



QCoal Sonoma Pty Ltd

**EA Amendment Supporting Document
EPML00707713**



Submitter information	
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Table of contents

1	Introduction	2
1.1	Existing Environmental Authority Conditions	4
1.2	Proposed EA Amendments.....	4
1.2.1	Addition of Sonoma East 2 MLA for the Relevant ERAs	4
1.2.2	Amendment of Figures.....	4
1.3	Requirements for an Amendment Application (EP Act).....	4
1.4	Tenement Details	5
1.5	Underlying Properties	6
1.6	Pre-requisite Permits	6
2	Changes to the SCM Operation.....	7
3	Environmental Values and Management Actions	9
3.1	Surface Water	9
3.1.1	Existing Environment	9
3.1.2	Environmental Values	11
3.1.3	Wetlands	12
3.1.4	Potential Impacts.....	12
3.1.5	Proposed Management Actions	13
3.2	Ecology	13
3.2.1	Terrestrial Ecology	13
3.2.2	Aquatic Ecology	16
3.2.3	Potential Impacts.....	16
3.2.4	Proposed Management Actions	17
3.3	Groundwater	17
3.4	Land and Land Use.....	18
3.4.1	Soils.....	18
3.4.2	Existing Land use	18
3.4.3	Post-mining Land Use	18
3.4.4	Potential Impacts.....	18
3.4.5	Proposed Management Actions	19
3.5	Air (Dust) and Acoustic (Noise and Vibration)	21
3.5.1	Existing Environment	21
3.5.2	Climate	21
3.5.3	Sensitive Receptors	21
3.5.4	Potential Impacts.....	22
3.5.5	Proposed Management Actions	25
3.6	Waste	27
3.6.1	Potential Impacts.....	28
3.6.2	Proposed Management Strategies	28
4	Conclusion	29

Appendices

Appendix A: Sonoma East 2 ML IDP

Appendix B: Proposed EA Figures

Tables

Table 1 – Tenement Information.....	6
Table 2 – SCM Background Land Tenures.....	6
Table 3 – Waste Management Legislation.....	27

Table of Figures

Figure 1 - Project Location	3
Figure 2 – Sonoma East Complex Proposed LOM Layout.....	8
Figure 3 – Sonoma East 2 MLA Ordered Drainage	10
Figure 4 – Regional Ecosystem Mapping	15
Figure 5 – Average Annual Rainfall and Temperatures	21
Figure 6 – SCM Sensitive Receptors.....	23

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1 Introduction

Sonoma Coal Mine (SCM) is an open cut coal mine located in the northern Bowen Basin, approximately seven kilometres south of the town of Collinsville (see **Figure 1**). The SCM is owned by the Sonoma Coal Joint Venture (the JV) comprising four joint venture partners:

- QCoal Sonoma Pty Ltd;
- JS Sonoma Pty Ltd;
- CSC Sonoma Pty Ltd; and
- Watami (QLD) Pty Ltd.

The SCM currently comprises three (3) granted mining leases held by the JV, namely ML 10325, ML 10326, and ML 10327, with a total tenement area of 2,140.1 ha. The SCM is subject to environmental authority (EA) EPML00707713, the current version of which is dated 29 September 2022. The SCM is operated as part of the wider QCoal Northern Hub (QNH) which incorporates the adjoining Cows, Drake and Jax mines. Each QNH mine has a separate ownership structure and operates under its own Environmental Authority.

The JV is seeking to add a 73.7 ha mining lease (ML 700075) to the SCM (for a total of four mining tenures), which is referred to as the “Sonoma East 2 ML” (SE2ML). The SE2ML represents a 3.4% increase to the overall SCM tenement area. The SE2ML is located directly south of and adjoining the existing ML 10327 (see **Figure 1**), and together these areas are hereafter collectively referred to as the ‘Sonoma East Complex’.

The proposed SE2ML is required to more effectively extract a known coal resource within the existing ML10327, and recover some additional resource on ML 10326, improving the economics of the SCM and minimising sterilisation of the underlying resource. Potential environmental impacts from the addition of the SE2ML to the existing SCM will not be materially different to that already approved in the current EA for the SCM (i.e. it will not introduce new environmental values or new receptors and will not materially increase the scale of existing previously assessed impacts).

This document has been produced to support an application to amend the EA to include the SE2ML. The purpose of this report is to satisfy the requirements of section 226 and 226A of the *Environmental Protection Act 1994* (EP Act), specifically to provide:

- a detailed description of the proposed EA amendments; and
- an assessment of the potential impacts to relevant environmental and human values, as well as detailing any management strategies, associated with the EA amendment.

The SE2ML Initial Development Plan (IDP) prepared in support of the ML application to the Department of Resources (DoR) is appended to this document (**Appendix A**). The SE2ML IDP contains details of geology, scheduling, progression, layout, quantities, etc., and where such detail is applicable to this report, the content will be replicated herein or references to the relevant IDP section will be made and relied upon.

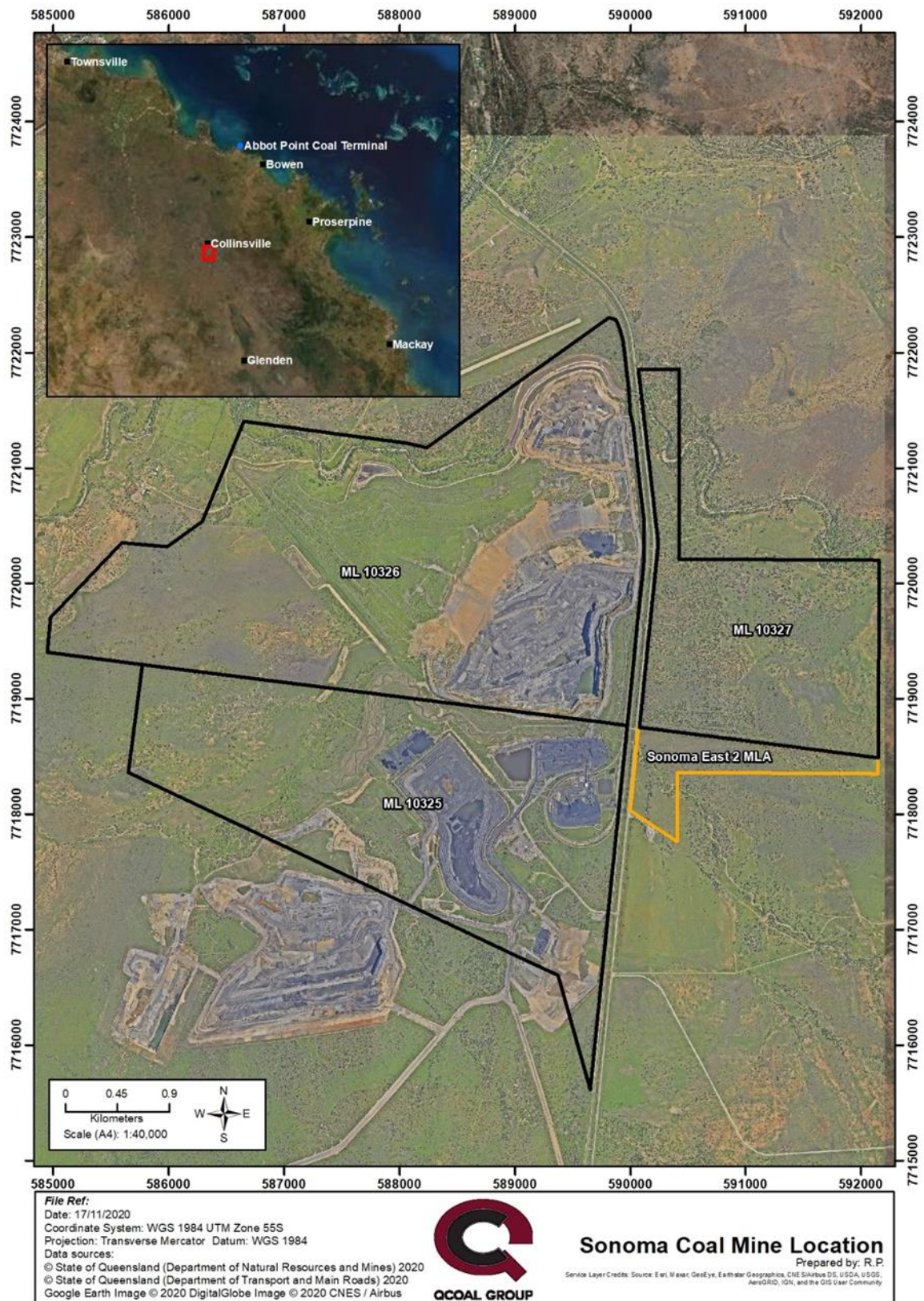


Figure 1 - Project Location

1.1 Existing Environmental Authority Conditions

The SCM is subject to the conditions of EA EPML00707713, the current version of which is dated 29 September 2022. No changes to the existing conditions will be required as a result of this application.

1.2 Proposed EA Amendments

1.2.1 Addition of Sonoma East 2 MLA for the Relevant ERAs

It is proposed that the SE2ML (nomenclature to be updated when the designated ML number is available) be added to the SCM EA in the “Environmentally relevant activity and location detail” table, making it subject to the conditions of the EA as part of the broader SCM for all ERAs, consistent with the other granted MLs for the operation.

1.2.2 Amendment of Figures

EA Figure 1 and EA Figure 2 (appended to the EA) will need to be updated to include the SE2ML area, and the proposed updates to these figures have been provided as **Appendix B**.

1.3 Requirements for an Amendment Application (EP Act)

The *Environment Protection Act 1994* (EP Act) Section 226 stipulates the content criteria for an EA amendment application generally. Each criterion is presented below (in italics) with a discussion as to how this application satisfies each in **green**.

EP Act section 226 – Requirements for amendment application generally

1. *An amendment application must—*
 - a. *be made to the administering authority; and*
This amendment was lodged with the Permit and Licence Management branch (PALM) of Department of Environment and Science (DES) via email.
 - b. *be made in the approved form; and*
This amendment application includes the completed *Application to amend an environmental authority* (ESR/2015/1733 Version 13) form.
 - c. *be accompanied by the fee prescribed under a regulation; and*
The prescribed fee of \$346.60 will be paid by credit card on receipt of an invoice from PALM.
 - d. *describe the proposed amendment; and*
The proposed amendments are described in **Section 1.2** of this document.
 - e. *describe the land that will be affected by the proposed amendment; and*
The land affected by the proposed amendment is described in **Section 1.4** of this document.
 - f. *describe any development permits in effect under the Planning Act for the carrying out of the relevant activity for the authority; and*
There are no development permits in effect under the Planning Act for the carrying out of mining activities at the SCP.

- g. *state whether each relevant activity will, if the amendment is made, comply with any eligibility criteria for the activity; and*
Not applicable as the activity does not have any eligibility criteria.
- h. *if the application states that each relevant activity will, if the amendment is made, comply with any eligibility criteria for the activity; and*
Not applicable as the activity does not have any eligibility criteria.
- i. *state whether the application seeks to change a condition identified in the authority as a standard condition; and*
No conditions within the existing EA are identified as standard conditions, therefore this is not applicable.
- j. *if the application relates to a new relevant resource tenure for the authority that is an exploration permit or GHG permit—state whether the applicant seeks an amended environmental authority that is subject to the standard conditions for the relevant activity or authority, to the extent it relates to the permit; and*
This application does not relate to a new relevant resource tenure that is an exploration permit or GHG permit.
- k. *include an assessment of the likely impact of the proposed amendment on the environmental values, including—*
i. a description of the environmental values likely to be affected by the proposed amendment; and
ii. details of any emissions or releases likely to be generated by the proposed amendment; and
iii. a description of the risk and likely magnitude of impacts on the environmental values; and
iv. details of the management practices proposed to be implemented to prevent or minimise adverse impacts; and
v. details of how the land the subject of the application will be rehabilitated after each relevant activity ceases; and
Section 3 of this document describes the potential impacts of the proposed amendment on environmental values, including emissions or releases, risks and magnitude of potential impacts, and details of proposed prevention and/or minimisation procedures. Rehabilitation is also covered in this section.
- l. *include a description of the proposed measures for minimising and managing waste generated by any amendments to the relevant activity; and*
A description of waste management procedures related to this amendment are discussed in Section 3 of this document.
- m. *include details of any site management plan or environmental protection order that relates to the land the subject of the application; and*
There is no site management plan or environmental protection order relating to the land subject to the application.
- n. *include any other document relating to the application prescribed under a regulation.*
No other documents relate to the application prescribed under a regulation.

1.4 Tenement Details

The SCM comprises three (3) granted MLs (ML 10325, ML 10326 and ML 10327) and the proposed SE2ML, all held or proposed to be held by the Sonoma JV. The particulars of the tenements are presented in **Table 1**, and further detail is publicly available from the DoR.

Table 1 –Tenement Information

ML Number	Authorised Holder	Area (ha)	Grant Date
ML10325	QCoal Sonoma Pty Ltd	716.7	12 April 2007
ML10326	QCoal Sonoma Pty Ltd	1063.0	21 November 2005
ML10327	QCoal Sonoma Pty Ltd	360.4	21 November 2005
ML 700075	QCoal Sonoma Pty Ltd	73.7	N/A

1.5 Underlying Properties

The mining activities on the SCM will be undertaken on five (5) rural lots, and three (3) lots associated with easements. Lot and tenure information is presented in **Table 2**.

Table 2 – SCM Background Land Tenures

MLA Number	Lot/Plan	Land Type
ML 10325	1SP190745	Freehold
ML 10326	1SP190745	Freehold
	25SP190745	Freehold
ML 10327	1SP190745	Freehold
	21DK160	Lands Lease
	25SP190745	Freehold
	ADK116	Easement
	BDK116	Easement
MLA 700075	4SP234989	Freehold
	7SP123162	Lands Lease
	ARP739573	Easement

1.6 Pre-requisite Permits

The pre-requisite permits underlying the SCM MLs/SE2ML are:

- EPC 586 held by Bowen River Coal Pty Ltd which was granted on 28/11/1995 and expires on 27/11/2022.
- EPC 639 held by Pelican Creek Coal Pty Ltd which was granted on 1/12/2001 and expires on 11/12/2023.

The SCM MLs and the SE2ML are not overlapped by any exploration permit for petroleum or minerals.

2 Changes to the SCM Operation

A detailed overview of the mining operation is provided in the SE2ML IDP (**Appendix A** to this document). The proposed life of mine (LOM) layout for the Sonoma East Complex, which covers the approved ML 10327 and the SE2ML is presented in **Figure 2**.

The scale and scope of mining activities on the SCM will not change by the inclusion of the SE2ML. The southern wall of the Sonoma East Pit will extend from ML 10327 slightly into the SE2ML to allow full recovery of the coal resource from ML 10327; however, any pit within the SE2ML will be backfilled (i.e. no residual void will remain within the SE2ML). SE2ML is primarily for support infrastructure, and will involve clearing of vegetation, construction of roads and water management infrastructure, topsoil stockpiling and operation of a Mine Infrastructure Area (MIA) including a workshop).

As shown in **Figure 2**, the proposed infrastructure takes up most of the tenement area, with access tracks (not shown) also required. Accordingly, as a conservative measure, the entirety of SE2ML (73.7 ha) is proposed to be approved for disturbance in the EA, to allow for flexibility of location of infrastructure. The approved disturbance area on the SCM (as per the EA) is 1,626.5 ha. SE2ML will add an additional 73.7 ha (a 4.5% increase in disturbance footprint).

Areas of disturbance on the SE2ML will be cleared of vegetation just prior to the commencement of construction activities. Trees and shrubs will be bulldozed, windrowed and burned or used for erosion protection/wildlife refuge. All clearing will be supervised by a qualified fauna spotter catcher, and any areas of remnant vegetation will be assessed for offset liabilities prior to clearing activities being undertaken. Topsoil will be removed from the cleared area by scrapers or bulldozers and either stockpiled for later use or placed directly on areas undergoing rehabilitation. A Topsoil Management Plan and associated register will be used to track the movement of topsoil. Roads and water management infrastructure (i.e. drains and levees) will be constructed using civil earthmoving machinery. A topsoil stockpile is proposed to be located on a portion of the SE2ML.

No out of pit waste rock dumps are proposed on SE2ML. As such, waste rock removed from Sonoma East Pit within SE2ML will be dumped on ML 10327 (either out-of-pit or in-pit depending on the stage of pit progression) or on SE2ML (as in-pit dump).

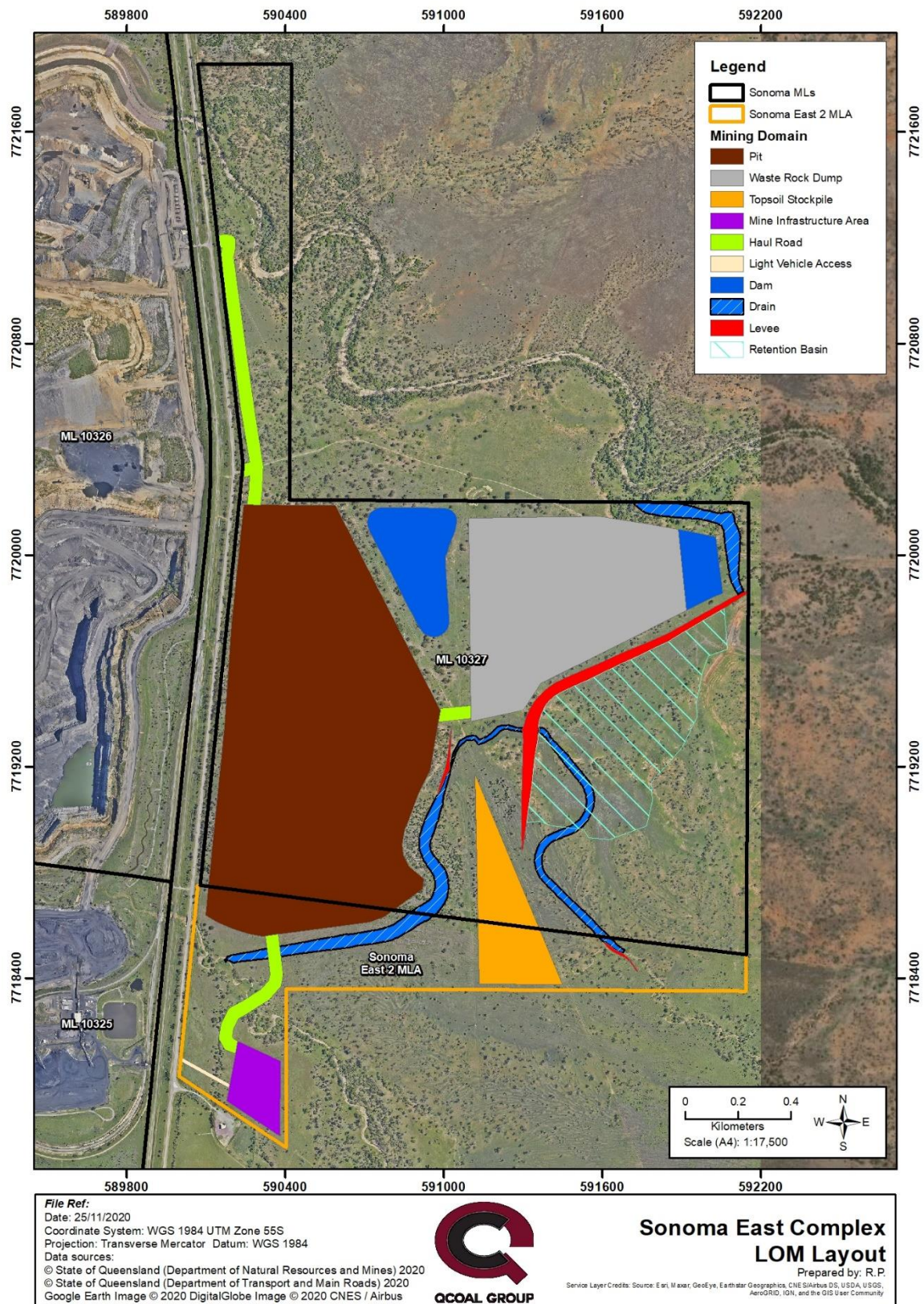


Figure 2 – Sonoma East Complex Proposed LOM Layout

3 Environmental Values and Management Actions

An assessment of the existing environmental values of the SCM has been completed. The assessment considers the site-specific environmental data gained since the commencement of SCM operations in 2008. The addition of the SE2ML will result in a small increase in the operational area for the SCM (%), the scale, intensity of the operation remain unchanged. Additionally, the downstream receptors and closest sensitive receptors also remain unchanged.

The addition on SE2ML represents no material change to the potential impacts to environmental values or sensitive receptors, from what is currently approved under the current EA for the SCM.

Based on the nature of the proposed activities, the following are considered the applicable environmental values requiring assessment:

- Ecology
- Surface Water
- Groundwater
- Land and Land Use
- Air (Dust)
- Acoustic (Noise and Vibration)
- Waste
- Community

3.1 Surface Water

3.1.1 Existing Environment

Surface Drainage

Two Mile Creek is located directly west of the SE2ML, running through ML 10325, and is a tributary to Pelican Creek, a part of the broader Burdekin River catchment. Two Mile Creek has been permanently diverted in ML 10325 and ML 10326 (downstream of the SE2ML) to facilitate mining in the SCM Main Pit on ML 10326. Two tributary gullies to Two Mile Creek run through the proposed SE2ML (see **Figure 3**). Watercourse determinations were undertaken for all waterways within MLs 10325 and 10327 by DNR officers in 2013. This included assessment of the reaches immediately downstream of the gullies within SE2ML, neither of which were determined to be watercourses. SE2ML is upstream of those reaches and as such are not watercourses under the *Water Act 2000*. Both tributaries more closely resemble 'drainage features' as defined by the *Water Act 2000*.

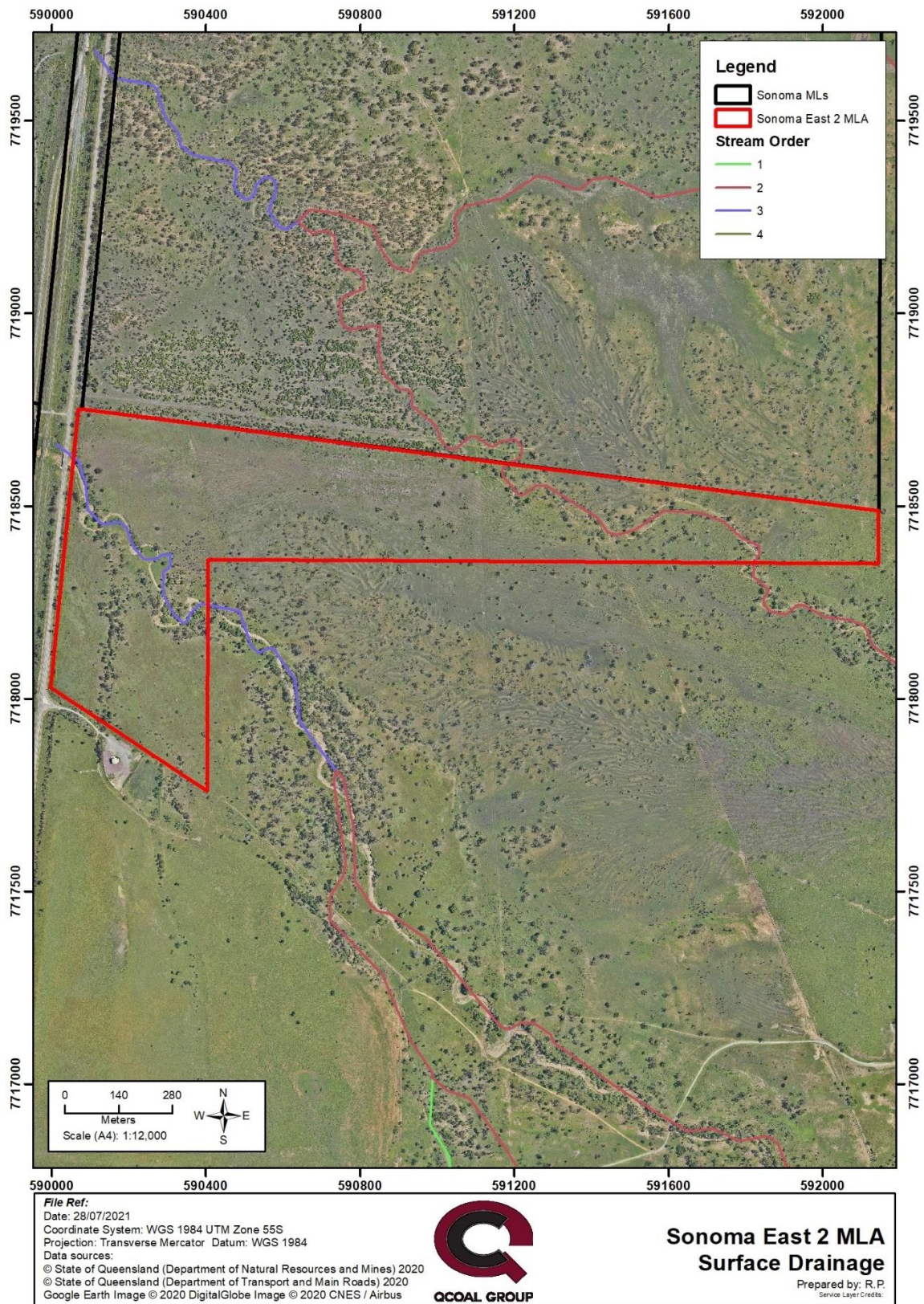


Figure 3 – Sonoma East 2 MLA Ordered Drainage

All water features upstream, on, or immediately downstream of the SCM and SE2ML (including the tributaries of Two-Mile Creek) are highly ephemeral, only flowing for limited time after significant regional rainfall events (i.e. have no baseflow). As such the sole contributor to the flow of all surface drainage features in the vicinity of the SCM is rainfall, which is typically summer-dominant and has been observed to be highly variable (see **Section 3.5.2** for further detail). Mean pan evaporation exceeds mean rainfall in all months of the year, indicating that there is a net evaporative climate.

Flooding

SE2ML is not in the flood plain associated with Coral Creek or Two Mile Creek.

Water Quality

Baseline water quality assessments within Two Mile Creek, and the broader Pelican Creek catchment were attempted during the SCM EIS in 2006; however, dry overall conditions in the years prior to the EIS meant that no robust baseline could be determined and due to the highly ephemeral nature of the creeks within the catchment limited data was available. Operational water quality monitoring has subsequently been undertaken within Two Mile Creek as part of the ongoing receiving environment monitoring program (REMP), discharge monitoring during events and regular catchment monitoring.

3.1.2 Environmental Values

Environmental values (EVs) for the SCM are detailed in the QNH Water Management Plan (WMP) (Engeny, 2021). The WMP identified the relevant EVs for the SCM in accordance with the *Draft environmental values and water quality guidelines: Burdekin River Basin fresh and estuarine waters – Draft for consultation – March 2017* (DSITI, 2017), which identified the following:

- Aquatic Ecosystems
- Irrigation
- Farm Use
- Stock Watering
- Human Consumption
- Secondary Recreation
- Visual Appreciation
- Raw Drinking Water
- Industrial Use
- Cultural and Spiritual

The key EVs related to operations on the SE2ML have been identified in the subsections below with a brief discussion.

Agricultural Use

Use of surface water in the SCM area is primarily related to livestock watering. Surface water samples from the monitoring sites have indicated relatively low concentrations of dissolved metals, and all parameters were generally below or within the ANZECC 2000 guidelines for livestock watering.

Aquatic Ecosystem

The value of the surface water in the vicinity of the SCM as aquatic ecosystem habitat is relatively low and consistent with those of the wider catchment. This is reflective of the ephemeral flow of the receiving environment and of the land use in the area being predominately livestock grazing. Environmental values are dictated primarily by the ephemeral and intermittent nature of the flow within the region's waterways. Creeks in the catchment are generally in moderate condition and are characterised by low habitat diversity and considered to be moderately disturbed.

No rare or threatened species of aquatic flora or fauna have been recorded from or are likely to occur in the waterways of the area. There are no wetlands of Regional, State or National significance within or adjacent to the SE2ML.

3.1.3 Wetlands

No wetlands of Regional, State or National significance are found within or adjacent to the SE2ML.

3.1.4 Potential Impacts

The proposed water management associated with the Sonoma East complex (including SE2ML) involves diverting clean water around disturbance areas and into the existing Two-Mile Creek diversion and Coral Creek. As such there no permanent capture of flow and no change to the flow regime downstream of the SCM.

Potential impacts on surface water values are therefore only associated with a degradation of water quality in the receiving environment due to water being released from the SCM, having a resultant negative effect on sensitive receptors.

The mechanisms by which activities on the SCM could cause a degradation of water quality in Two Mile Creek include:

- Sediment-laden runoff from disturbed areas;
- Mine affected water;
- Contaminants from the mining infrastructure area (e.g. hydrocarbons, detergents, degreasers);
- Acid mine drainage (AMD);
- Tailings dam leakages; and
- Sewage effluent.

The addition of the SE2ML to the SCM:

- does not intercept any new catchments that aren't already intercepted by the existing SCM operations and does not direct water into any new drainage feature which is not already a receiving water for release of sediment or mine affected water from the SCM. As such, the downstream receiving environment (values and receptors) remain unchanged;
- does not include additional release points or required releases of mine affected water;
- is a continuation of the geological strata within the existing ML 10327 and as such the overburden and coal characteristics remain unchanged. Accordingly, the AMD risks remain unchanged, and the characteristics of runoff (sediment-affected and mine-affected) also remain unchanged; and
- will continue to use of existing infrastructure at the SCM for processing coal and disposal of tailings, major servicing of mobile plant, and sewage treatment; therefore, consideration of tailings dam leakages and sewage effluent impacts is not relevant.

3.1.5 Proposed Management Actions

The existing SCM EA conditions for surface water management and assessment include requirements for a site-wide Water Management Plan, Erosion and Sediment Control Plan, and REMP. These plans will be updated upon grant of the mining lease to reflect activities on the SE2ML as a part of the broader SCM operation.

Existing management actions and control measures in place on the SCM include the following:

- Establish, implement and regularly update a site Water Management Plan (as conditioned by the EA);
- Separate runoff from disturbed and undisturbed areas;
- Contain, treat and reuse surface water on site in preference to discharge;
- Manage releases to protect downstream environmental values; and
- Conduct monitoring to identify any potential impacts.

Water management infrastructure works undertaken within the tributary gullies will be subject to a specific erosion and sediment control plans associated with the construction works, separate to the broader QCoal Northern Hub Water Management Plan and Erosion and Sediment Control Plan, to address any location-specific risks associated with these works.

3.2 Ecology

3.2.1 Terrestrial Ecology

Threatened and Near-Threatened Species

The majority of the SE2ML and surrounding areas have been grazed historically, facilitated by historical broadscale clearing. Grazing within remnant open woodland Regional Ecosystems (REs) has also been undertaken extensively, limiting the value for native flora

and fauna within the vicinity of the SCM. No essential habitat is located within the SE2ML area.

The WildNet conservation significant sightings mapping was reviewed to determine the presence of threatened and near threatened species within 5 km of the central point of the SE2ML. This review identified only one (1) flora species within the area, being Black ironbox (*Eucalyptus reveretiana*). This record was located on Coral Creek, approximately 3 km north of the SE2ML. The SCM has an existing actively managed 40 ha offset for Black ironbox in Coral Creek, containing more than 900 mature individuals.

A WildNet records search was also undertaken for Lot 4 on Plan SP234989 with a one kilometre surrounding buffer (i.e. the search extended 3.5 km to the south and 8.5km to the east of SE2ML). This report returned one conservation significant species present, being Squatter pigeon (southern) (*Geophaps scripta scripta*), which is listed as vulnerable.

Vegetation

Large areas of the SE2ML have historically been cleared of native vegetation for grazing activities. A patch of 12.00 ha of mapped endangered RE 11.9.10 is present within the SE2ML footprint. The relevant REs present within and surrounding the SE2ML are presented in **Figure 4**

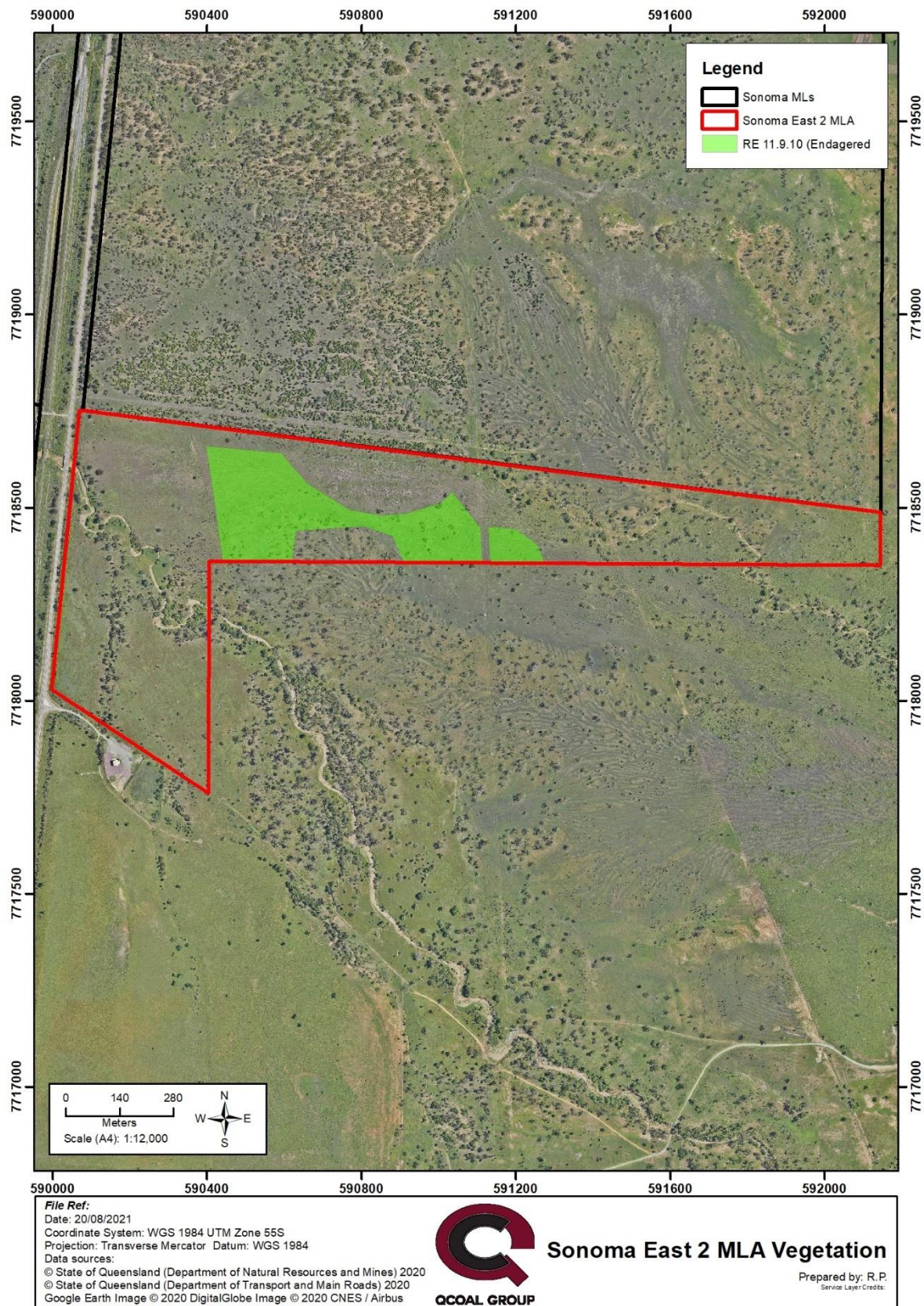


Figure 4 – Regional Ecosystem Mapping

Protected Flora Survey Triggers

The SE2ML is not covered by any protected plants flora survey trigger mapping.

Matters of State Environmental Significance

Other than the mapped endangered RE identified above and shown in **Figure 4**, no other MSES are present within the SE2ML.

3.2.2 Aquatic Ecology

The aquatic ecosystem within and adjacent (upstream and downstream) to the SCM has been subject to REMP monitoring since the commencement of operations in 2008 and as such is well understood.

The composition and abundance of aquatic biota are relatively low, consistent with those of the wider catchment. This is reflective of the ephemeral nature of the flow of the tributaries within the site and the receiving environment, and of the land use in the area being predominately livestock grazing. Watercourses and drainage lines in the broader catchment are generally in moderate condition and are characterised by low habitat diversity.

No rare or threatened species of aquatic flora or fauna have been recorded (or are considered likely to occur) in the waterways of the area. There are no wetlands of Regional, State or National significance within or adjacent to the SCM. On this basis, the receiving water ecosystem is considered slightly to moderately disturbed and of low value.

3.2.3 Potential Impacts

Terrestrial Ecology

The clearing of remnant RE 11.9.10 will be the primary impact with regard to terrestrial ecology. The actual presence and quality of the RE areas, and the need to mitigate impacts will be determined by a suitably qualified ecologist prior to undertaking any clearing activities on the SE2ML.

Aquatic Ecology

As stated in **Section 3.1.4**, the addition of the SE2ML does not intercept any new drainage channels or creeks. As such, the downstream receiving environment (values and receptors) for the SCM remains unchanged.

Additionally, the potential for water quality impacts downstream of the SCM (which is the driver for any resultant impacts on downstream aquatic ecology) remain unchanged with the addition of the SE2ML, as also addressed in **Section 3.1.4**.

3.2.4 Proposed Management Actions

Terrestrial Ecology

Prior to undertaking any works on the SE2ML, a suitably qualified ecologist will be engaged to ground truth the remnant vegetation present and determine the presence of MNES and MSES. Once this survey has been completed, the requirement to undertake any biodiversity offsets, or seek any particular State or Federal governments approvals prior to any work being undertaken will be assessed.

Regardless of the above, a number of best practice terrestrial ecology control measures are to be implemented as follows:

- Restrict the clearing of areas to only those that are required for the practical development of the SCM. A clearing permit system will be implemented to control clearing activities for the SCM.
- The development of a Weed Management Plan to monitor and control weed populations on the SCM. Site inductions are to include training for site personnel on weed management and identification.
- A qualified fauna spotter catcher will inspect trees prior to felling for the presence of vertebrate fauna.

Aquatic Ecology

The release and management of water from the SCM into the receiving in environment is discussed in **Section 3.1.5**. It is noted that no mine-affected water release points will be located on the SE2ML. In addition, a REMP has been developed for the broader QCoal Northern Hub, including Two Mile Creek, in order to determine any impacts from the operation on aquatic ecology environmental values. The annual Two Mile Creek Diversion inspection will also identify any downstream impacts from activities undertaken on the SE2ML.

3.3 Groundwater

As stated in **Section 2**, the SE2ML is being sought to allow full recovery of resources from the Sonoma East Complex. More specifically, the southern wall of the Sonoma East Pit will extend from ML 10327 slightly into the SE2ML to allow full recovery of the coal resource from ML 10327; however, any pit within the SE2ML will be backfilled. No coal rejects are intended for disposal within the SE2ML. Accordingly, there is no potential for groundwater drawdown or leaching of rejects into groundwater associated with activities on the SE2ML.

Small quantities of chemicals, fuels and petroleum-based products are proposed to be stored within the MIA area on the SE2ML. These will be appropriately bunded and managed in accordance with the conditions of the SCM EA, which remain applicable to the new ML.

As such SE2ML does not represent any change to the Sonoma East Pits which would require any specific impact assessment, groundwater monitoring or management.

3.4 Land and Land Use

3.4.1 Soils

Detailed soil surveys were undertaken during the SCM EIS process. The *Land Resource Assessment Report* (GSS, 2005) indicates that the soils underlying the SE2ML are dominated by a red duplex soil unit, which is present throughout the south-eastern portion of the SCM. This soil is generally non-saline and non-sodic with little potential for acid generation.

The topsoil layer is approximately 1 m thick, with the upper 0.3 m being most suitable as a growth medium. Stripped topsoil is considered suitable as a growth medium for rehabilitation in accordance with the QNH Rehabilitation Management Plan.

3.4.2 Existing Land use

The land underlying the SE2ML has been utilised for grazing activities historically. No Strategic Cropping Land or other areas of regional interest are present for the land underlying SE2ML.

3.4.3 Post-mining Land Use

The proposed post-mining land use (PMLU) for rehabilitated areas at the SCM is proposed to be grazing pasture in line with the pre-mining and adjacent land uses and in accordance with the existing SCM EA conditions and the QNH Rehabilitation Management Plan. Activities on SE2ML will also be required for inclusion in the SCM Progressive Rehabilitation and Closure Plan (PRCP).

3.4.4 Potential Impacts

Potential impacts on land resources from mine-related disturbance include changes to land suitability, land use, existing landforms, and land contamination.

These potential impacts could potentially result from activities including:

- Wind erosion of soil and dust generation;
- Loss of topsoil through poor management practices;
- Dispersion, slaking and erosion of exposed soils;
- Degradation of downstream water quality through sediment-laden or contaminated runoff;
- Blasting and excavation;
- Contamination resulting from acid rock drainage and/or saline leachate;
- Contamination of land from storage, use and management of hydrocarbons or chemicals;
- Generation and storage of domestic wastes; and
- Storage of sewage.

The addition of the SE2ML does not represent any increase to previously approved potential land or land use impacts, because:

- the proposed final landforms and PMLU are the same as on the broader SCM,
- the soils and soil types are the same as on adjacent portions of the SCM.

Management practices during operations and rehabilitation of disturbed areas will ensure no permanent or long-term impacts to the land are likely to occur.

3.4.5 Proposed Management Actions

Topsoil

The SE2ML, once granted will be subject to the updated Topsoil Management Plan for the QCoal Northern Hub (QNH).

The primary topsoil management strategies and commitments for the SCM (including the SE2ML) during construction, operations and closure are as follows:

- A topsoil management plan and register (including materials balance) is to be developed prior to the commencement of any topsoil stripping;
- Topsoil and vegetation clearing will only be carried out as necessary for ongoing operations;
- Suitable topsoil (the vertosol and calcarosol soil units) will be stripped and stockpiled for use in future rehabilitation works;
- Topsoil stockpiles will be located away from drainage paths and the final surface will be ripped to promote natural revegetation;
- The placement of topsoil will consider the landscape position the topsoil was stripped from, with soils of the undulating topography used on slopes and hilltops and alluvial soils used in lower slopes and areas where water accumulation may occur;
- All topsoil stockpiles will be no higher than 3m to retain viability of the natural seedbank;
- Topsoil is to be stored for the shortest period practicable and reused as soon as possible to maximise the viability of the seedbank;
- Where wind erosion is a risk to topsoil stockpiles, efforts will be made to minimise this erosion by promoting grass or other vegetation cover or applying geofabric or less erosive topsoil; and
- All topsoil stockpiles will be surveyed and the locations and volumes recorded in a Topsoil Register.

Land Management

The primary land management strategies for the SE2ML during construction, operations, and closure are as follows:

- Active control of and management of potential erosion issues;
- Active control of weeds and pest animals on the MLs;

- Development and implementation of management measures to prevent contamination of land will include, but not necessary be limited to:
 - Design and construction of fuel storage areas in accordance with relevant Australian Standards.
 - Provision of spill control kits at all hydrocarbon and chemical storage areas;
 - Provision of bunding of liquid storage facilities where appropriate;
 - Storage of chemicals in appropriately designed areas;
 - Maintenance of incident register detailing any hydrocarbon or chemical spill including location, date, actions taken, and recommended remedial actions;
 - Provision of oil interceptors in workshop areas to prevent contamination of runoff;
 - Training of all staff responsible for servicing of machinery, hydrocarbon and chemical use or transportation to ensure they are aware of the correct procedures for activities involving hydrocarbons and/or chemicals, including emergency response procedures and the use of spill control kits; and
 - Regular integrity testing and auditing of hydrocarbon and chemical storage facilities;
- Any sites that become contaminated will be investigated and managed in accordance with the requirements of the contaminated land provisions in the EP Act.

Disturbance will be limited to those areas required for active mining activities. Mine planning strategies will be implemented to ensure unnecessary disturbance of land is avoided.

Rehabilitation

The SE2ML will be incorporated into the existing approved Rehabilitation Management Plan (RMP) for the QCoal Northern Hub (QNH). The existing rehabilitation approach in place for the SCM and the broader QNH is considered suitable for the SE2ML for the reasons previously provided (e.g. same PLMU and soils).

The RMP includes, but is not limited to, the following:

- Rehabilitation objectives to achieve the rehabilitation goals for all disturbed areas;
- Detailed rehabilitation methods for each disturbed area;
- Rehabilitation indicators to measure the success of the rehabilitation against the rehabilitation objectives;
- Final completion criteria that will achieve the rehabilitation goals and objectives;
- Details of appropriate monitoring and maintenance of rehabilitation;
- Identification of 3 reference sites to be used to develop rehabilitation success criteria for each disturbance domain;
- A description of monitoring of rehabilitation and reference sites inclusive of statistical design; and
- A description of progressive rehabilitation planning.

Progressive rehabilitation of the SCM (including the SE2ML once it is approved) will also be subject to the PRCP.

3.5 Air (Dust) and Acoustic (Noise and Vibration)

3.5.1 Existing Environment

The local air shed is typically rural and sparsely populated. There are no major industrial sources of nitrogen oxides (NO_x), sulfur dioxide (SO₂) odorous compounds or volatile organic compounds (VOC) surrounding the SCM. The proposed activities on the SE2ML do not contain or generate those pollutants in any significant quantity and as such these are not considered further as part of this assessment.

Land uses in the area are mining, agricultural and pastoral. As such, existing land uses are known to contribute to background levels of odour and dust in the vicinity, with wind-blown dust associated with mining activities and agricultural land clearing being the largest source of dust emissions in the region.

Bush fires may occur intermittently; however, based on the largely cleared nature of much of the region, these are typically limited to grass fires and impacts are anticipated to be minor.

3.5.2 Climate

The Collinsville area has a sub-tropical climate with distinct wet and dry seasons, with the majority of the year's rain falling between October and March. See **Figure 5**.

Wind direction is primarily from the east, northeast, and southeast; however, winds occasionally come from the north and south.

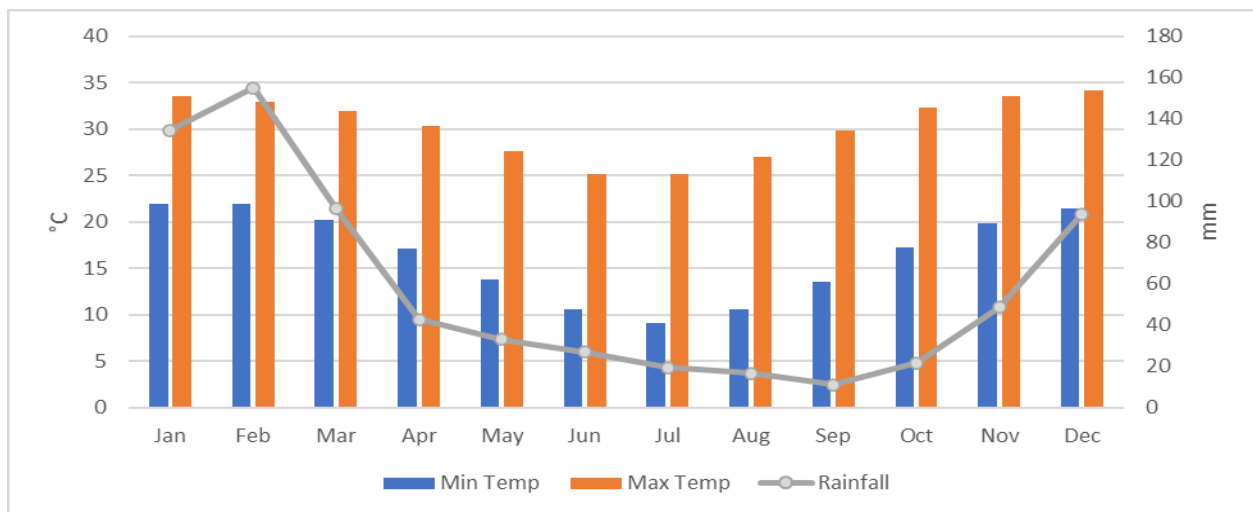


Figure 5 – Average Annual Rainfall and Temperatures

3.5.3 Sensitive Receptors

There are a number of sensitive and commercial places defined in the vicinity of the SCM. They comprise mostly rural homesteads to the north, with one to the southeast (see **Figure 6**).

The closest sensitive receptor to SE2ML activities is the Belmore homestead to the southeast, at approximately 2km. Currently the Belmore homestead is approximately 2.15km to southeast for the nearest SCM activities.

3.5.4 Potential Impacts

Dust

The primary source of dust from conventional open-cut mining is blasting, and truck and shovel operations to extract and transport overburden, interburden and ROM coal. Secondary sources of dust from the SCM may include wind-blown dust from dumps, haul roads and other cleared areas. It is noted that during the short-term construction activities, the placement of a topsoil stockpile and the small area of the mining pit that extends into the SE2ML, have the potential to generate dust within the SE2ML. The majority of potential dust emissions from the Sonoma East Complex are associated with the previously approved mining activities on ML 10327.

The impact to sensitive receptors from dust emissions is dependent on the concentration of dust at a sensitive receptor, which itself is dependent on several factors, such as:

- rate of dust generation at the source;
- wind speed and direction and
- distance and direction from the source to the receptor.

The addition of the SE2ML does not represent an increase to previously approved potential dust impacts associated with SCM operations that are not otherwise addressed by existing dust management strategies in place, because:

- the extraction rate (intensity) of mining remains unchanged, does not require an increase in the number or type of plant, and does not involve a change to mining methods (refer to the IDP), and as such the rate of dust generation from the SCM remains unchanged;
- no new sensitive receptors are introduced by the inclusion of the SE2ML, and potential impacts to those receptors have already been assessed, managed and approved.

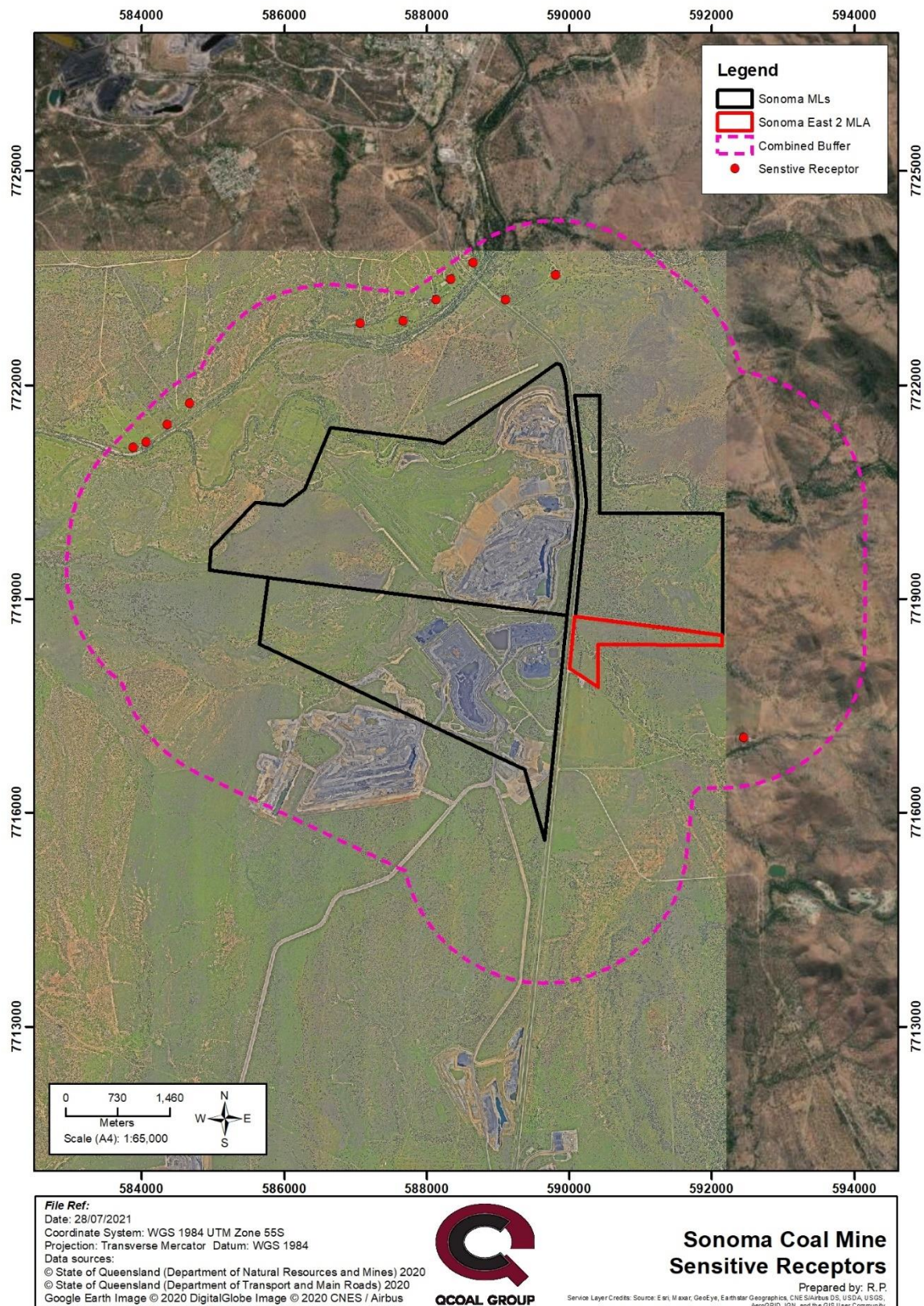


Figure 6 – SCM Sensitive Receptors

Noise

The area surrounding the SCM is rural, with principal noise sources being traffic on the nearby Bowen Development Road, rail traffic and agricultural equipment noise.

The impact to sensitive receptors from noise is dependent on a range of variables including:

- time of noise (e.g. night or day);
- frequency and decibel level at the noise source;
- background noise levels;
- wind direction at the time of the noise occurrence;
- atmospheric conditions; and
- distance from the source to the receptor.

Potential sources of noise impact from the proposed mining operations are:

- construction noise (during the initial stages of the operation);
- blasting operations (in the form of airblast overpressure); and
- operational noise (predominantly mining machinery).

The addition of the SE2ML does not represent an increase to previously approved potential noise impacts associated with SCM operations which are not otherwise addressed by existing noise management strategies in place for the SCM, because the SE2ML:

- does not include construction of processing facilities;
- does not increase the extraction rate (intensity) of mining, does not require an increase in the number or type of plant, and does not involve a change to mining methods (refer to the IDP IDP), and as such frequency and decibel level of noise at the source remains unchanged; and
- is a minor southern extension of ML 10327, and contains minimal activities with high potential for noise generation.

Vibration

Potential sources of vibration impacts will be associated with the blasting of consolidated strata overlying the coal seams (blasting of coal seams is not anticipated to be required) and from the use of rail transportation. This is not a consideration for the addition of the SE2ML as blasting has already been considered for the Sonoma East Pit and rail transport will remain unchanged from those activities already approved and undertaken on the SCM.

Potential Impacts - Greenhouse Gas (GHG)

Emissions of GHG can be classed as either direct or indirect. Direct emissions are defined as occurring from sources within the boundary of an organisation as a direct result of that organisation's activities, such as the combustion of fossil fuels to power machinery. Indirect emissions are defined as occurring in the wider economy as a consequence of an organisation's activities, but which are physically produced by the activities of another organisation, such as the consumption of electricity.

The activities on the SCM that produce GHG emissions can be primarily grouped into the following categories:

- Stationary fuel combustion (non-road registered vehicles, generators, etc.) – direct;
- Transport fuel combustion (road registered vehicles) – direct;
- Fugitive emissions from coal – direct; and
- Electricity usage – indirect.

The addition of the SE2ML to the SCM will not create a material increase in the annual emissions rate from the SCM as the mining rate, processing requirements, mobile plant fleet and fixed plant requirements will be unchanged. Therefore, the annual emissions will not materially change from the previously approved SCM activities.

3.5.5 Proposed Management Actions

Dust

Dust management and monitoring on the SCM is undertaken in accordance with the approved QNH Dust Management Plan, and once approved, the SE2ML will be incorporated into, and subject to that management plan.

Noise

Ongoing community consultation will assist in determining any ongoing noise impacts to adjacent sensitive receptors, allowing the operation to adjust activities as appropriate.

Additionally, the following general noise management measures are to be implemented as appropriate:

- Temporarily ceasing or adjusting operations in areas generating elevated noise levels;
- Moving aspects of the operation to alternative areas on-site;
- Restricting vehicle speeds;
- Maintaining equipment and machinery;
- Fitting mobile equipment with appropriate noise dampening equipment (including consideration of alternative reversing alarms);
- Enclosing and/or shielding plant; and
- Implementing noise awareness training for site staff.

Vibration

The Sonoma East Pit complex has already been approved. No additional vibration is proposed for SE2ML requiring additional management.

Greenhouse Gas

As previously noted, the addition of the SE2ML to the SCM will not generate an increase in the annual emissions rate from the SCM as the mining rate, processing requirements, mobile

plant fleet, fixed plant requirements will be unchanged, with a slight increase in Sonoma East Pit footprint. Therefore, the annual emissions will not materially change from the previously approved SCM activities.

Greenhouse gas emissions are monitored and limited by the National Greenhouse and Energy Reporting (NGER) framework, and the National Pollutant Inventory (NPI) framework.

Emissions of greenhouse gases from the SCM will be limited through the following measures:

- Utilise energy-efficient equipment where appropriate;
- Maintain equipment to retain high levels of energy efficiency;
- Fit and maintain appropriate exhaust systems on all equipment where appropriate to minimise diesel particulate emissions;
- Utilise local materials and personal where able to reduce transport-related emissions;
- Restrict vegetation clearing to only that necessary for mining and associated activities; and
- Progressively rehabilitate disturbed areas.

3.6 Waste

Waste management in Queensland is governed by four primary pieces of legislation as presented in **Table 3**.

Table 3 – Waste Management Legislation

Legislation	Operative application
<i>Environmental Protection Act 1994</i>	The Environmental Protection Act 1994 (EP Act) is the primary piece of legislation that controls the management of waste in Queensland. The EP Act deals primarily with protecting the environment and managing the potential pollution impacts of activities.
<i>Environmental Protection Regulation 2008</i>	The objective of the <i>Environmental Protection Regulation 2008</i> (EP Regulation) is to provide the basis for effective and efficient administration and enforcement of the EP Act. The treatment, transfer, storage and disposal of waste as a part of mining activities is authorised under this legislation.
<i>Waste Reduction and Recycling Act 2011</i>	The primary objective of the <i>Waste Reduction and Recycling Act 2011</i> is to modernise waste management and resource recovery in Queensland. Key provisions relating to QNH operations include: <ul style="list-style-type: none"> • A requirement that Queensland Government agencies and local governments prepare waste management plans, and • Introduction of stewardship arrangements for any waste products that are identified as growing problems for landfill in the future.
<i>Waste Reduction and Recycling Regulation 2011</i>	The <i>Waste Reduction and Recycling Regulation 2011</i> provides additional detail for the <i>Waste Reduction and Recycling Act</i> framework. The regulation provides the following information: <ul style="list-style-type: none"> • A waste levy rate for leviable waste delivered to a leviable waste disposal site • Weight measurement criteria for leviable waste disposal sites without weighbridges • Fees associated with management of wastes • Prescribed activities and requirements for resource recovery areas, and • Planning for waste reduction and recycling, and • Reporting on waste management

Waste on site is to be managed in accordance with the hierarchy presented below (in order of priority):

- Avoid
- Reduce
- Reuse
- Recycle
- Recover, and
- Dispose.

Various wastes are expected to be generated during the construction, operation and decommissioning of the SCM, including:

- Regulated waste including hydrocarbon waste (oils, emulsions, oily wastewaters, oily sludge, grease, oil rages, filters an drums), detergents, solvents, paints, resins and batteries;
- Inert construction and demolition waste (concrete materials, sand, aggregate, bricks, and pavers);

- General and putrescible waste including food waste, packaging and food containers;
- Recyclable waste including paper, cardboard, glass aluminium cans, and plastics;
- Green waste arising from vegetation clearing;
- Wood waste including timber, pallets and off-cuts;
- Tyres including light vehicle tyres and mine truck tyres;
- Scrap steel;
- Treated effluent from the sewage treatment plant; and
- Coarse and fine rejects from mineral processing.

3.6.1 Potential Impacts

In general, if not appropriately managed, wastes generated by the SCM have the potential to create impacts on air quality, water quality, soil quality and visual amenity of the site and the surrounding environment. Sensitive receptors could be detrimentally impacted if waste streams were to enter waterways and groundwater systems and migrate off-site.

Potential adverse impacts during construction and operations resulting from poor waste management practices could potentially include:

- Soil contamination and adverse impacts to current and/or post-mining land uses;
- Land contamination;
- Hazards to human and ecological health;
- Degradation of native habitat and diminished ecological value of habitat;
- Surface and/or groundwater contamination;
- Odour emissions and/or airborne contaminants; and
- Reduction in visual amenity.

The addition of the SE2ML does not represent any increase or change to the waste profile of the SCM, because SE2ML does not increase the extraction rate (intensity) of mining, does not require an increase in the number of plant or the type or plant, does not increase the proposed workforce and does not involve a change to mining methods (refer to the SE2ML IDP). As such, the type and quantity of waste remains unchanged and there are no additional potential impacts associated with waste on SE2ML.

3.6.2 Proposed Management Strategies

Once approved, the SE2ML will be subject to the existing QNH Waste Management Plan, which is a requirement of the existing SCM EA.

4 Conclusion

The inclusion of ML 700075 to the SCM and EA EPML00707713 is required to improve the economics and better recover a known coal resource. The impact footprint of the SCM will increase by approximately 73.7 ha (a 3.4% increase to the overall SCM tenement area and a 4.5% increase in disturbance footprint).

The potential environmental harm from the SCM, or potential impact to sensitive receptors is not anticipated to be materially greater than that approved in the current EA.

Appendix A: **Sonoma East 2 ML IDP**

QCoal Sonoma Pty Ltd

Sonoma Coal Mine: Sonoma East 2 MLA Initial Development Plan



[Comments]

Submitter information	
Report type	For submission to administering authority
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Tenure holders	QCoal Sonoma Pty Ltd JS Sonoma Pty Ltd CSC Sonoma Pty Ltd Watami (Qld) PTY LTD
Date of plan	August 2021

Table of contents

1	Introduction	2
1.1	Sonoma East 2 MLA Initial Development Plan Background and Purpose	2
1.2	IDP Term.....	3
1.3	IDP Content and Layout.....	3
2	Project Overview	4
2.1	Project Location	4
2.2	Project Tenements	4
2.3	Project Ownership.....	6
3	Geology and Coal Resources.....	7
3.1	Regional Geology	7
3.2	SCM Coal Geology	8
3.3	Drilling and Exploration Activities	11
3.4	Coal Resource	13
3.4.1	Location and Estimate of SCM Resources	13
3.4.2	Resource Optimisation.....	13
4	Sonoma East 2 IDP.....	15
4.1	Mine Lease Term	15
4.2	MLA General Arrangements	15
4.3	Mining Operations	18
4.3.1	Workforce and Plant.....	18
4.3.2	Mining Method.....	19
4.3.3	ROM Coal Handling	19
4.3.4	Processing (CHPP, Rejects, Product, Rail and Port)	19
4.4	Support Infrastructure	20
4.4.1	Access and Haul Roads.....	20
4.4.2	Power and Raw Water Supply	20
4.4.3	Mine and Sediment Affected Water Management	20
4.4.4	Regulated Diversions	21
4.4.5	Run of Mine Stockpile Area.....	21
4.4.6	Mine Infrastructure Area.....	21
4.5	Development Schedule	21
4.5.1	Sonoma East Pit Complex	21
4.5.1	Sonoma Main Pit.....	22
4.6	Public Interest	22
5	Coal Seam Gas Statement.....	24
5.1	Overlapping CSG Tenure	24
5.2	Coal Seam Gas (CSG) Occurrence.....	24
5.3	Impact on Future Commercial Gas Extraction	25
5.4	Co-Development Opportunities.....	25

6	Conclusions.....	26
Appendix A	Resource Mapping.....	27

Tables

Table 1 – SCM Tenure Particulars	4
Table 2 – SCM Background Land Tenures.....	6
Table 3 – QCoal Group Drilling Program 1996 to Date	11
Table 4 – Summary of SCM Coal Resources (Mt ROM @ 6% <i>insitu</i> moisture)	13
Table 5 – Sonoma East Pit Complex Schedule of Activities (ML 10327 and Sonoma East 2 MLA)	22
Table 6 – Impact of Sonoma East 2 as part of the SCM on Public Interest Issues.....	23

Table of Figures

Figure 1 – SCM Location.....	5
Figure 2 – Geological Conceptualisation	8
Figure 3 – Coal Measures Conceptualisation	10
Figure 4 – Exploration Drilling within the SCM Area	12
Figure 5 – Sonoma East 2 MLA LOM Layout	16
Figure 6 – Sonoma East 2 MLA LOM Layout with ML 10327	17

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1 Introduction

The Sonoma Coal Mine (SCM) is an open cut coal mine located in the northern Bowen Basin approximately seven kilometres south of the town of Collinsville. The SCM is owned by the Sonoma Coal Joint Venture (the JV) comprising four joint venture partners:

- QCoal Sonoma Pty Ltd;
- JS Sonoma Pty Ltd;
- CSC Sonoma Pty Ltd; and
- Watami (QLD) Pty Ltd.

At 1 August 2021, the SCM comprises three (3) tenures (see **Section 2.2**), namely three granted mining leases (ML) held by the JV being ML 10325, ML 10326 and ML 10327.

One additional ML is proposed for the SCM, which will bring the SCM up to a total of four ML tenements. As such, a ML Application (MLA) is required (referred to as “Sonoma East 2 MLA”), which includes the submission of this Initial Development Plan (IDP).

QCoal Sonoma Pty Ltd (QCoal Sonoma) holds the majority interest in the JV and is the authorised holder and majority holder for the tenements.

The SCM is operated as part of the QCoal Northern Hub (QNH), which comprises four (4) separate adjoining QCoal-affiliated open cut coal mines, namely Jax Coal Mine (JCM), Drake Coal Mine (DCM), Cows Coal Mine (CCM) and the SCM. The QNH is collectively operated as a single operational hub, sharing operational and technical resources, with some mining pits spanning ML boundaries within the QNH. In addition to the coal recovered from pits on the SCM, run-of-mine (ROM) coal extracted from pits on the CCM, JCM and DCM is (and will continue to be) received at the SCM where it is processed and transported to the coal terminal at the Port of Abbot Point (Abbot Point) for the export market.

The operations at the SCM are subject to environmental authority (EA) EPML00707713 of which QCoal Sonoma is the principal holder.

The QNH including the SCM uses conventional drill, blast, truck and excavator techniques to primarily target the Moranbah Coal Measures (MCM)

1.1 Sonoma East 2 MLA Initial Development Plan Background and Purpose

QCoal Sonoma has identified a parcel of land (referred to as the Sonoma East 2 MLA) adjacent to the southern boundary of ML 10327, which if included in the SCM would markedly increase the efficiency and optimise operations of the SCM. The Sonoma East 2 MLA is underlain by the prerequisite tenure EPC586 (held by Bowen River Coal Pty Ltd, a wholly owned subsidiary of QCoal Pty Ltd) and EPC639 (held by Pelican Creek Coal Pty Ltd, a wholly owned subsidiary of QCoal Pty Ltd). Submission of an MLA requires an IDP,

and this document has been prepared in accordance with the requirements of the *Mineral Resources Act 1989*, in support of the Sonoma East 2 MLA submission. .

For clarity, this IDP provides the information for the proposed Sonoma East 2 MLA as well as some broader SCM project information for context. Accordingly, for more detailed information regarding other BCM tenures, this IDP should be read in conjunction with the current SCM Later Development Plan (LDP) - QCoal 2018. .

1.2 IDP Term

The term of this IDP is proposed to be five years commencing with the grant of the Sonoma East 2 MLA. Thereafter LDPs will be submitted for the entire SCM in accordance with the requirements of the *Mineral Resources Act 1989*.

1.3 IDP Content and Layout

This IDP has been developed in accordance with sections 318DT, 318DU and 318DV (IDP requirements) of the *Mineral Resources Act 1989* and with reference to the DNRME “Initial and Later Development Plan Guideline”. It has been prepared to:

- Provide a term for this IDP (ref **Section 1.2**);
- Provide the location and estimation of the coal resources within the SCM MLs (refer to **Section 3**);
- Discuss the utilisation and optimisation of all targeted coal and coal seam gas within the MLs (refer to **Section 3** and **Section 5**);
- Provide graphic representations to illustrate where the activities will be performed during the term of this IDP (refer to **Section 4**);
- Describe the nature and extent of mining activities for each year of this IDP term (refer to **Section 4**);
- Include a statement of how the effects on, and the interests of, any relevant overlapping or adjacent petroleum tenure holder has been considered, with due regard to the main purposes of the coal seam gas (CSG) regime and the CSG assessment criteria (refer to **Section 5**); and
- Provide reasons why the plan is considered appropriate (refer to **Section 6**).

2 Project Overview

2.1 Project Location

The SCM is located approximately seven kilometres south of the mining town of Collinsville and approximately 100 km by road to the southwest from the coastal centre of Bowen in north-eastern Queensland. The SCM is divided by the State-controlled Bowen Developmental Road and the existing parallel Newlands railway line, with ML 10325 and ML 10326 on the western side, and ML 10327 and Sonoma East 2 MLA on the eastern side. Access to the SCM from Bowen and Collinsville is by the Bowen Developmental Road.

The SCM coal resource lies along the southern boundary of ML 10325, the central and northern areas on the eastern side of ML 10326, and on the western side of ML 10327 and the Sonoma East 2 MLA.

The townships of Collinsville and the adjacent Scottsville have a combined population of approximately 2,000 people with several hotel/motels, a hospital and medical services, schools, shopping, and sport and recreation facilities. The SCM is within an established mining and grazing region in the Whitsunday Regional Council local government area. Presented in **Figure 1** is the location of the SCM and the surrounding mines which form part of the QNH.

SCM ROM coal (along with ROM coal from other QNH mining pits) is transported by truck to the SCM ROM pad, coal handling and preparation plant (CHPP) and associated rail loop, where it is processed and loaded onto trains for rail transport to Abbot Point for the export market.

2.2 Project Tenements

The SCM comprises three granted MLS (ML 10325, ML 10326, and ML 10327) and the proposed Sonoma East 2 MLA, all held or proposed to be held by the JV participants.

The total area of the SCM (including the Sonoma East 2 MLA) is 2,214 ha (refer **Table 1**).

The boundaries of the SCM MLs, including Sonoma East 2 MLA, is presented in **Table 1**.

Table 1 – SCM Tenure Particulars

ML Number	Authorised Holder	Area (ha)	Grant Date
ML10325	QCoal Sonoma Pty Ltd	716.7	12 April 2007
ML10326	QCoal Sonoma Pty Ltd	1063.0	13 September 2007
ML10327	QCoal Sonoma Pty Ltd	360.4	13 September 2007
Sonoma East 2 MLA	QCoal Sonoma Pty Ltd	74	N/A

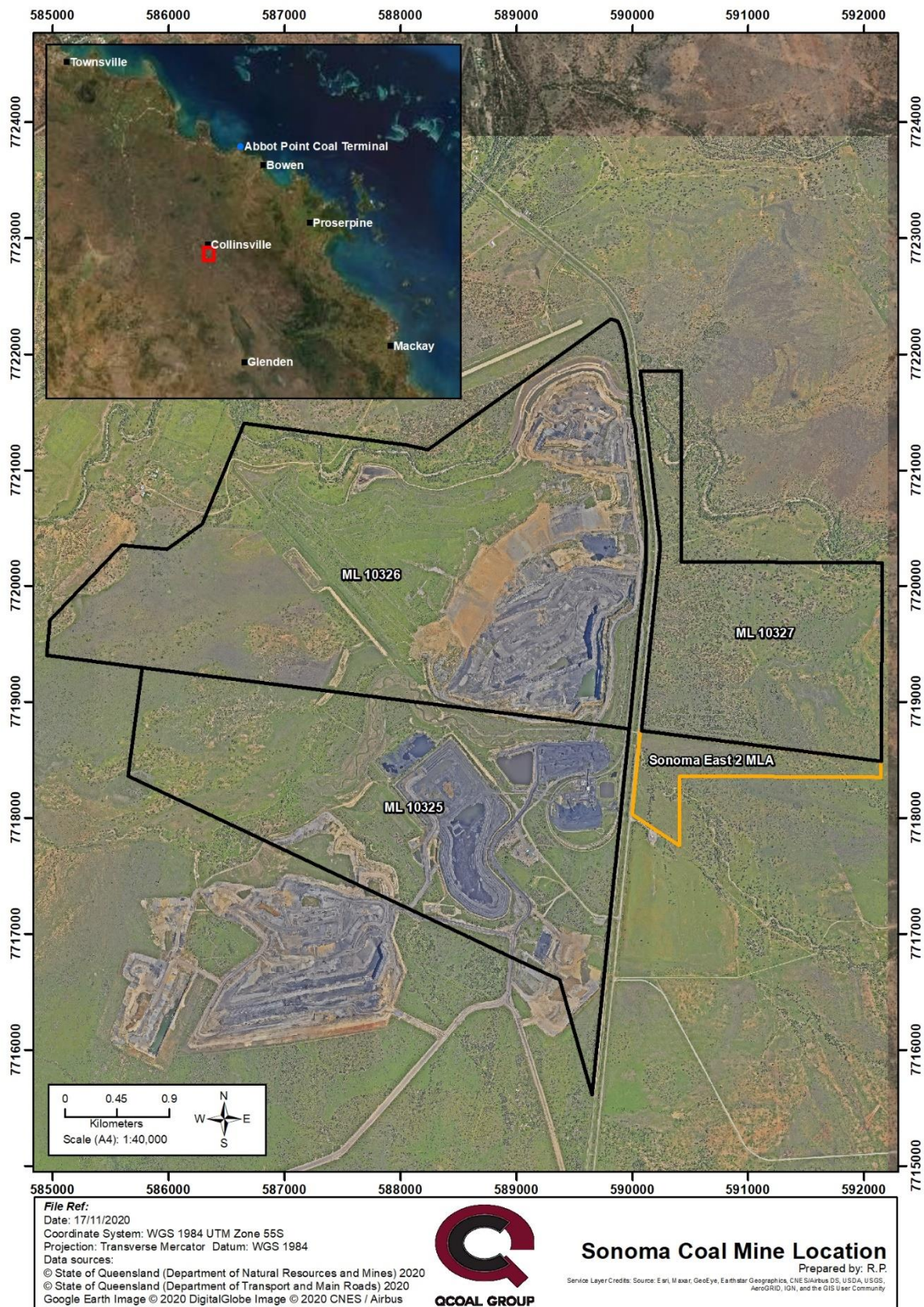


Figure 1 – SCM Location

The background land tenures underlying the SCM are detailed in **Table 2**.

Table 2 – SCM Background Land Tenures

MLA Number	Lot/Plan	Land Type
ML 10325	1SP190745	Freehold
ML 10326	1SP190745	Freehold
	25SP190745	Freehold
ML 10327	1SP190745	Freehold
	21DK160	Lands Lease
	25SP190745	Freehold
	ADK116	Easement
	BDK116	Easement
Sonoma East 2 MLA	4SP234989	Freehold
	7SP123162	Lands Lease
	ARP739573	Easement

The pre-requisite permits underlying the SCM MLs/Sonoma East 2 MLA are:

- EPC 586 held by Bowen River Coal Pty Ltd which was granted on 28/11/1995 and expires on 27/11/2022.
- EPC 639 held by Pelican Creek Coal Pty Ltd which was granted on 12/12/2001 and expires on 11/12/2023.

The SCM MLs and the Sonoma East 2 MLA are not overlapped by any exploration tenements for petroleum or minerals.

2.3 Project Ownership

The SCM is owned by a joint venture (JV) comprising four partners, namely QCoal Sonoma (majority shareholder), JS Sonoma Pty Ltd, CSC Sonoma Pty Ltd, and Watami (Qld) Pty Ltd.

Contact details for QCoal Sonoma are provided below:

- Street Address: Level 15, 40 Creek Street, Brisbane Qld 4000
- Postal Address: PO Box 10630, Brisbane Qld 4000
- Phone: (07) 3002 2900
- Facsimile: (07) 3002 2999

3 Geology and Coal Resources

This section describes:

- the regional and local geology in the area of the SCM;
- a description of the SCM coal seams;
- drilling and exploration activities undertaken within the SCM; and
- SCM coal resources.

3.1 Regional Geology

The SCM, as part of the broader QNH, is located in the northern Bowen Basin, where active subsidence and deposition during the Permo-Triassic was centred within an extensional terrain known as the Taroom Trough. This deposition centre was situated marginal to the Collinsville Shelf in the west, which typically behaved as a stable platform throughout. The deformed Taroom Trough of the north Bowen Basin is defined by the Nebo Synclinorium, where contained sediments and volcanics of the western two-thirds dip gently toward the major synclinal axis in the east. Post-depositional compression has resulted in a fold-and-thrust style of deformation, particularly on the eastern side of the basin where sediments along this margin tend to dip steeply westward.

The SCM is underlain by the late Permian Blackwater Group consisting of lithic sandstone, siltstone, shale, conglomerate, dolomite and tuff and minor coal. This is surrounded and underlain by the low to upper Permian Blenheim Subgroup described as a succession of siltstone, sandstone, conquite and limestone (i.e. the Blackwater Group is an outlier surrounded by the Blenheim Subgroups). The Collinsville Coal Measures underlie the Blenheim Group.

Regionally, the stratigraphic sequence is summarised as follows: the Permo-Triassic sediments of the Bowen Basin are overlain by a veneer of unconsolidated Quaternary alluvium and colluvium, poorly consolidated Tertiary sediments and, in places, remnants of Tertiary basalt flows. The stratigraphy comprises basal Lizzie Creek Volcanics and overlying marine Back Creek Group, non-marine Blackwater Group, and Tertiary sediments of the Sutor Formation.

Geological detail in the SCM area is intermittently obscured by alluvium and gravel, especially adjacent to creeks and watercourses. This recent (Cainozoic) cover comprises unconsolidated fine to very coarse-grained sand, along with occasional irregularly interbedded silt, clay and gravel lenses. The most persistent gravel bed occurs at the base of the unit generally comprising rounded pebble to cobble-sized clasts of predominantly andesitic to basaltic composition, set in a silt to clay-rich matrix. Generally the alluvial unit is a thin veneer but becomes thicker along rivers and watercourses in the region.

The stratigraphy of the SCM as part of the broader QNH is presented in **Figure 2**, in which the coal measures targeted by the SCM are highlighted.

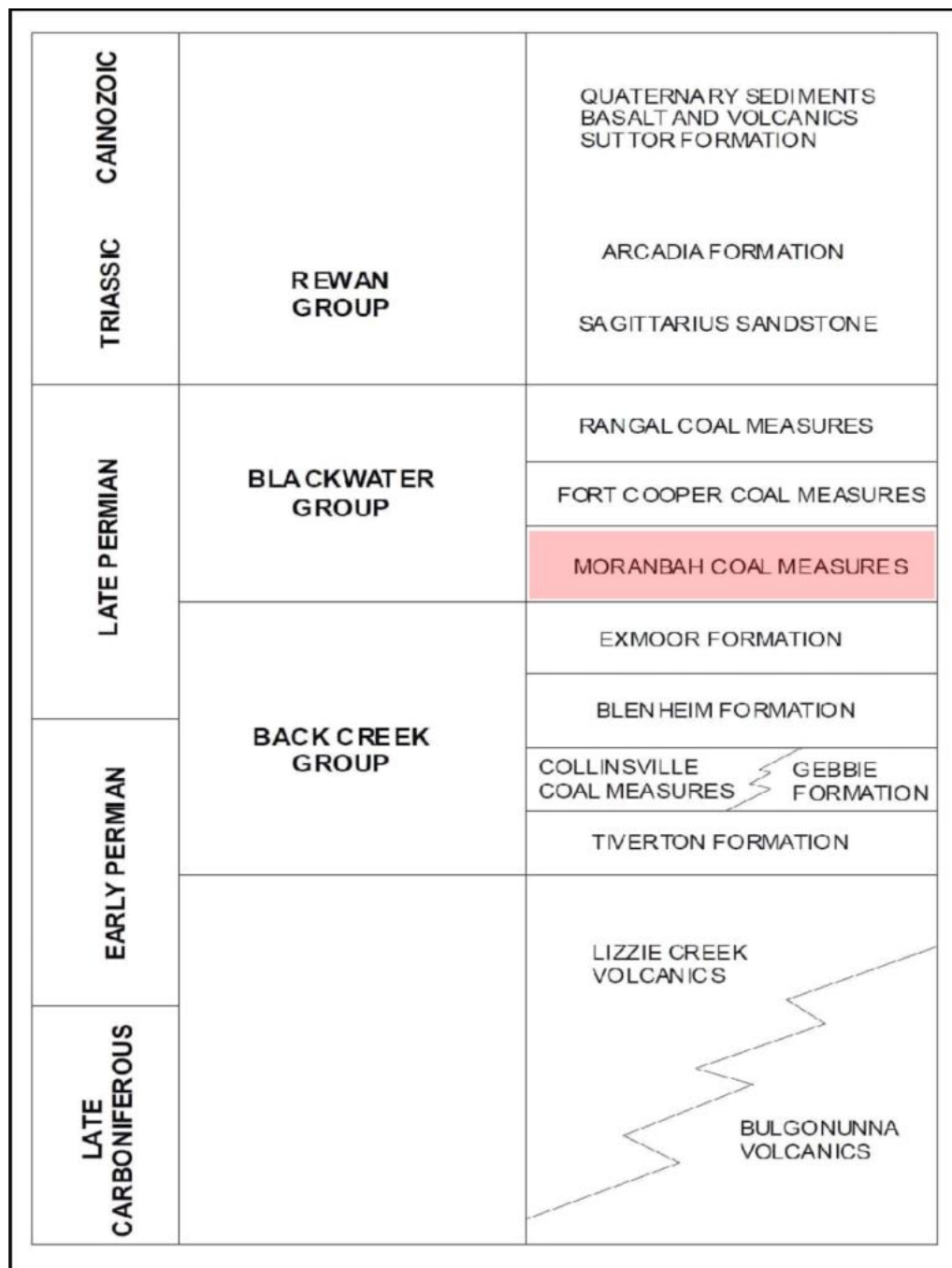


Figure 2 – Geological Conceptualisation

3.2 SCM Coal Geology

The Moranbah Coal Measures (MCM) at the northern tip of the Bowen Basin contain a number of coal seams dipping to the south and to the east, labelled alphabetically from the “A” seam (the deepest) to the uppermost “S” seam (see **Figure 3**). The SCM targets several of these seams across five main mining areas. Coal seams “A” through “Q” are described below (note that the descriptions of these coal seams are consistent with previously submitted IDPs and LDPs for the SCM):

- A Seam

Highly banded and extensively intruded as well as heat affected. Although the seam occurs over a 15 – 19 m thick interval, individual coal plies are typically $\leq 1 - 1.5$ m thick. The coal is commonly dull, intermittently stony, and contains abundant mudstone and tuffaceous claystone partings. The A Seam is generally classified as non-economic because of its inferior quality.

- B Seam

The B Seam is separated from the underlying A Seam by 15 – 24 m and is dark grey, fine-grained sandstone, siltstone and carbonaceous mudstone. The northern extent of the B Seam sub crops approximately 12 km to the northwest in the vicinity of Coral Creek. The seam consistently dip at approximately $5 - 7^\circ$ toward the south and south-southeast, but records indicate dipping as high as $12 - 15^\circ$ in some areas. At the northern end of the deposit, the B Seam is essentially a single entity. Where the B Seam is a single entity, it has been identified as 12 – 16 m thick. As the seam continues to the southwest, it progressively splits into two and three distinct units and during mining these were observed as B1 (1 m thick), B2 (3 m thick) and B3 (1 m thick).

- B-Rider Seam

The B-Rider Seam is generally thin (0.7 – 2.0 m), laterally persistent coal seam which is midway between the B and C Seams. In most instances, the B-Rider Seam is found to be intruded or significantly heat affected. The B-Rider Seam is not considered to be of economic importance.

- C Seam

The C Seam is separated from the underlying B Seam by approximately 70 m of interburden. The C Seam ranges in thickness from 4.5 – 6.7 m with dips to the south-southeast at a constant angle of around $4 - 5^\circ$. The C Seam has a consistent geophysical profile that is more stone banded in the top half of the seam, but as the coal plies display similar ash liberation characteristics as in the lower parts of the seam, it was treated as a single ply for mine planning purposes.

- E Seam

The E Seam correlates with the Goonyella Middle seam. The experience of mining at SCM indicates E Seam can be intruded and heat affected. The E Seam is not considered to be of high economic value for the SCM.

- **P Seam**

The P seam is separated from the underlying E Seam by approximately 30 – 40 m of light to medium grey siltstone. The seam itself comprises an upper and lower horizon separated by approximately 1 m of partly carbonaceous siltstone. Neither coal horizon is particularly well developed, with the upper ply ranging between 0.5 – 1.0 m thick and the lower play between 1.0 – 1.5 m thick. Both horizons are also either extensively intruded or significantly heat-affected and are not considered to be of economic importance.

- **Q Seam**

Q Seam ranged in thickness with two parting bands (10 – 25 cm) appearing in the seam, which form marker bands for the purposes of mining activities. Mining of Q Seam in other QNH pits has seen Q Seam split into three working sections with a total thickness of 9 m, of which two were economic and mined.

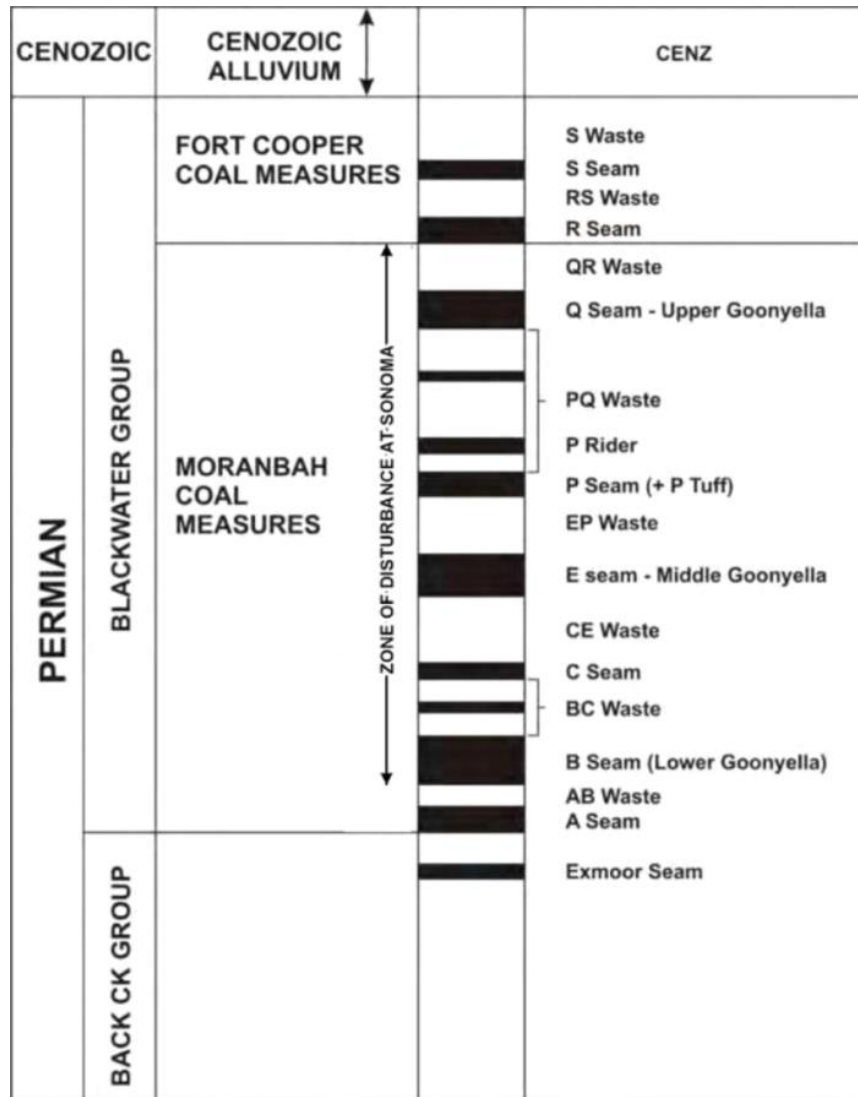


Figure 3 – Coal Measures Conceptualisation

3.3 Drilling and Exploration Activities

From 1996 to present, 527 exploration holes have been drilled on the SCM MLs, as detailed in **Table 3** and presented in **Figure 4**. It is noted that **Figure 4** is presented on a February 2020 aerial, and as such exploration drillholes in the vicinity of Main Pit, Q Pit and B Pit have been mined out.

The previous exploration drilling on ML 10327 and Sonoma East 2 MLA, has delineated the economic extent of the targeted coal seams on the East of the Bowen Developmental Road, to the western half of ML 10327 and along the northern boundary (on the western side) of Sonoma East 2 MLA.

Table 3 – QCoal Group Drilling Program 1996 to Date

Year	Chip Holes	Core Holes	Total Drilled (m)	Total Cored (m)	Casing (m)
1996-2005	308	42	26,448	638.65	3,762
2006	104	6	4,044	301.25	213
2007	-	2	-	98.15	33
2008	16	-	853	-	17
2011	24	-	2,195	-	369
2014	16	-	1,669	-	92
2015	3	6	1,472	122.36	112
Total	471	56	36,681	1,160.41	4,598

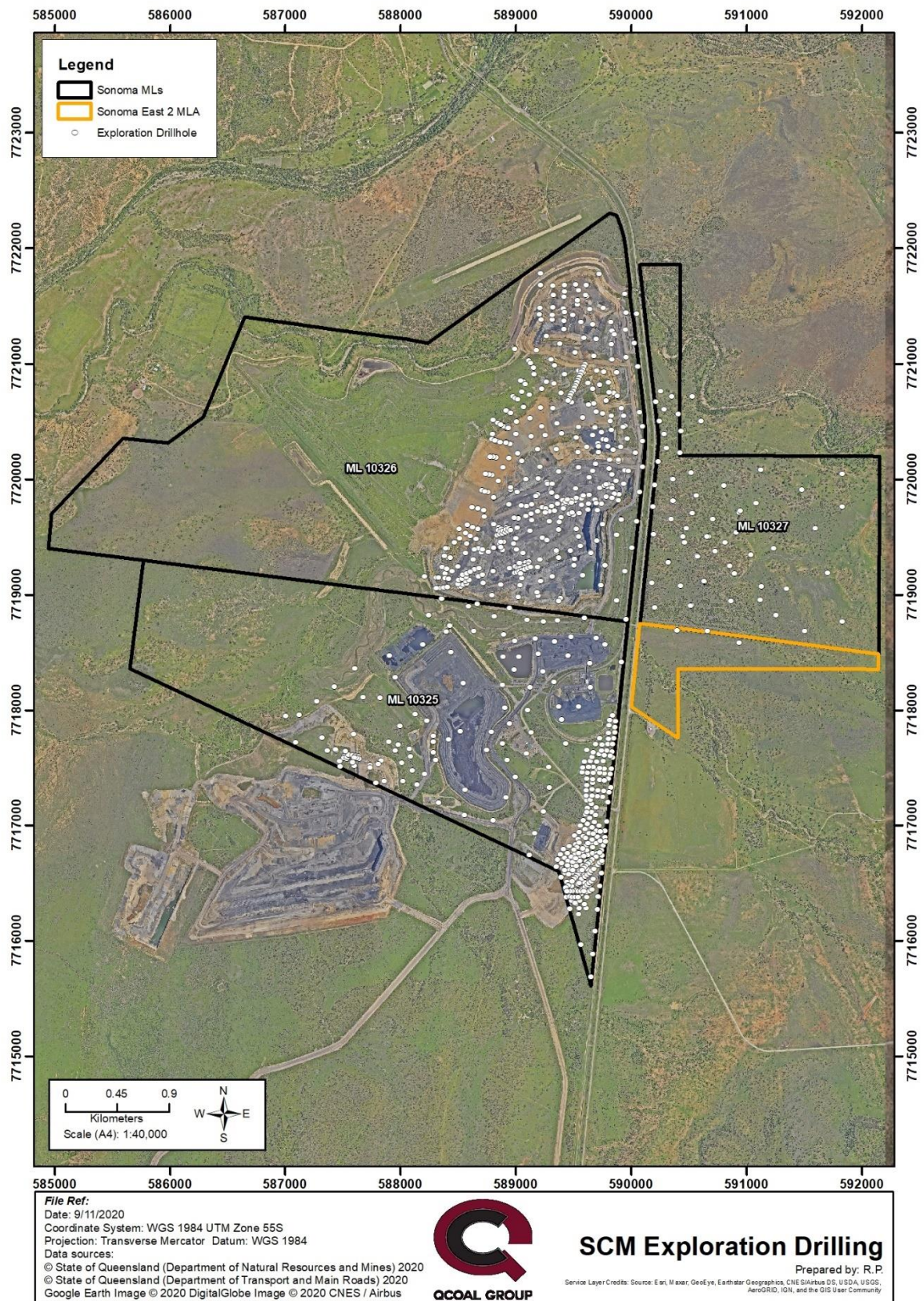


Figure 4 – Exploration Drilling within the SCM Area

3.4 Coal Resource

The most recent coal resource estimate and mapping for the SCM, was prepared by Measured Group Pty Ltd (Measured Group 2018 Report), based on updates to the SCM geological model from exploration activities described previously and approximately 10 years of active mining at the SCM. The coal resource at the SCM is therefore considered to be well understood.

The Measured Group 2018 Report is compliant with the Australasian Code of Reporting of Exploration Results, Mineral Resources, and Ore Reserves, 2012 edition (JORC Code).

3.4.1 Location and Estimate of SCM Resources

A composite resource map prepared as part of the Measured Group 2018 Report was included within the SCM Later Development Plan (LDP) (QCoal, 2018), and, as it remains fit for purpose, the map has been included as **Appendix A** in this IDP.

The composite resource map shows the mined areas on SCM (as at 2018) as well as the economic resource in ML 10327, which extends extending to the northern boundary of Sonoma East 2 MLA. The economic resource extends into the northern boundary of Sonoma East 2 MLA as described in **Section 3.3**; however, as the figure in **Appendix A** pre-dates inclusion on Sonoma East 2 MLA in mine planning it is not shown.

A summary of measured, indicated and inferred coal resources from the Measured Group 2018 Report is shown in **Table 4** below (split into resources within the SCM MLs). The Measured Group 2018 Report does not quantify coal resources within the Sonoma East 2 MLA, as it is inferred that the resource on ML10327 continues into the Sonoma East 2 MLA, and therefore a small portion of the pit batter will extend into the new tenure.

Table 4 – Summary of SCM Coal Resources (Mt ROM @ 6% *insitu* moisture)

Tenure	Measured	Indicated	Inferred	Total
ML 10325	0	6	26	32
ML 10326	5	8	4	17
ML 10327	2	15	11	28
Sonoma East 2 MLA	-	-	-	-
Total	7	29	41	77

3.4.2 Resource Optimisation

Sonoma East 2 MLA enables the full recovery and optimisation of all economic coal resources within ML 10327 (as identified in Appendix A) and the remaining coal in Sonoma Main Pit on ML 10326. Without Sonoma East 2 MLA, neither of those optimisations would be possible:

- Without Sonoma East 2 MLA, the section of resource along the southern ML 10327 boundary will be sterilised by the need for a battered mine wall set back from the boundary, which by the time the pit is at maximum depth will represents a notable sterilisation of resources. Inclusion of Sonoma East 2 MLA allows for mining to continue through the MLA 10327 southern boundary to realise the full economic extent of the resource. This would include recovery of all economic resources in the north of Sonoma East 2 MLA.

- Sonoma East 2 MLA is intended to include the required surface supporting infrastructure in areas where there is no identified resource and no planned waste rock dumps, as opposed to requiring infrastructure on ML 10327 leading to pit/dump designs having to be restricted to account for surface infrastructure.
- Water management on ML 10327 and Sonoma East 2 MLA, is designed to divert clean water around the mining areas on ML 10326 into an existing drainage feature on Sonoma East 2 MLA. This enables the Sonoma East Pit Complex to operate one large pit rather than two smaller pits, allowing full recovery of the resource without sterilisation. For clarity, without this option the Sonoma East Pit Complex will be split into two pits separated by a drainage feature, which will render the coal between those pits as sterilised.
- The clean water diversion associated with Sonoma East 2 MLA, will also make possible the recovery of a remaining coal resource in Sonoma Main Pit, which will otherwise remain unavailable due to existing drainage alignments.

4 Sonoma East 2 IDP

This section provides information specifically relating to the development of the Sonoma East 2 MLA, including:

- layout;
- workforce and plant requirements;
- mining methods;
- coal handling and transport requirements;
- supporting infrastructure requirements; and
- schedule of development.

4.1 Mine Lease Term

The proposed term for the Sonoma East 2 MLA is 25 years.

4.2 MLA General Arrangements

The Sonoma East 2 MLA is located immediately adjacent to the south of ML 10327 and will be southward an extension of the Sonoma East Pit Complex. The proposed life of mine (LOM) layout for the Sonoma East 2 MLA is presented in **Figure 4**.

The Sonoma East 2 MLA maximises use of the tenure area in consideration of the natural constraints on the land, and comprises pit, vehicle access, topsoil stockpiles and water management infrastructure.

Presented in **Figure 5** is the LOM layout for the Sonoma East Pit Complex, which covers ML 10327 and the Sonoma East 2 MLA.

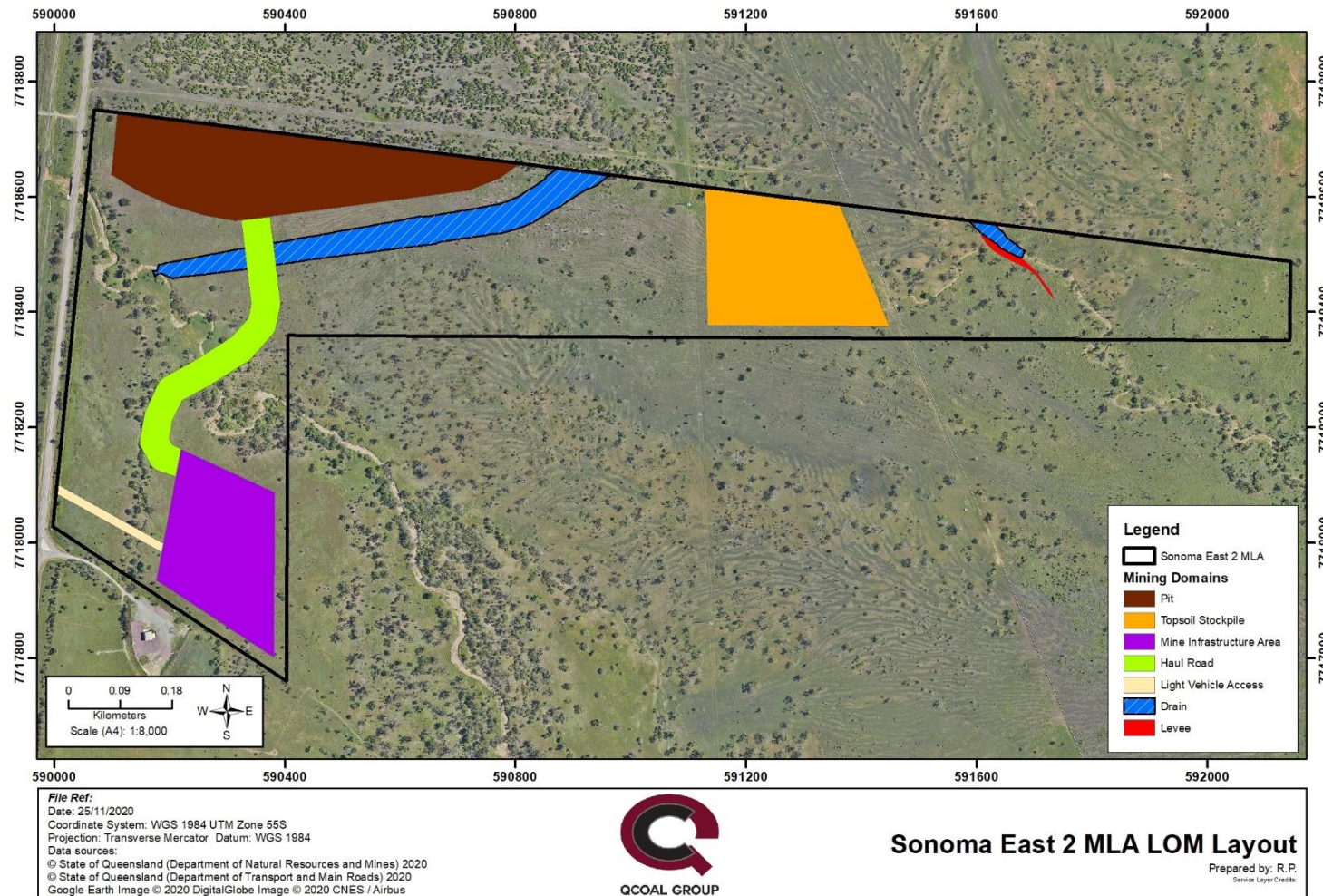


Figure 5 – Sonoma East 2 MLA LOM Layout

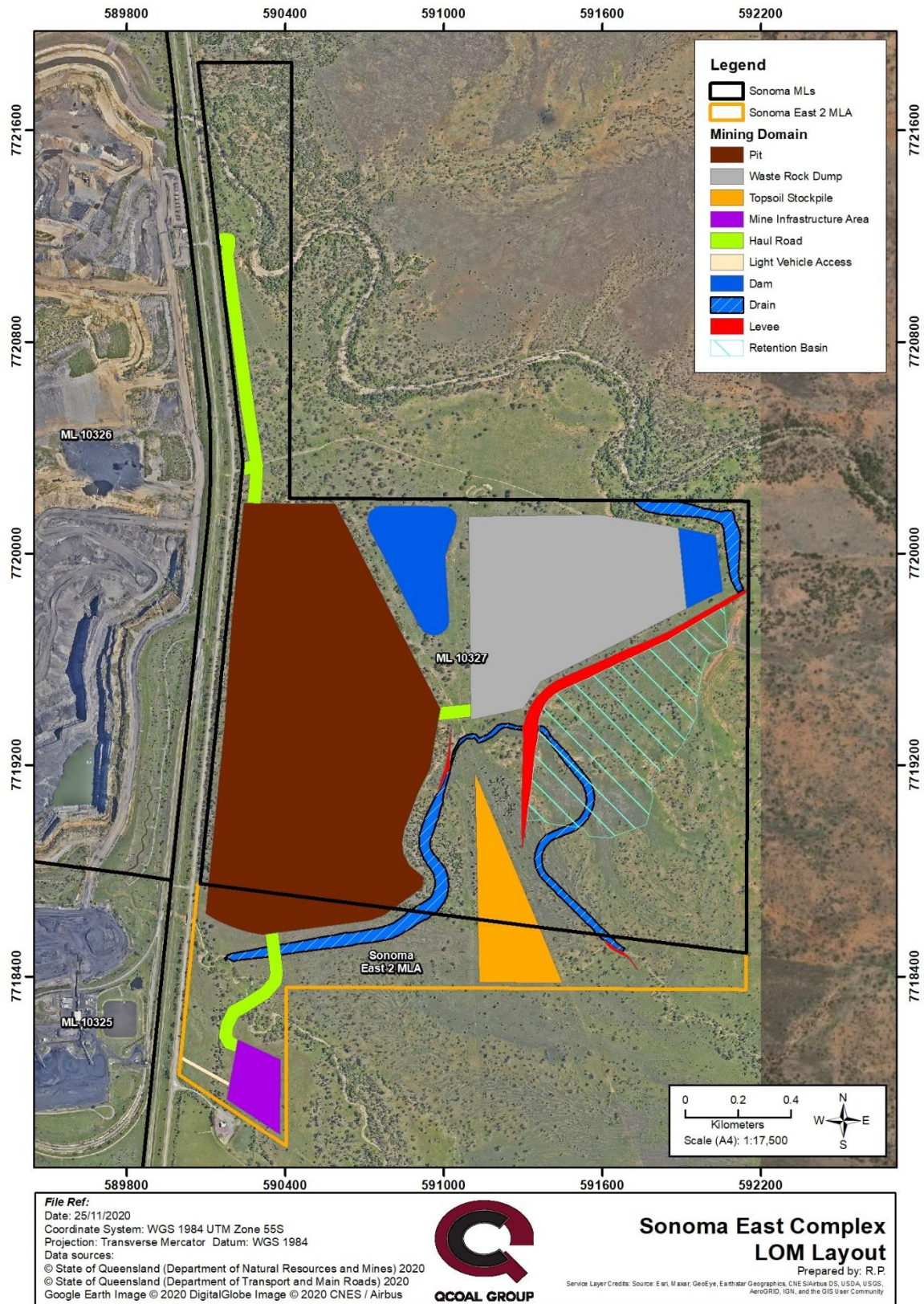


Figure 6 – Sonoma East 2 MLA LOM Layout with ML 10327

4.3 Mining Operations

4.3.1 Workforce and Plant

The Sonoma East 2 ML is proposed as an extension to, and in support of, the East Pit Complex. The inclusion of the Sonoma East 2 MLA area for the East Pit Complex will not require additional workforce or plant beyond the requirements for the broader SCM (i.e. activities on the Sonoma East 2 MLA will utilise existing SCM workforce and plant).

The QNH (into which the SCM is integrated) has adopted the industry standard model for contract mining operations, whereby the contractor provides the necessary mining fleet, support plant (e.g. graders, bulldozers, water trucks, etc.), equipment and staff to meet mine production requirements. However, as part of a broader commercial strategy for the QNH, QCoal has purchased a fleet of excavators and haul trucks, which are operated by the contractor workforce across the QNH, in addition to the contractor-owned fleet. As such, the mining fleet used on the SCM may be a combination of QCoal and/or contractor-owned equipment, depending on mining fleet scheduling, breakdowns, servicing, etc., across the QNH.

The workforce on the SCM is part of the broader QNH workforce. Contractor resources and equipment are moved across the QNH (from mine to mine and pit to pit) as a function of changes to production schedules, changing priorities and the actual stage of production in any given pit (such as dozer pushing, bench drilling, overburden excavation or coal excavation). All these variables (and therefore the workforce particulars) are ultimately market-driven. For those reasons the plant and workforce profile on any individual pit or mine within the QNH will change frequently (in some cases to nil where a pit has been put on hold in lieu of working in another QNH pit), but the total QNH plant and workforce profile will remain more stable. Accordingly, any reporting of the SCM plant and workforce profile should consider the workforce arrangements on the broader QNH.

Operator workforce is variable, as detailed above, and administrative, management, maintenance and other support staff (e.g. technicians, fitters, tradespeople, managers, engineers, geologists, surveyors, administration, maintenance and environmental personnel) are shared across the broader QNH (including the SCM). The total QNH workforce typically ranges between 350 and 500 FTE.

With regard to plant type and number at the SCM, for the same reasons that apply to changes in workforce numbers, the number and type of plant used at the SCM is subject to market and production driven change, as well as internal changes in operational priorities within the broader QNH. As an indicator of mining plant used on the SCM at any one time, there has been:

- between 1 and 4 hydraulic excavators (550 tonne and 350 tonne);
- a fleet of between 3 and 17 haul trucks (predominantly 190 tonne class); and
- a support fleet of bulldozers (between 3 and 9), loaders (between 1 and 2), graders (between 1 and 3) and water trucks (between 1 and 4).

4.3.2 Mining Method

The batter slopes of the southern Sonoma East Pit will extend into the Sonoma East 2 MLA to the economic limit of the resource. As such the mining method will not require a specific box cut for commencement on Sonoma East 2 MLA, but will be a continuation of an existing pit (the Sonoma East Pit). Sonoma East Pit ROM coal will be mainly from MLA 10327.

The SCM operates as a drill, blast, truck and excavator mining operation, with large excavators and rear-dump mining haul trucks used to remove the overburden as well as the coal. The surface Cenozoic material is free dug, with the remaining waste blasted and excavated by hydraulic excavators. Coal may be excavated unblasted and mined by hydraulic excavator and truck. A support fleet of dozers, graders and water trucks are used in support of the mining fleet as required. Waste rock removed from the section of the pit entering the Sonoma East 2 MLA will be dumped either out-of-pit on ML 10327 or in-pit on the Sonoma East 2 MLA or ML 10327.

The majority of disturbance on Sonoma East 2 MLA relates to support infrastructure water management infrastructure, roads, Mine Infrastructure Area (MIA), etc.

All areas of disturbance on the Sonoma East 2 MLA will be cleared of vegetation just prior to the commencement of construction activities. Trees and shrubs will be bulldozed, windrowed and burned or used for erosion protection/wildlife refuge. Topsoil is removed from the cleared area by scrapers or bulldozers and either stockpiled for later use, or placed directly on areas undergoing rehabilitation. A Topsoil Management Plan and associated register is used to track the movement of topsoil. Roads and water management infrastructure (i.e. drains and levees) are constructed using civil earthmoving machinery. A topsoil stockpile is proposed to be located on a portion of the Sonoma East 2 MLA.

4.3.3 ROM Coal Handling

The Sonoma East 2 MLA is intended as an extension to, and in support of, the East Pit Complex on ML 10327. ROM coal within the broader Sonoma East Pit Complex will be stockpiled at an in-pit ROM pad for subsequent transport to the SCM CHPP. The Sonoma East 2 MLA area has no planned out-of-pit ROM coal stockpiling or handling facilities.

4.3.4 Processing (CHPP, Rejects, Product, Rail and Port)

All ROM coal extracted from the Sonoma East Pit Complex, including any from the Sonoma East 2 MLA will be processed and loaded onto trains at the SCM CHPP located on ML 10325. No processing, rejects management or product stockpiling is proposed for Sonoma East 2 MLA.

4.4 Support Infrastructure

4.4.1 Access and Haul Roads

The primary site access for the Sonoma East Pit Complex for light vehicles is via the State-controlled Bowen Development road to the West of the Sonoma East 2 MLA. Approval from the Department of Transport and Main Roads for the intersection with the Bowen Developmental Road will be sought prior to the commencement of construction activities.

A haul road will connect the Sonoma East 2 MLA MIA area (which will include a heavy vehicle workshop) to the Sonoma East Pit. This haul road will require two drainage line crossings, one over Two Mile Creek, and another over a constructed drainage line. These crossings will be appropriately designed to not impact the hydrological regime of the drainage lines.

4.4.2 Power and Raw Water Supply

As no coal processing is proposed to be undertaken on the Sonoma East 2 MLA no raw water supply is required, and power demand is limited to the MIA (offices, workshop, ablution/crib blocks etc). Power demand will therefore be satisfied by connection to existing QNH power infrastructure which currently has sufficient capacity or by diesel generators for satellite area (go-lines etc).

Water for dust suppression will be sourced from the mine water dam located in the north of the Sonoma East Pit Complex.

4.4.3 Mine and Sediment Affected Water Management

Management of mine and sediment affected water across the SCM is addressed in detail in the QNH Water Management Plan (WMP), which includes an Erosion and Sediment Control Plan (ESCP). The WMP/ESCP will be updated with the approval of the Sonoma East 2 MLA to incorporate the catchment area, runoff management, dust suppression requirements, etc. in the WMP. The updated WMP will be submitted to DES.

Mine-affected water in the case of the Sonoma East 2 MLA is limited to stormwater runoff from the MIA area, and related to the pit batters that extend into the Sonoma East 2 MLA. This runoff will be directed to water storages, which are subsequently available for dust suppression across the Sonoma East Pit Complex.

Clean surface water runoff is directed via bunds, drains or culverts back into the environment. In the case of Sonoma East 2 ML that will include diverting clean water around the Sonoma East Pit complex on ML 10327, into Sonoma East 2 MLA existing natural drainage features.

Shown in **Figure 5** are the indicative locations of water management infrastructure on the Sonoma East 2 MLA during the term of this IDP, with broader water management for the Sonoma East Pit Complex presented in **Figure 6**.

4.4.4 Regulated Diversions

No regulated diversion works are proposed as part of activities on the Sonoma East 2 MLA. It is noted, however, that the water management works undertaken on the Sonoma East 2 MLA and the broader Sonoma East Pit Complex will render the north-south arm of the existing Two-Mile Creek Diversion unnecessary (making the recovery of a remaining coal resource in Sonoma Main Pit possible as per **Section 3.4.2**).

4.4.5 Run of Mine Stockpile Area

No ROM stockpiles will be present on the Sonoma East 2 MLA.

4.4.6 Mine Infrastructure Area

A MIA will be located in the southern area of the Sonoma East 2 MLA. The MIA will comprise a crib room, administrative office, ablutions facilities and a heavy vehicle workshop to support operations on the Sonoma East Pit Complex.

The existing administration areas on ML 10325 will also be utilised by personnel and vehicles working on the Sonoma East Pit Complex.

4.5 Development Schedule

4.5.1 Sonoma East Pit Complex

Activities on the Sonoma East 2 MLA are directly related to the development of the Sonoma East Pit Complex on ML 10327. As such, the activities on the Sonoma East 2 MLA for the term of this IDP will align and be undertaken as part of the works for the Sonoma East Pit Complex. The schedule for activities within the Sonoma East Pit Complex are presented in **Table 5**.

Construction activities (clearing, stripping and water management infrastructure) in the Sonoma East Pit Complex will commence during years 1 and 2 of the IDP term (the majority of the works on the Sonoma East 2 MLA completed in year 1), with first coal planned during the first half of year 2 of the IDP term. Mining will generally advance north to south, with dumping of waste rock planned to commence out-of-pit to the east of the pit (within ML 10327) but will transition to in-pit once the pit has sufficiently progressed (progressive backfilling).

Rehabilitation activities (such as dumping to final slope, shaping, drainage installation, etc) will be subject to the broader rehabilitation priorities on the SCM.

Prior to commencement of any activities on Sonoma East 2 MLA, the SCM EA requires amendment to include the Sonoma East 2 MLA (refer to **Section 1.1**), after which it will be eligible to be granted. Approval to create a new intersection for access from the State-controlled Bowen Developmental Road will also need to be sought prior to commencement of activities.

Table 5 – Sonoma East Pit Complex Schedule of Activities (ML 10327 and Sonoma East 2 MLA)

IDP Year	Activities
1	<ul style="list-style-type: none"> - Commence construction of water management infrastructure. - Support infrastructure construction (haul roads, stripping access) - Commence box cut
2	<ul style="list-style-type: none"> - Active mining - Out-of-pit dumping. - Progressive rehabilitation activities subject to operational requirements.
3	<ul style="list-style-type: none"> - Active mining - Out-of-pit dumping transitioning to in-pit dumping. - Progressive rehabilitation activities subject to operational requirements.
4	<ul style="list-style-type: none"> - Active mining - In-pit dumping. - Progressive rehabilitation activities subject to operational requirements.
5	<ul style="list-style-type: none"> - Active mining - In-pit dumping. - Progressive rehabilitation activities subject to operational requirements.

4.5.1 Sonoma Main Pit

The water management works on the Sonoma East 2 MLA and the broader Sonoma East Pit Complex also enable the mining of the remaining coal reserve of Sonoma Main Pit (ML 10326) underlying the north-south stretch of the Two Mile Creek diversion. The timing of this work will be market dependent and cannot commence until all water management works are completed on the Sonoma East Pit Complex. More detail on Sonoma Main Pit and recovery of resource associated with Sonoma East 2 MLA water management was provided in the SCM Later Development Plan (LDP) (QCoal, 2018).

4.6 Public Interest

The Sonoma East 2 MLA has been considered in conjunction with the broader SCM according to the 'public interest' criteria detailed in Section 318AK of the *Mineral Resources Act 1989*. A summary is detailed in **Table 6**.

The commencement of operations on the Sonoma East 2 MLA in conjunction with the approved adjacent ML 10327 (the Sonoma East Pit Complex) will enable continued operation and expansion of an existing low-cost mine supplying a production into a market for which there is existing demand.

Table 6 – Impact of Sonoma East 2 as part of the SCM on Public Interest Issues

Public Interest Criteria	Specific Comments in relation to SCM / Sonoma East 2
Government Policy	<p>It is known that an economic coal resource exists on the SCM, as evidenced by the combined results of exploration and current mining on the SCM MLs. The results have returned commercial drivers favourable to the continued development and expansion of the SCM operations including, within the approved MLs and the Sonoma East 2 MLA, as an open-cut operation exporting coking and thermal coal.</p> <p>In addition, the SCM has attracted direct investment by two major overseas customers as JV partners. Queensland Government policy is supportive of and encourages continued foreign investment in major resource projects such as the SCM.</p> <p>The addition of the Sonoma East 2 MLA facilitates an improved optimization of the coal resources on ML 10327 and ML 10326.</p>
Value of commodity production (including time value)	<p>The activities currently undertaken on the proposed Sonoma East 2 ML are critical to support the ongoing QNH operations for commodity production and to maximise the resource recovery for the SCM.</p> <p>Given the intention to continue to continue export of SCM/QNH mine product overseas, the SCM will continue to have a positive impact on Australia's current accounts.</p>
Employment creation	<p>The QNH, of which the SCM is part, has employment of up to 500 FTE.</p> <p>Indirect employment as a result of the SCM has occurred throughout the region, in particular in the nearby town of Collinsville.</p> <p>Direct and indirect employment are expected to continue for the extended life of the SCM with the inclusion of operation on the Sonoma East 2 MLA.</p>
Total return to the State and to Australia (including royalty and rent), assessed on both a direct and indirect basis, so that, for example, downstream value adding is included.	<p>Royalty payments to the Queensland Government for the coal production are estimated to be in excess of \$200 million over the life of the SCM. Rental payments for the Sonoma East 2 MLA to the Queensland Government are estimated to be approximately \$120,000 over the life of the SCM.</p> <p>In addition, payroll tax, company tax, income tax and goods and services tax receipts as a result of the SCM will be substantial.</p>
Social impacts	<p>The SCM is located in an area with a strong tradition of coal mining. The mining activities on the SCM MLs have thus far had positive social impacts on the region and the SCM will provide continued long term employment opportunities to the mining sector in the region.</p> <p>The addition of the Sonoma East 2 MLA to the SCM will continue and increase the positive social impacts and employment opportunities in the region.</p>
The overall economic benefit for the State, or a part of the State, in the short and long term.	<p>The SCM presents an opportunity for continued positive economic benefits to the State (via royalties, rent, rail and port charges, and corporate taxes). The addition of the Sonoma East 2 MLA to the existing operational MLs will improve the economics of mining on the SCM and further increase those positive benefits.</p> <p>The SCM has positive impacts on the Collinsville region by direct employment and by encouraging growth in the local economy, which would also increase with the additional mining activities on the Sonoma East 2 MLA.</p> <p>Growth in the local economy will ultimately improve the availability and sustainability of services and facilities which will enhance the vitality and lifestyle of the region in general.</p>

5 Coal Seam Gas Statement

The following Coal Seam Gas (CSG) Statement describes overlapping petroleum or gas tenements and CSG occurrences within the approved SCM MLs and the Sonoma East 2 MLA.

5.1 Overlapping CSG Tenure

There are no current petroleum or gas exploration or production permits overlapping the SCM MLs or the Sonoma East 2 MLA.

5.2 Coal Seam Gas (CSG) Occurrence

In accordance with Section 315 of the *Mineral Resources Act (Qld) 1989*, an activity report (including CSG reporting) is prepared annually for the SCM mining leases, and the findings can by extension be applied to the Sonoma East 2 MLA.

At 1 August 2021 there has been no occurrence of CSG at the SCM. Further, the results of CSG testing undertaken prior to the granting of the current Sonoma MLs in combination with the SCM geology and CSG properties indicate a low likelihood of commercial quantities of gas at the SCM, specifically:

- All coals contain various types and quantities of gas, such as methane (CH₄), carbon dioxide (CO₂), carbon monoxide (CO) and hydrogen sulphide (H₂S).
- Higher rank, mature coals usually retain much less gas than originally generated during the maturation process. The optimal coal rank for methane formation is around or above a vitrinite reflectance (R_v) of 1.3%. For the MCM in the SCM, the R_v is around 1.0%.
- The amount of gas released depends on such parameters as porosity, permeability, fracturing and absorption properties of the coal. Much of the methane formed is liberated into overlying strata, where it can be trapped or lost rather than being absorbed into the coal particles. Given the shallow depth of the coal seams, and the nature of the overburden, any CSG is likely to have liberated from the SCM. This is especially so as the SCM pits have involved dewatering activities.
- Coal seams of the MCM within the SCM area occur at shallow depths (from sub-crop to a maximum of 200 m below the surface) and measured reservoir gas contents (whilst highly variable) are very low (<5 m³/t).
- The coal seams are variably intruded by igneous sills and dykes over the area. The consequent introduction of carbon dioxide (CO₂) into the reservoirs during this event renders any commercial extraction of the cohabiting methane improbable.
- Major NNW-trending faults that delineate the eastern and western margin of the MCM have effectively compartmentalised the coal measure sequence into an

isolated block no greater than about 2 km wide. Igneous dykes trending in NE and easterly directions further compartmentalise the area. Effective connectivity between adjacent blocks is considered highly unlikely.

- Coal from the SCM, like all coals, releases minor amounts of gas of unknown types during the various stages of exploration, mining, transportation and stockpiling.

5.3 Impact on Future Commercial Gas Extraction

The seams mined at the SCM continue throughout the QNH through the CCM and DCM, south to the Bowen River. Any potential commercial quantities of CSG in these seams could be extracted by access from the south of the QNH MLs (south of the Bowen River).

As such, potential commercial quantities of gas in the coal measures surrounding the QNH, remain unaffected by the proposed operations.

5.4 Co-Development Opportunities

As there are no active petroleum or gas exploration permits overlying the SCM area, no co-development opportunities have been identified for the SCM.

6 Conclusions

The SCM is an opencut coal mine comprising three granted MLs and the Sonoma East 2 MLA, with the active mining proposed to continue in the Sonoma Main Pit Complex and the Sonoma East Pit Complex, with mining completed in the Sonoma North Pit, B-Pit and Q-Pit Complexes.

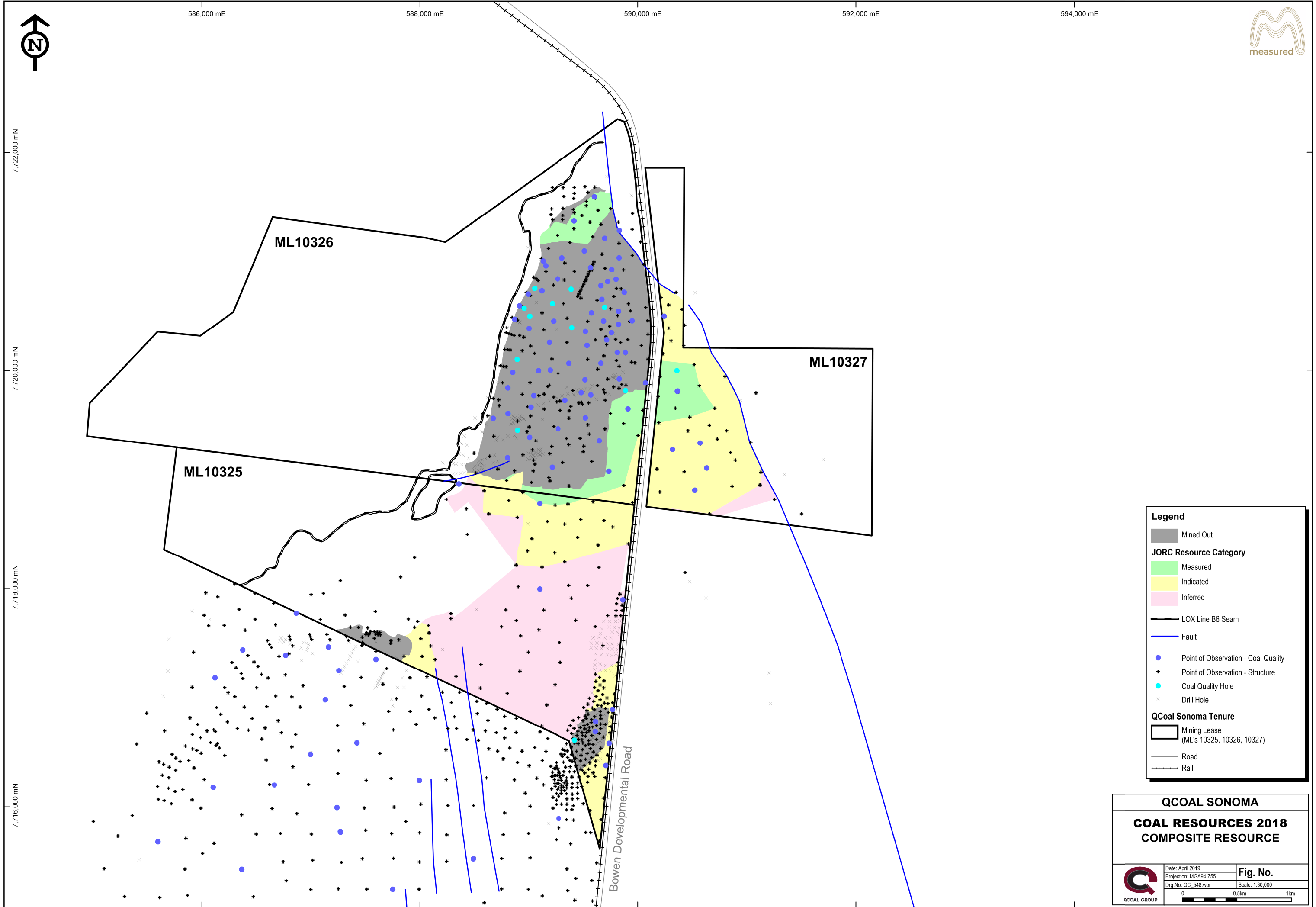
The addition of the Sonoma East 2 MLA to the Sonoma East Pit Complex enables the full recovery and optimisation of all economic coal resources within ML 10327 (as identified in Appendix A) and the remaining coal in Sonoma Main Pit on ML 10326. Without Sonoma East 2 MLA, neither of those optimisations would be possible:

This is facilitated by developing water management infrastructure between ML 10327 and Sonoma East 2 MLA, . Therefore, the activities on the Sonoma East 2 MLA will align with and be undertaken as part of the works for the Sonoma East Pit Complex. Infrastructure on the Sonoma East 2 MLA comprises vehicle access, haul road, mine infrastructure area, pit batter and water management.

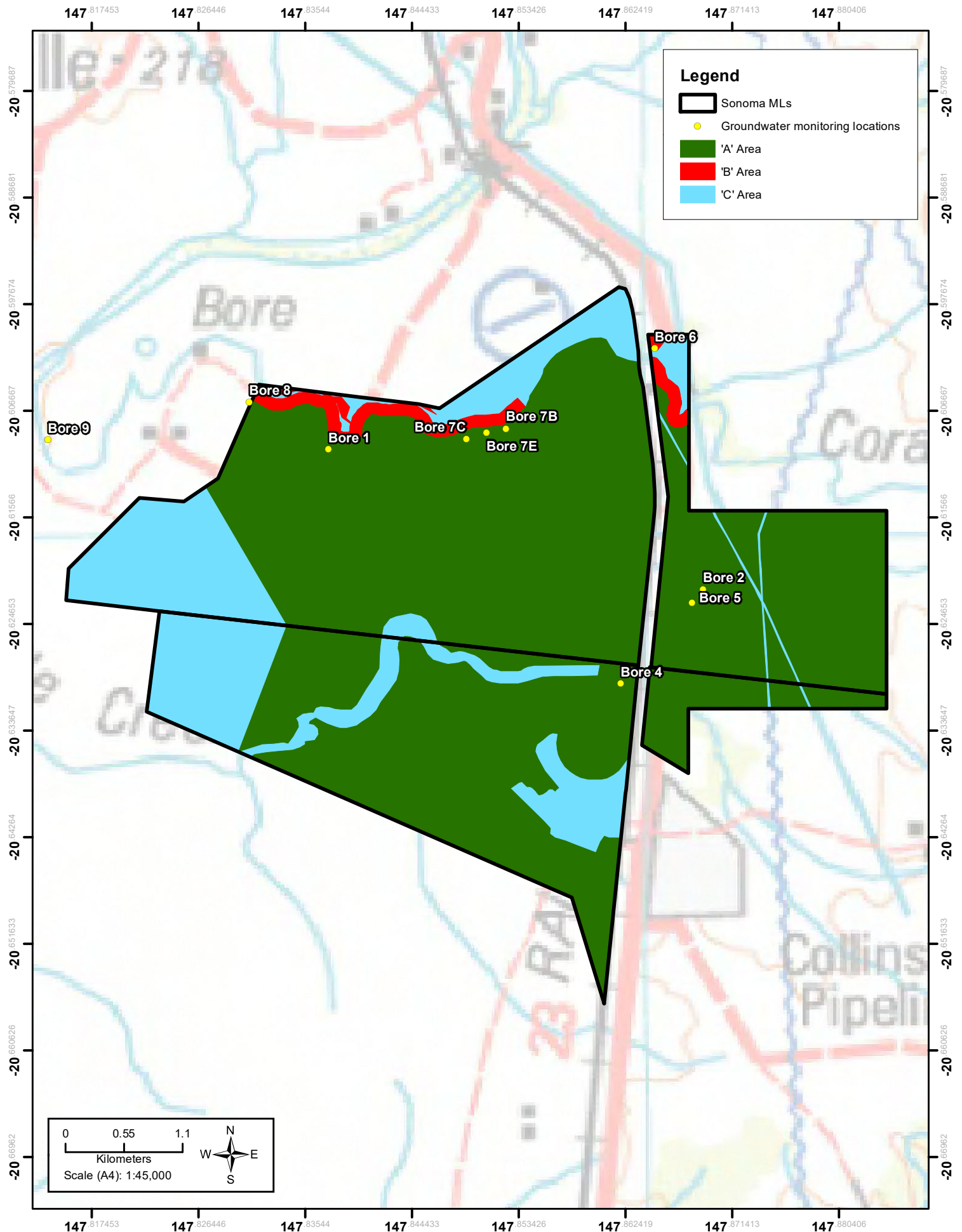
The IDP is considered appropriate as:

- the development will not adversely impact on the development of current or future petroleum resources;
- the SCM is already in operation and has the capacity to commence production on the proposed production commencement day; and
- the Sonoma East 2 ML, once granted, permits the identified resource to be recovered in the most efficient and economically viable way.

Appendix A Resource Mapping

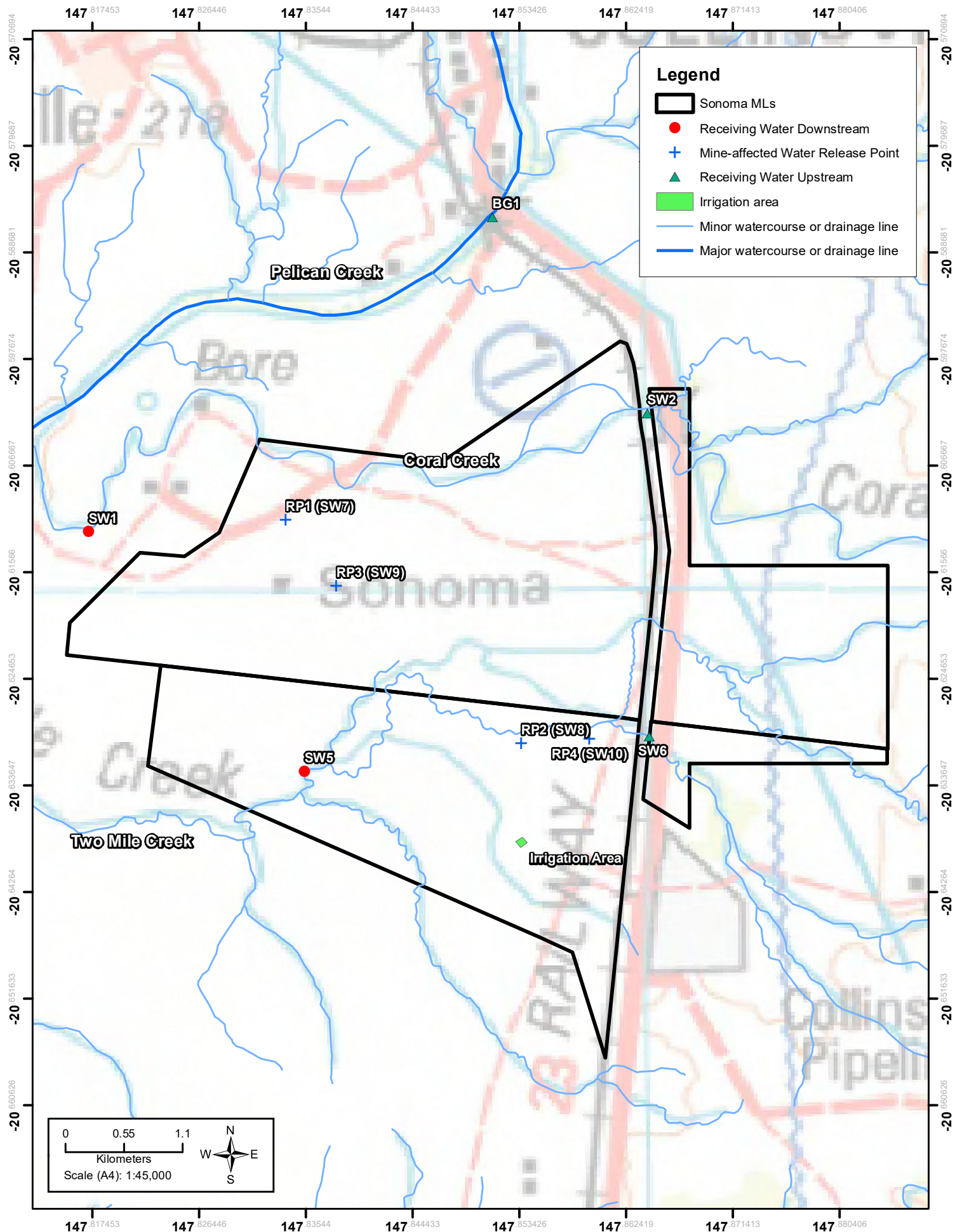


Appendix B: Proposed EA Figures



Date: 29/11/2022
 Coordinate System: GCS GDA 1994
 Datum: GDA 1994
 Data sources:
 © State of Queensland (Department of Natural Resources and Mines) 2017
 © State of Queensland (Department of Transport and Main Roads) 2017

Figure 1 - Site map, domains and groundwater monitoring locations



Date: 29/11/2022
 Coordinate System: GCS GDA 1994
 Datum: GDA 1994
 Data sources:
 © State of Queensland (Department of Natural Resources and Mines) 2017
 © State of Queensland (Department of Transport and Main Roads) 2017

Figure 2 - Mine-affected water release points, sources and receiving waters