction and soil profile mixing as a result of broadscale landscaping and topsoil redistribution.
- Increased frequency and intensity of necessary soil conservation structures and drainage systems at the paddock scale.
- Necessary introduction of erosion control structures and armoring of relocated drainage lines or existing drainage lines to prevent scouring where flow velocities and shear forces have been increased.

Impediments to cropping likely to result from these impacts include:

- ~ Reduced long term productivity in areas where topsoil depths have been reduced by borrowing topsoil in the processes of remodelling the altered landform or the construction of additional soil conservation structures.
- ~ Reduced area of SCL available for cropping due to increase in the area of paddocks occupied by soil conservation, drainage and erosion control structures and works.
- ~ Alienation of land from cropping where subsidence-induced tilt results in slopes approaching and exceeding 4%, at which soil erosion hazards and the complications and costs of controlling rainfall runoff and soil loss and subsequent reduced productivity may outweigh the returns from cropping that land.
- ~ Localised alienation of land from cropping where the disruptions to the predevelopment landform makes ongoing cultivation impractical.
- ~ Deferment of cropping on SCL for the number of years that it takes to stabilise the land with a perennial cover crop (pasture), remove existing soil conservation and drainage structures, mine the land, allow for it to fully subside and stabilise, re-design and introduce appropriate soil conservation and drainage structures that are suited to the post-mining landform and re-commence cropping. For some paddocks this period of cropping deferment may be in the order of 5-10 years based on the expected rate of longwall progression underneath the paddock (120m per week). This is currently recognised as best practice for soil conservation on cropped land impacted by mine subsidence. No evidence-based alternative approach has been put forward in the application.

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| | <p>~ Increased costs and inefficiency associated with continuing to crop in a steeper and more complex landform and within the confines of more tightly spaced and erratically aligned contour banks and collection drains.</p> <p>~ Increased costs, complexity and agronomic difficulties associated with persisting with irrigated cropping using alternative irrigation systems (pivot or travelling overhead sprinklers) in the absence of pre-existing flood irrigation systems.</p> <p><i>*Impacts on SCL are recognised as any impediment to cropping the land that did not exist predevelopment, or any alteration to the predevelopment condition of the land as per s14 of the SCLA.</i></p> |
| Duration: | <p>The SCL application states mining will cease in 30 years though the EIS assessment reports the operating life of the mine to be 40 years.</p> <p>No reliable timeframe has been given for rehabilitating or remediating the impacts of longwall subsidence. A subsidence management plan has not been formulated but has been required as a result of the EIS assessment process.</p> <p>The application puts forward conflicting statements about the intended subsidence remediation process including:</p> <ul style="list-style-type: none"> • reporting that there will be no disruption or suspension of cropping on land as it is mined and subsided, • reporting that soil conservation structures will be modified progressively as longwalls are subsided (progressively across a paddock), • reporting that subsided land will be remodelled and remediated on a paddock by paddock basis, • reporting that following remediation all SCL will be returned to a state where it is zonal criteria compliant including in terms of topsoil depth (>600mm) and slope (<3%) without demonstrating how this will be achieved in terms of earthworks and soil redistribution within the existing site constraints of limited pre-development soil depths, vulnerability of soils to degradation through compaction and mixing and recognition of existing slopes within paddocks and the impacts of subsidence on these existing slopes. <p>It is evident from the impacts recognised in this report that subsidence will result in changes to the pre-development landform and drainage patterns across the MLA that will remain in perpetuity.</p> <p>It is evident from some of the approaches to remediation put forward in the application, that measures taken to minimise adverse impacts of subsidence on the soil resource and agricultural land uses will additionally result in irrevocable changes to the depth and quality of topsoil at particular sites.</p> <p>It is evident that post-mining cropping enterprises will face additional complexities and difficulties that are directly attributable to underground mining and consequent subsidence that will remain in perpetuity.</p> <p>It is evident that some areas of SCL that were previously available for cropping will no longer be available for cropping due to the re-engineering of drainage patterns and soil conservation measures that will need to be implemented in order to conserve the soil resource given the increases in erosion hazard attributable to subsidence-led slope increases and landform complexity.</p> <p>Consequently the duration of these alterations to the land and impediments to cropping are expected to exceed 50 years.</p> |

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| Activity 3: | Topsoil and subsoil stockpiling |
| Location: | Den-Lo Park (Lot 2DSN856). Centre point of proposed stockpiling area: E638900 N7354800 (MGA94). |
| Area: | 70 ha (indicative) |
| Nature of activity/disturbance proposed: | <p>The nature and scope of impacts* recognised in the application and by DNRM that may potentially arise from the stockpiling of soils include:</p> <ul style="list-style-type: none"> • Subsoils salvaged from the disturbance footprint for mine surface infrastructure and the various mine site excavations are proposed to be stockpiled to the west of the main infrastructure area. In the case of subsoil stockpiling, this will prevent the land from being cropped for the duration of stockpiling. Whether stockpiling of topsoils will result in a similar impact is dependent on the particular strategy chosen and its adequate justification in terms of minimising impact on the SCL soils that have been salvaged and the area of SCL occupied by their storage. • No materials balance has been provided to verify salvaged topsoil and subsoil volumes and requirements for soil stockpile areas. • The application proposes respreading Vertosol topsoils (Sullivan SMU) that have been stripped from the disturbance footprint of surface infrastructure and respreading it at 300mm depth over an indicative 70ha of SCL further upslope. The SCL within the indicative stockpiling area is characterised by a disparate soil type (Kilmore SMU) that is described as a red duplex soil in the application report. The intent of this strategy is described as improving the productivity of the poorer quality Kilmore soils. This is regarded by the applicant as being in preference to stockpiling the better quality Vertosols for the duration of the mining period and preventing them from being cropped during this time. • No soil conservation plans or sediment and erosion control plans have been developed for the proposed stockpiling strategy or that address the additional risks of soil loss associated with re-spreading the salvaged Vertosols at 300mm depth over land that will continue to be cultivated and cropped as opposed to preserving these high value soils in large stockpiles within an area of controlled drainage that occupies a significantly smaller area as per industry practice. • While no soil management plan has been prepared to justify the strategy for respreading topsoils as opposed to stockpiling, it is suggested in the application report that a suitable strategy will be developed in consultation with DNRM – presumably prior to disturbances on SCL taking place. • The risks to SCL impacted by stockpiling include: <ul style="list-style-type: none"> – Loss of available areas of SCL for cropping while occupied by stockpiles and that lost to necessary sediment and erosion control systems and exclusion zones. – Excavation and drainage associated with necessary sediment and erosion control systems installed in and around the stockpiling area. – Mixing of insitu topsoils with introduced subsoils and topsoils. – Compaction of insitu topsoils by machinery during stockpiling and retrieval of salvaged soils. – Compaction of insitu topsoils and reduced biological activity as a result of long-term burial at depth. – Erosion of insitu topsoils around stockpile areas due to |

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| | <p>concentration of runoff and diversion around stockpiles.</p> <ul style="list-style-type: none"> - Stockpiles can be a source of weeds and pests that impact on surrounding crop land and introduce additional impediments for cropping. <p><i>*Impacts on SCL are recognised as any impediment to cropping the land that did not exist predevelopment, or any alteration to the predevelopment condition of the land as per s14 of the SCLA.</i></p> |
| Duration: | <p>The duration of stockpiling is expected to be at least 40 years. Stockpiling should involve limited disturbance to the soils and landform in the area to be utilised for stockpiling. Potential should exist for the restoration of predevelopment condition and removal of all impediments to cropping areas of SCL within the stockpiling footprint and within 50 years, depending on the applicant's successful development and implementation of appropriate soil salvage and stockpiling management plans.</p> |

s. 101 (1)(b): Whether the carrying out of the resource activity will have a permanent impact of temporary impact on the land

In considering whether the impact is permanent or temporary, DNRM has considered, for each assessable resource activity, its impact in line with the following.

Section 14 of the *Strategic Cropping Land Act 2011* (SCL Act) provides for permanent and temporary impacts to SCL. To be considered a permanent impact a development (including resource activities) need only meet one of the following three considerations – s14 a, b, or c.

- a) If the development activity introduces an impediment to cropping for any period of time and that impediment endures for 50 years or more, that is a permanent impact irrespective of the current land use (ie. if it is currently being cropped or not). There is no definition of "Impede" in the SCL Act, accordingly DNRM has reverted to the ordinary meaning in the Macquarie Dictionary. Land may be impeded from being cropped due to its direct occupation by development activities or restrictions on access (for example safety or legal restrictions) to areas of land during the life of the development or beyond. Impediments to cropping may be partial (as in an additional restriction, complication or cost on cropping that is caused by the development) or absolute (as in the complete exclusion of cropping from the land while it is occupied by the development).
- b) If the development activity results in land disturbance that alters the "pre-development" condition of the land, and if that condition is unable to be restored, the impact is permanent. The land's condition at the point in time prior to the development commencing, is taken to be the benchmark against which impacts that are attributable to the development are compared. This could entail (amongst other things) an alteration to the soil profile or soil properties, changing the topography, or altering the surface or subsurface drainage characteristics and conditions of the land including any modifications or improvements to the land that existed prior to the impacting activity.
- c) an activity which is or involves open cut mining or storing hazardous mine wastes including for example, tailings dams, overburden or waste rock dumps are automatically considered as having a permanent impact on the land, regardless of what forms of rehabilitation may be pursued to reduce the severity of their impacts on the land.

A temporary impact s14(4) is an impact that does not qualify as a permanent impact – being if all impediments to cropping are removed within 50 years, and the land can and will be restored to its pre-development condition.

Pre-development condition is defined in Schedule 2 - dictionary. "... means the land is restored to—

- a) its condition before the development started; or
- b) if the condition can not be worked out—a condition consistent with contiguous SCL for the land

- DNRM's position is "Pre-development" is prior to the proposed activity commencing, not prior to any previous development. i.e. DNRM currently include any improvements (eg laser levelling, contouring) previously made by a landholder when appraising the land's pre-development condition.
- the "condition" of the land is not further defined. As the definition, as well as the definitions of temporary and permanent impact, state the "land", as opposed to "soil" or "SCL", DNRM considers the "condition" to be a measure of a combination of including but not limited to:
 - soil profile characteristics

- chemical, physical and biological properties and processes within the soil
- pre-development landform, land cover, topography, overland flow and sub-surface drainage characteristics,
- land improvements (eg levelling, drainage modification)

In practice the “measure” of pre-development condition should be tailored to the nature of the expected impacts. For example, if the impact is likely to only affect chemical properties of the soil, the relevant measure of predevelopment conditions should be more focused on the chemical attributes of the soil and potentially the physical and biological consequences of a change to soil chemistry, as opposed to attempting to benchmark and monitor changes to other physical attributes of the impacted site such as landform or depth of topsoil which would be expected to remain unchanged.

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| <p>Activity 1a:</p> | <p>† Permanent Impact activity:</p> <p>63ha area of material impacts on SCL associated with the mine industrial area, ancillary mine infrastructure, surface disturbances including bulk excavations and quarrying, ROM coal handling, access and haulage routes – all restricted to Den-Lo Park.</p> <p>Note: the area of permanent impact attributable to 1ha of quarrying is removed from the final accounting of the area of permanent impacts associated with surface infrastructure and facilities as the quarry site is an existing gravel scrape lying within the proposed 7064ha longwall footprint.</p> <p>† <i>Permanent Impact defined under s.14(1-3).</i></p> |
| <p>Justification:</p> | <p>Establishment of the surface mine infrastructure, underground access, coal handling facilities and other surface disturbances including site drainage, quarrying and storage or usage of extracted waste rock involves significant material impacts to the soils, landform and drainage patterns across the site. Site plans are at this stage only conceptual in nature and are subject to change as mine planning progresses. The application is unsupported by the benefit of detailed engineering and site plans and is without development of any restoration or rehabilitation plans that could be relied upon to form the basis of deciding that a temporary impact will result from the development. There are no precedents for SCL affected by development of this type being restored to predevelopment condition. In addition, the estimated duration of coal extraction from MLA70486 is estimated to be in the order of 40 years. Whether or not the mine closure and rehabilitation objectives would be able to be completed within 50 years of commencement is also uncertain given the scale of works and levels of disturbance involved. Mine rehabilitation requirements governed by the proposed EA also do not meet standard required for the impact on SCL to be considered as temporary. Based on the lack of documentation of the extent and nature of the construction and disturbance activities required to establish the mine and the lack of any accompanying evidence that the impacts of these activities on the land can and will be restored to its pre-development condition, the impacts of these activities are considered to result in permanent impacts on SCL.</p> |
| <p>Activity 1b:</p> | <p>Ω Temporary Impact activity:</p> <p>19ha area of impeded access to SCL for cropping, associated with the mine industrial area, ancillary mine infrastructure, surface disturbances including bulk excavations. ROM coal handling, access and haulage routes – all contained on Den-Lo Park.</p> <p>Ω <i>Temporary Impact defined under s.14(4).</i></p> |
| <p>Justification:</p> | <p>The application report sustains that the area of SCL to be alienated from cropping due to its proximity to mine infrastructure and fragmentation will not be materially impacted by any mine activity other than the restriction of access to</p> |



| | |
|-------------------------|--|
| | <p>the land for unimpeded agricultural use. If this land remains undisturbed by mining activities and is protected from soil loss, weed invasion and other forms of land degradation throughout the mining period, its exclusion from being available for cropping should be temporary and able to be restored within 50 years as long as the surrounding areas that are impacted by infrastructure are also able to be returned to cropping within that period.</p> |
| Activity 2: | <p>† Permanent Impact activity:</p> <p>7064ha of material impacts on SCL associated with the longwall mining and subsidence on Den-Lo Park, Springton, Cowley, Cedar Park and Arcturus Downs.</p> <p>† <i>Permanent Impact defined under s.14(1-3).</i></p> |
| Justification: | <p>The landform and drainage characteristics across the extent of farming systems and SCL impacted by subsidence will be permanently changed as a result of mine subsidence. Additional changes to the soils and landform within the mine footprint will take place as a result of soil erosion and redistribution in the face of diverted runoff and stream flows and the necessary attempts to address the adverse consequences for soil conservation and ongoing agricultural land use. These changes to the landform, soils and drainage characteristics of the landscape are unable to be completely reversed by any conceivable means provided within the application. These changes therefore constitute a permanent impact on SCL. In addition the changes to the landform and drainage characteristics and the necessary revisions in soil conservation and drainage works required to conserve agricultural soils in the modified landscape, will result in enduring complexities and difficulties for cropping enterprises that did not exist prior to the land being subsided. These enduring impediments also constitute a permanent impact on SCL. The underground mining activity proposed and the necessary approaches to remediating and minimising its adverse consequences for the landscape and ongoing agricultural production are therefore considered to result in permanent impacts on SCL.</p> |
| Activity 3: | <p>Ω Temporary Impact activity:</p> <p>Potentially 70ha of material impacts on SCL associated with topsoil and subsoil stockpiling on Den-Lo Park.</p> <p>Ω <i>Temporary Impact defined under s.14(4).</i></p> |
| Justification: | <p>Stockpiling of salvaged topsoils and subsoils will only be required during the life of the mine which is expected to be in the order of 40 years, after which the stockpiles should be removed and redistributed as part of mine infrastructure decommissioning, reinstatement of landform and site rehabilitation. After stockpile removal, the land directly impacted should be available to return to cropping use. Given that stockpiling should involve limited disturbance to the soils and landform of the area to be utilised for stockpiling, potential should exist for the restoration of predevelopment condition and removal of all impediments to cropping within the stockpiling footprint. It is recommended that this restoration objective be pursued through development and implementation of an appropriate soil salvage and stockpiling management plan. It is also possible, as a result of development of such a plan and in the process exploring the most cost-effective and appropriate strategy for topsoil preservation over an expected 40 year period, the area of SCL to be temporarily impacted by the soil stockpiling activity may be further reduced. This may be achieved by pursuing an alternative topsoil stockpiling strategy to respreading the soils over a relatively large area as is proposed in the application. This would effectively reduce and minimise the extent of impacts on SCL resulting from stockpiling.</p> |
| Other Activities | <p>Ω Temporary Impact activity:</p> |



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| | <p>Potential activities carried out on SCL within the MLA70486 that may be able to comply with Part 2 or Part 3 of the SCL Standard Conditions Code for Resource Activities such as construction of temporary access tracks, soil and geotechnical surveys, laydowns, buried linear infrastructure and temporary accommodation less than 21 EP.</p> <p>^Ω <i>Temporary Impact defined under s.14 (4).</i></p> |
| Justification: | <p>The applicant has not directly sought to obtain an SCL Compliance Certificate to enable activities such as those described to be conducted on SCL within the MLA70486. The application does not provide a high level of detail about the component infrastructure and disturbances associated with establishing and operating the mine. However it is conceivable that the Springsure Creek Coal Project will potentially give rise to a need to carry out activities not mentioned in the application that have potential to comply with the SCL Standard Conditions Code for Resource Activities. It is not the intent of this decision to restrict those activities from being conducted on SCL where it has been identified that they cannot be avoided and that their impacts are able to be made temporary in accordance with the code requirements.</p> |

s. 101 (1)(c) Whether the applicant has demonstrated that the impact have been avoided or minimised to the greatest extent practicable.

Avoidance of SCL

The application accepts the extent of mapped potential SCL within the MLA70486 as providing a reasonably accurate representation of the extent of land that might comply with the relevant SCL Zonal Criteria and has accepted that the extent of potential SCL be taken to be SCL for the purposes of the assessment. Given the pervasive extent of SCL across the MLA70486, there are limited opportunities for the proponent to avoid its surface and underground activities from impacting on SCL.

It is accepted that the extent of SCL to be impacted by mine subsidence is unavoidable if the resource is to be extracted by the proposed extraction methods.

The extents of some activities – particularly coal handling, quarrying, waste rock disposal and soil stockpiling – are however unsubstantiated by any planning detail in terms of material balances and operational requirements. Also given the conceptual nature of the mine layout provided, there is limited justification for the actual areas of SCL to be impacted by various activities. More detailed planning particularly around site layout, controlled drainage and stockpiling activities may present further opportunity to avoid certain impacts on SCL in terms of total area of SCL affected or the degree of fragmentation of SCL by the arrangement of surface infrastructure and associated earthworks.

In order to be fully satisfied that all impacts on SCL have been avoided to the greatest extent practicable, the Chief Executive has conditioned the provision of further detail particularly around soil stockpiling, soil conservation plans, and the design capability of drainage controls and water management infrastructure. The Chief Executive must be satisfied with the further detailed information prior to SCL being impacted..

Minimisation of impacts on SCL

The application provides limited detail on how potential impacts on SCL documented in the application and this Statement will be sought to be minimised in terms of severity or extent. The application report does list generalised approaches to remediating impacts, some of which themselves result in impacts which may be better avoided (for example stripping topsoils from cropping land to fill in depressions and reduce the steepness of slopes along panel margins that have been induced by subsidence). The application in the main leaves the detail surrounding SCL impact minimisation and subsidence management to be addressed through further development of the Environmental Management Plan (Environmental Protection Act requirement) and also subsidiary plans for managing subsidence, topsoil, erosion and sedimentation, surface water, mine closure and rehabilitation. This is in addition to the proposed future work of the Springsure Creek Agricultural Coexistence Research Committee on developing cropping systems that can 'co-exist' with consequences of mine subsidence.



In order to be fully satisfied that all reasonable endeavours will be taken to rehabilitate and minimise the unavoidable impacts of mining on the landscape and its future agricultural use, the Chief Executive has conditioned the provision of further detail particularly in the areas of in-paddock management of subsidence on cropped soils, re-design of soils conservation systems and drainage control works, decommissioning and rehabilitation of surface infrastructure. The Chief Executive must be satisfied with the further detailed prior to SCL being impacted

s. 101 (2): In imposing SCL protection conditions, the Chief Executive must consider the SCL Principles:

In considering imposing conditions DNRM has considered the principles of the SCL Act and their meanings as provided in section 11 of the SCL Act. SCL principles are: *Protection; Avoidance; Minimisation; Mitigation; Productivity.*

The SCL Principles will be achieved for this development in the following manner and have been taken into consideration when imposing the conditions:

Protection

MLA70486 is located within the SCL Central Protection Area. Transitional provisions within the SCL Act however permit the SCC Project to have permanent impacts on SCL without being encumbered by the *permanent impact restriction* as defined in section 94 of the Act.

Section 290 of the SCL Act defines the scope for SCL protection conditions which may be imposed on the SCC Project as follows:

- No open cut mining can be carried out under the mining lease; and
- The SCC Project must apply all reasonable endeavours to rehabilitate all impacts on the land from underground coal mining carried out under the lease; and
- The authority under chapter 3, part 4 of the SCL Act to impose additional SCL protection conditions on the SCC Project is not limited unless the imposed conditions are inconsistent with the above two conditions.

This scope provided for conditioning does not support the application of the protection principle in terms of prohibiting permanent impacts on SCL within the MLA70486.

Avoidance

The impacts of mining and subsidence on SCL or potential SCL can be avoided to the greatest possible extent by prohibiting open cut mining on the lease in addition to prohibiting stockpiling or storage of hazardous mine wastes including disposal or storage of overburden, waste rock or mine tailings as the application asserts will be the case and restricting the extents of permissible disturbances on SCL or potential SCL to those extents confirmed in the application.

As the layout of mine surface infrastructure and disturbances presented within the application are only "conceptual" and further detailed planning is expected prior to construction, the impacts of mining and subsidence on SCL will be avoided where reasonably practicable by requiring the proponent to further justify the area of impacts associated with mine surface infrastructure and facilities on Den-Lo Park through further detailed planning and rationalisation of the area of SCL impacted.

Minimisation

The impacts of mining and subsidence on SCL will be minimised to the greatest possible extent by requiring the proponent to develop and implement reasoned and auditable soil conservation and management plans. These plans will demonstrate and regulate how soil losses, structural degradation, contamination and disturbance attributable to mining activities will be managed and minimised and how enduring impediments to cropping will be identified and reduced where possible through applying the findings of the proposed Springsure Creek Agricultural Coexistence Research Committee and application of SCC's co-existence policy as described in the application report.

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Impacts of mining-related activities that are accommodated by the SCL Standard Conditions Code (The Code) will be minimised by adherence to the applicable conditions within The Code.

Mitigation

Mitigation for decided permanent impacts on SCL or potential SCL associated with the SCC Project will be achieved by the proponent paying relevant mitigation for 7126ha of permanent impacts on SCL within the Central Highlands Isaac sub zone of the Western Cropping zone.

Productivity

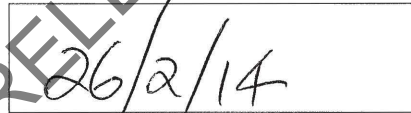
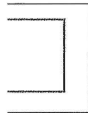
Productivity will be maintained for the 7126ha of SCL that is to be permanently impacted by the proposed Springsure Creek Coal Project by imposing a Mitigation requirement for 7126ha in the Central Highlands Isaac sub-zone of the Western Cropping zone.

Productivity of other impacted land within MLA70486 will be preserved by ensuring that the impacts are fully restored to predevelopment condition and that all introduced impediments to cropping are removed within 50 years of the impact commencing.

Financial Assurance Considerations

Given the relatively limited scope for restoration of the impacts of the proposed mining activities – other than restoration of areas of SCL impacted by soil stockpiling and restoration of impacts attributable to activities that are compliant with The Code – it is not considered necessary to levy additional financial assurance on the development given the financial assurance for mine rehabilitation that will be levied under the EA and the SCL conditions governing financial assurance liabilities imposed under the Code.

49-Sch4 - Personal Information



✓

Signature

Date

Dr Brett Heyward
Director-General
Department of Natural Resources and Mines
Chief Executive administering the
Strategic Cropping Land Act 2011

Enquiries:

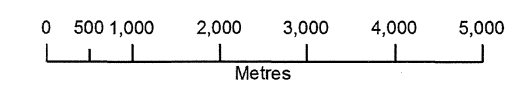
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DNRM - RTI DL RELEASE



Protection Decision Plan

SCLRD 2013/000146



Scale: 1:75000
(original size A3)



LEGEND

- Point at Zone 55 coordinate 639 170 mE and 7 350 480 mN
- ML70486 Boundary
- Area A
- Area B
- Overlap of Areas A and B
- Area C
- Ordered Drainage
- Cropping Land

Coordinate System: GDA 1994 MGA Zone 55

Map Prepared by:
Department of Natural Resources and Mines
PO Box 1080, Caboolture, Qld, 4510
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Map Preparation Date: 10 February 2014

Signed by the Chief Executive of the Department of Natural Resources and Mines
Name: Brett Hey
Title: Director - 19-Sch4 - Personal Information
Signature: _____
Date: 26/2/14

