Cadia Continued Operations Project

SCOPING REPORT

umwelt
Environmental & Social Consultants

Newmont™

Scoping Report

Cadia Continued Operations Project

730-17062-EN-REP-2032

May 2024

Disclaimer

This document has been prepared for the sole use of the authorised recipient and this document may not be used, copied or reproduced in whole or part for any purpose other than that for which it was supplied by Umwelt (Australia) Pty Ltd (Umwelt). No other party should rely on this document without the prior written consent of Umwelt.

Umwelt undertakes no duty, nor accepts any responsibility, to any third party who may rely upon or use this document. Umwelt assumes no liability to a third party for any inaccuracies in or omissions to that information. Where this document indicates that information has been provided by third parties, Umwelt has made no independent verification of this information except as expressly stated.

Forward Looking Statements

This document contains "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, which are intended to be covered by the safe harbor created by such sections. Where a forward-looking statement expresses or implies an expectation or belief as to future events or results, such expectation or belief is expressed in good faith and believed to have a reasonable basis. However, such statements are subject to risks, uncertainties and other factors, which could cause actual results to differ materially from future results expressed, projected or implied by the forward-looking statements. Forward-looking statements often address our expected future business and financial performance and financial condition; and often contain words such as "anticipate," "intend," "plan," "will," "would," "estimate," "expect," "believe," "pending," "proposed" or "potential." Forward-looking statements in this presentation may include, without limitation, (i) estimates of future production and sales, including production outlook, average future production and upside potential, including our Full Potential initiatives and synergies; (ii) estimates of future costs applicable to sales and all-in sustaining costs; (iii) estimates of future capital expenditures, including development and sustaining capital; (iv) expectations regarding the Tanami Expansion 2, Ahafo North, Cadia Block Caves, Yanacocha Sulfides, Pamour and Cerro Negro District Expansion 1 projects, including, without limitation, expectations for production, milling, costs applicable to sales and all-in sustaining costs, capital costs, mine life extension, construction completion, commercial production, and other timelines; (v) any share repurchases, (vi) estimates of future cost reductions, synergies, including pre-tax synergies, savings and efficiencies, Full Potential and productivity improvements and future cash flow enhancements through portfolio optimization, (vii) expectations regarding future exploration and the development, growth and potential of Newmont Corporation's ("Newmont"), project pipeline and investments; (viii) expectations regarding future investments or divestitures; (ix) expectations regarding free cash flow and returns to stockholders, including with respect to future dividends and future share repurchases, the dividend framework and expected payout levels; (x) expectations regarding future mineralization, including, without limitation, expectations regarding reserves and recoveries; (xi) expectations of future balance sheet strength and liquidity; (xii) expectations of future plans and benefits; (xiii) other outlook; and (xiv) expectations organic growth in our operations. Estimates or expectations of future events or results are based upon certain assumptions, which may prove to be incorrect. Such assumptions, include, but are not limited to: (i) there being no significant change to current geotechnical, metallurgical, hydrological and other physical conditions; (ii) permitting, development, operations and expansion of Newmont's operations and projects being consistent with current expectations and mine plans, including, without limitation, receipt of export approvals; (iii) political developments in any jurisdiction in which Newmont operates being consistent with its current expectations; (iv) certain exchange rate assumptions for the Australian dollar to the U.S. dollar, as well as other exchange rates being approximately consistent with current levels; (v) certain price assumptions for gold, copper, silver, zinc, lead and oil; (vi) prices for key supplies; (vii) the accuracy of current mineral reserve, mineral resource and mineralized material estimates; and (viii) other planning assumptions. Uncertainties include those relating to general macroeconomic uncertainty and changing market conditions, changing

restrictions on the mining industry in the jurisdictions in which we operate, impacts to supply chain, including price, availability of goods, ability to receive supplies and fuel, and impacts of changes in interest rates. Such uncertainties could result in operating sites being placed into care and maintenance and impact estimates, costs and timing of projects. Uncertainties in geopolitical conditions could impact certain planning assumptions, including, but not limited to commodity and currency prices, costs and supply chain availabilities. Investors are reminded that the dividend framework is non-binding. Future dividends have not yet been approved or declared by the Board of Directors, and an annualized dividend payout or dividend yield has not been declared by the Board. Management's expectations with respect to future dividends are "forward-looking statements" and the Company's dividend framework is non-binding. The declaration and payment of future dividends remain at the discretion of the Board of Directors and will be determined based on Newmont's financial results, balance sheet strength, cash and liquidity requirements, future prospects, gold and commodity prices, and other factors deemed relevant by the Board. For a more detailed discussion of such risks, see the Company's Annual Report on Form 10-K for the year ended December 31, 2023 filed with the SEC on February 29, 2024, as well as Newmont's other SEC filings, including the definitive proxy statement filed with the SEC on September 5, 2023, under the heading "Risk Factors", and other factors identified in the Company's reports filed with the SEC, available on the SEC website or www.newmont.com. Newmont is not affirming or adopting any statements or reports attributed to Newcrest (including prior mineral reserve and resource declaration) in this presentation or made by Newcrest outside of this presentation. Newmont does not undertake any obligation to release publicly revisions to any "forward-looking statement," including, without limitation, outlook, to reflect events or circumstances after the date of this presentation, or to reflect the occurrence of unanticipated events, except as may be required under applicable securities laws. Investors should not assume that any lack of update to a previously issued "forward-looking statement" constitutes a reaffirmation of that statement. Continued reliance on "forward-looking statements" is at investors' own risk.

Reliance on Third Party Information

This document contains information that has been obtained from third parties and has not been independently verified. No representation or warranty is made as to the accuracy, completeness or reliability of such information. This document should not be relied upon as a recommendation or forecast by Newmont.

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

APPENDICES

1 INTRODUCTION

Cadia Valley Operations (Cadia) is a prominent mining operation in the Central West of NSW with 25 years of operational history. This report outlines the proposal for the next 25 years of operation, highlighting the significant contribution that this continuation of operations would make to the local community and economic development of the region, in addition to the proposed approach to assessing the environmental and social impacts of the continued operations and how these will be managed.

Commencing in 1998 and operating continuously since then, Cadia is located approximately 25 km from Orange in the Central Tablelands region of New South Wales (NSW) with the mining operation occurring across two local government areas (LGAs) (Blayney Shire Council and Cabonne Council) (refer to **Figure 1.1**).

Cadia provides an important economic contribution to the region and NSW and is a major regional employer providing approximately 1,800 jobs. With confirmed mineable resources extending well beyond the 30 June 2031 life of the current Project Approval (PA 06_0295), Cadia has commenced planning for the continuation of mining operations. This continuation of mining operations project is known as the Cadia Continued Operations Project (CCOP).

The CCOP proposes to extend existing operations beyond 2031 through using the existing infrastructure and supporting services in combination with the continuation of underground mining within both the Cadia East Underground Mine (Cadia East) and Ridgeway Underground Mine (Ridgeway) mining areas. The CCOP will also include an extension to the existing Southern Tailings Storage Facility (STSF) known as Southern Tailings Storage Facility Extension (STSFX) to provide additional tailings storage capacity for the extended mine life. A new Southern Water Storage (SWS) is also proposed. Consistent with the current operations, the CCOP is planned to process up to 35 million tons of ore per annum[1], providing ongoing employment of up to approximately 1,140 operational employees, with an additional construction/development workforce of up to approximately 970 personnel and up to an additional 300–700 personnel during intermittent shutdown periods, further contributing to Cadia's economic and social value to the region.

The continued operation of Cadia, in particular the tailings storage strategy along with the general location, footprint and proposed technology has been subject to detailed options assessment and stakeholder engagement processes. Stakeholder feedback on initial designs has resulted in material changes to the design of the CCOP including the design of the tailings storages (incorporating a significant reduction in footprint) and changes to associated road realignment designs. These changes have reduced the area of impact of the CCOP and were part of a detailed options assessment process prior to Newmont identifying STSFX as the preferred tailings storage solution. Further discussion of the options assessment and project refinement process is provided in **Section 3.8**.

The CCOP is a State Significant Development (SSD) as defined under Schedule 1, Clause 5 of *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP) as it is development for the purposes of mining with a capital investment value of more than $30 million. The CCOP therefore requires development consent under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

The new development consent to be sought for the CCOP will replace the existing Project Approval (PA 06_0295) for Cadia, providing a new and modern consent to govern future operations at Cadia.

[1] In December 2020, Cadia applied for, and was subsequently approved (December 2021) for, a modification to the Cadia East Project Approval (Modification 14 (MOD14)). The updated Project Approval (PA06_0295) provided a condition (Schedule 2, Condition 6A) which permits processing up to 35 million tonnes in a calendar year upon satisfying this condition.

The current tailings storage facilities cannot sustain the operation at the end of the decade. In order to provide certainty for capital investment that will enable the site to operate for the proposed period of the CCOP approval, the cashflow to reinvest in the site's new projects and without significantly disrupting the employment of personnel onsite, approval is required to be able to construct and commission a new tailings facility and have it in operation before the end of the current consent timing.

Newmont Overseas Holdings Pty, a wholly owned indirect subsidiary of Newmont Corporation is the owner of Cadia Holdings Pty Limited (CHPL) which in turn is the owner and operator of Cadia. Cadia is one of Australia's largest gold mining operations.

1.1 The Applicant

CHPL will be the applicant for the development application (DA). The applicant is referred to as CHPL in this Report. **Table 1.1** presents the key details of the applicant.

Table 1.1 Applicant details

Requirement	Details
Full Name/s	Cadia Holdings Pty Limited (CHPL)
Postal Address	Level 5, 500 Hay Street, Subiaco, Western Australia 6008
Street Address (Project Site)	1460 Cadia Road, Orange NSW 2800
ABN	95 062 648 006
Nominated Contact	Geoffrey Newcombe Head of Strategy and Integrated Planning – Cadia Valley Operations Phone: 1800 716 864 Email: c.copeis@newcrest.com.au

CHPL is owned by Newmont which is a publicly listed global mining company producing gold, copper, silver, zinc and lead among other commodities. Newmont has operations/projects in Australia, North America, Latin America and the Caribbean, Africa and Papua New Guinea.

Prior to being owned by Newmont, CHPL was owned by Newcrest Mining. For ease of reference, Newmont (as the current owner) is referred to throughout this document as the owner whether or not the specific reference relates to a time prior to Newmont purchasing CHPL.

1.2 Project Overview

1.2.1 Overview

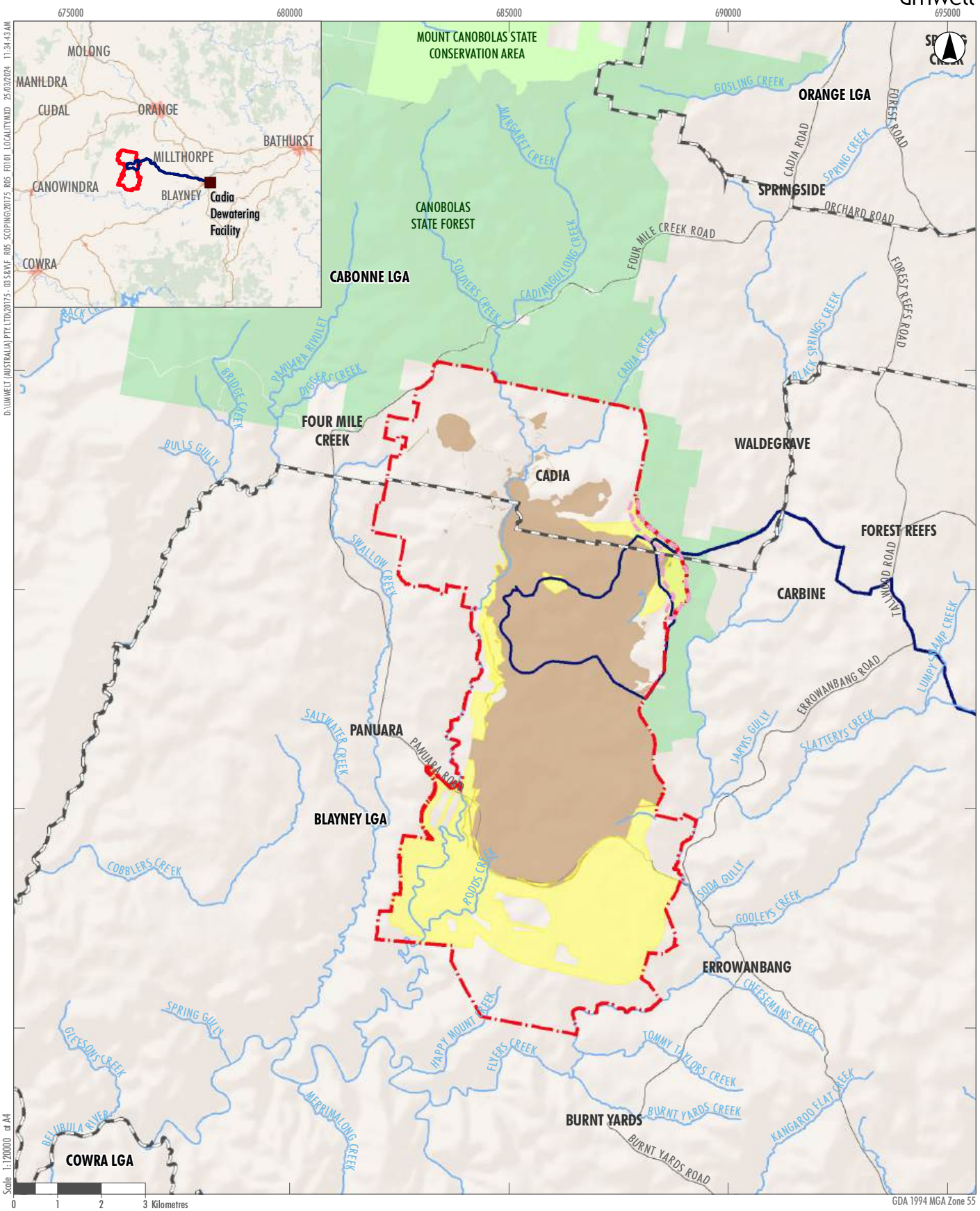
CHPL seeks approval for the CCOP which includes the following:

- Continuation of existing operations beyond 2031 (for a period of approximately 25 years from the date of approval of the CCOP, nominally to 2050).
- The ongoing use of existing and approved but not constructed infrastructure and supporting site services (e.g. mill, stockpiles, material handling system, Cadia Dewatering Facility and associated Cadia Concentrate and Return Water Pipeline, Molybdenum Recovery Plant, Sodium Hydrosulphide Solutioning Plant, pipelines, electricity transmission network, water management infrastructure, offices, amenity facilities, warehouses, workshop and maintenance facilities, fuel storage facilities).

- Continuation of underground mining with the already approved Cadia East Underground Mine (Cadia East) area with a refinement of the predicted subsidence zone.
- Continuation of underground mining with the already approved Ridgeway Underground Mine (Ridgeway) area with an extension to underground mining known as Lift 2. This is not expected to result in a change to the predicted subsidence zone as defined in Modification 15 to the Project Approval (PA06_0295).
- An extension to the existing Southern Tailings Storage Facility (STSF) known as STSFX for the storage of tailings from the processing of the identified ore reserves within Cadia East and Ridgeway.
- An additional water storage to provide improved security of water security (identified as the South Water Storage) to be located on Cadiangullong Creek.
- Realignment of a portion of Panuara Road and a portion of Cadia Road to account for the above project features.
- Changes to site infrastructure and facilities to enable ongoing mining operations.

An overview of the CCOP is shown on **Figure 1.2**. A more detailed description of the CCOP is provided in **Section 3**.

The CCOP will impact on areas currently approved for mining related disturbance and will also involve additional disturbance of land. The areas of land that may be impacted by the CCOP that are not currently approved for disturbance are referred to in this Scoping Report as the Potential Additional Disturbance Area (refer to **Figure 1.1**). The disturbance area associated with the CCOP will be further refined throughout the EIS process and will be defined in the EIS.



Legend

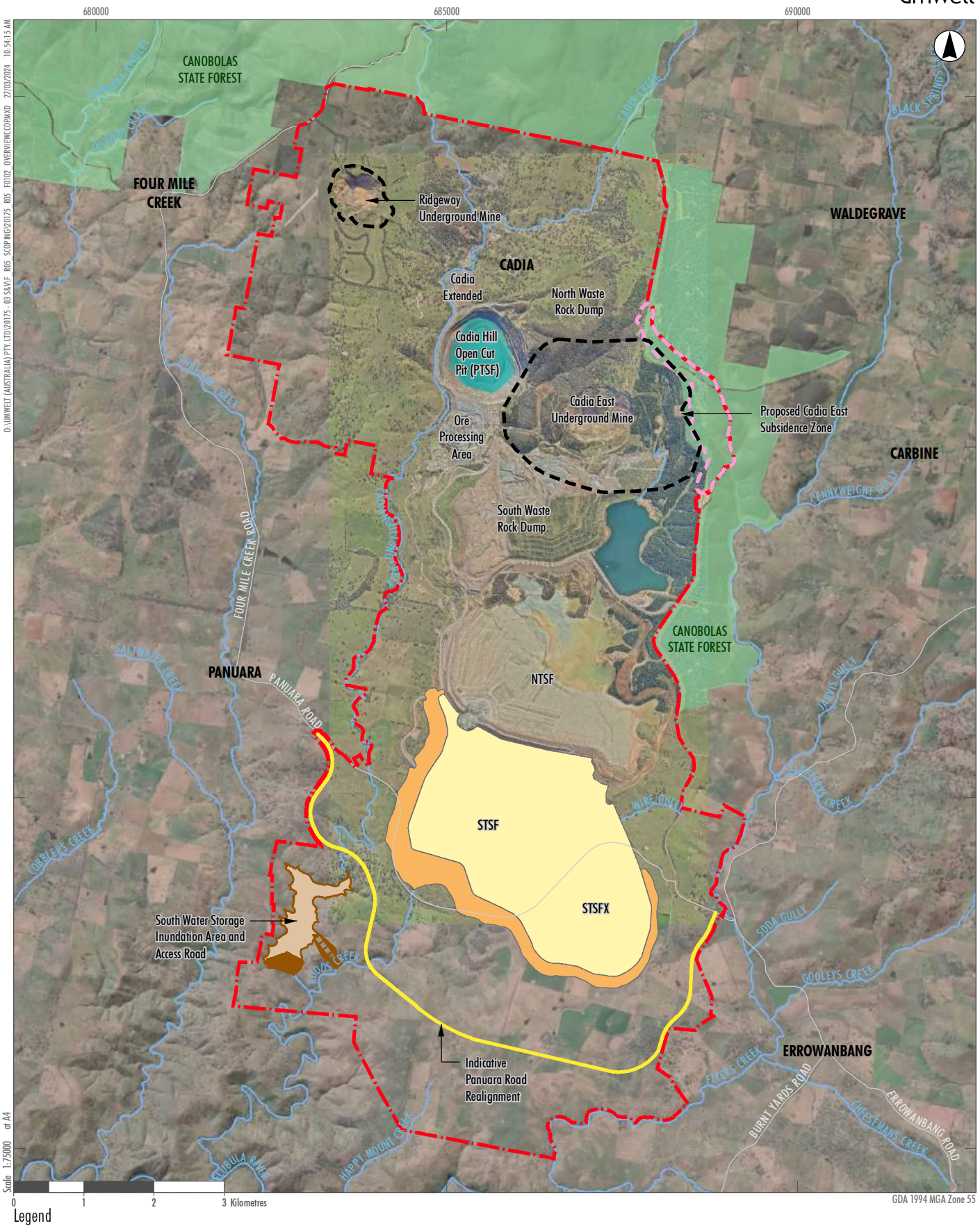
- CCOP Project Area
- Cadia Road Realignment Study Area
- Existing/Approved Disturbance
- Potential Additional Disturbance Area
- Local Government Area (LGA)
- National Parks (NPWS Estate)
- State Forest
- Road
- Creek/River
- Existing Concentrate Pipeline

FIGURE 1.1

Locality Plan

Data source: DSFI (2022), Newmont (2023)

Cadia Document Number: 730-17062-EN-DDG-2003



Legend

- CCOP Project Area
- Cadia Road Realignment Study Area
- Indicative Subsidence Zone of Influence
- Indicative Panuara Road Realignment
- Indicative South Water Storage Inundation Area and Access Road

Indicative Southern Tailings Storage Facility Extension (STSFX)

- Proposed Final Tailings
- Proposed Hydrocycloned Sand Embankment
- State Forest
- Road
- Creek/River

FIGURE 1.2

Proposed CCOP

Image Source: ESRI Basemap, Newmont (2023) Data source: DSFI (2022), Newmont (2023)

Cadia Document Number: 730-17062-EN-DDG-2003

1.2.2 Objectives

The key objectives of the CCOP are to:

- Maximise the efficient recovery of the State's mineral resources while minimising disturbance.
- Maximise the use of existing infrastructure and equipment, thereby minimising additional disturbance associated with the continued operation of an existing mining complex.
- Extend the approved life of Cadia to maximise the recovery of identified ore reserves in the underground mining areas.
- Ensure that the ongoing operation of Cadia continues in a safe and sustainable manner.
- Provide ongoing employment opportunities for the existing workforce significantly beyond the life of the current planning approval under which Cadia operates.
- Provide for additional tailings storage to support the recovery and processing of the identified ore reserves.
- Enhance the water security of Cadia.
- Create new road realignments that minimise disruption to the community and environmental impacts and provide an equitable long-term solution for local and regional traffic.
- Maintain the existing environmental controls, safeguards and management measures as well as any additional measures to minimise the environmental and social impacts from extension to the life of Cadia.
- Provide for a safe, stable and sustainable final landform suitable for planned future land uses.
- Provide longer term certainty for investment planning and project delivery.

1.3 Background to the CCOP

The Cadia area has a long history of exploration and mining dating back more than 140 years to the discovery of copper and gold in 1851, shortly after the first Australian gold rush at Ophir 40 km to the north. Extensive copper mining historically took place at Cadia, with the largest production coming from the Iron Duke (Big Cadia) mine which by 1917 yielded more than 100,000 tonnes of secondary copper ore. From 1918 to 1929 and 1941 to 1943 Iron Duke also produced 1.5 million tonnes of low grade iron ore.

Carpentaria Exploration Company conducted exploration at Cadia in the mid-1960s. In 1968, Pacific Copper Limited completed drilling programmes at Big and Little Cadia, which resulted in the discovery of further low-grade gold/copper mineralisation.

Newcrest Mining discovered the Cadia Hill orebody in 1992, which lead to the development and the grant of planning approvals for the Cadia Hill Gold Mine, followed by the Ridgeway Gold Mine, the Ridgeway Deeps Mine Extension and the Blayney Dewatering Facility. In 2010 these discrete planning approvals were consolidated under the Cadia East Project and form the current mining operations at Cadia which are known collectively as the Cadia Valley Operations.

1.3.1 Approved Operations

Commencing mining in 1998 as an open cut mine and operating continuously since then, Cadia currently operates under Project Approval (PA) 06_0295 issued to CHPL in January 2010 under the then Part 3A of the EP&A Act. **Table 1.2** provides a summary of the previous approvals at Cadia, which have now been consolidated and replaced by PA 06_0295.

Table 1.2 Previous Approvals

Development	Date of Grant	Description
Cadia Hill Gold Mine (DA 44/95)	1996	Commencement of operations at Cadia – Cadia Hill Project.
Ridgeway Trial (DA 101-12-98)	1999	Ridgeway trial to extract a bulk ore sample and trial stoping mining methods at the Ridgeway orebody.
Ridgeway (DA 134-04-00)	2000	Following the successful completion of the Ridgeway Trial, the potential environmental impacts of Ridgeway were assessed in the Ridgeway EIS.
Blayney Dewatering Facility (DA 133-04-00)	2000	Concentrate dewatering facility to facilitate the transport of the concentrate by train.
Ridgeway Deeps (DA 257-10-2004)	2005	After the approval and development of Ridgeway, CHPL exploration activities identified and delineated a significant extension of the Ridgeway orebody at depth below the approved mine that would significantly extend the life of Ridgeway. This area was named Ridgeway Deeps

As noted above, PA 06_0295 consolidated and replaced the previous development consents issued to Cadia and currently provides for the following:

- Life of mine Cadia East ore production of approximately 525 million tonnes (Mt) of gold/copper ore and approximately 96 Mt of ore from Ridgeway Underground up until 30 June 2031.
- Processing of up to 35 Mt per annum2 (Mtpa) of gold/copper/molybdenum ore on site to produce gold doré from a gravity circuit, a gold-rich copper concentrate from a flotation circuit (which is piped to a dewatering plant at Blayney and then sent by rail for export) as well as a molybdenum rich concentrate which is sent by truck directly from the Molybdenum Recovery Plant at Cadia for export.

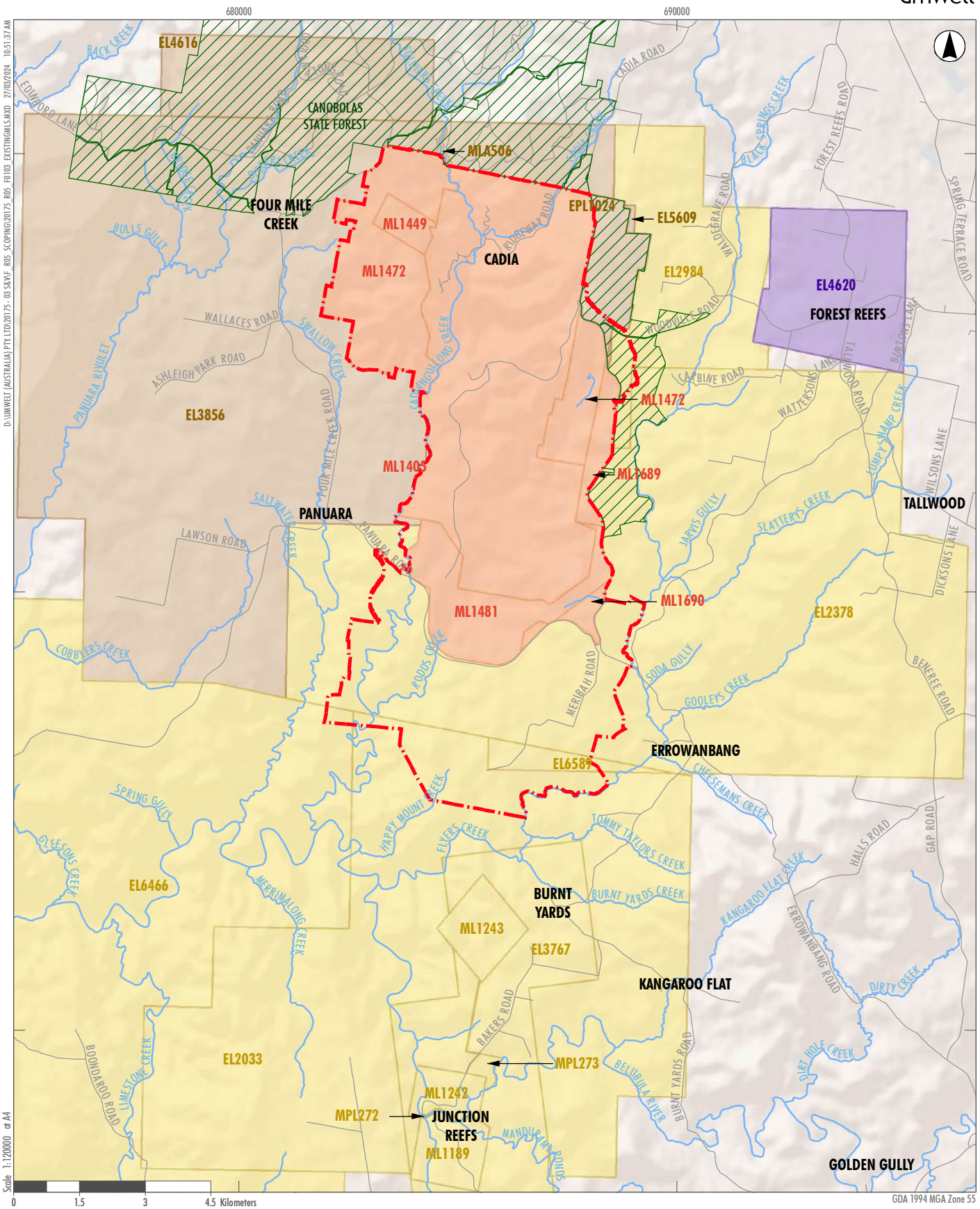
[2] *In December 2020, Cadia applied for, and was subsequently approved (December 2021) for, a modification to the Cadia East Project Approval (Modification 14 (MOD14)). The updated Project Approval (PA06_0295) provided a condition (Schedule 2, Condition 6A) which permits processing up to 35 million tonnes in a calendar year upon satisfying this condition.*

- Disposal of tailings through emplacement into one of three Tailings Storage Facilities (TSFs) being the Northern TSF (NTSF), Southern TSF (STSF) and Pit TSF (PTSF).
- Significant underground and surface infrastructure and ancillary activities to support the operation of the mine including ore processing, rock emplacements, water management, maintenance, store and staff facilities and land management practices.

PA 06_0295 has been modified 14 times since issue, with the most recent modification approved on 13 December 2021 to provide for the repair, upgrade, and reinstatement of tailings deposition to the NTSF and STSF and increase production from 32 to 35 Mtpa.

Cadia is currently progressing with a further modification to PA 06_0295 (Modification 15) which was lodged with the NSW Department of Planning and Environment (DPE – now Department of Planning, Housing and Infrastructure [DPHI) in November 2023. Modification 15 seeks to change the existing NTSF and STSF embankment footprints, recommence mining in the Ridgeway underground mine and create a minor realignment to the location of two sections of Panuara Road, together with various minor changes or infrastructure additions to support ongoing mining activities (e.g. access road alterations, expansion of the substation and vent fan installations).

CHPL also holds an Environment Protection Licence 5590 (EPL 5590) as well as other environmental licences including water licences, and mining approvals and authorities related to Cadia. The mining authorities which Cadia operate under are shown on **Figure 1.4**.



Legend

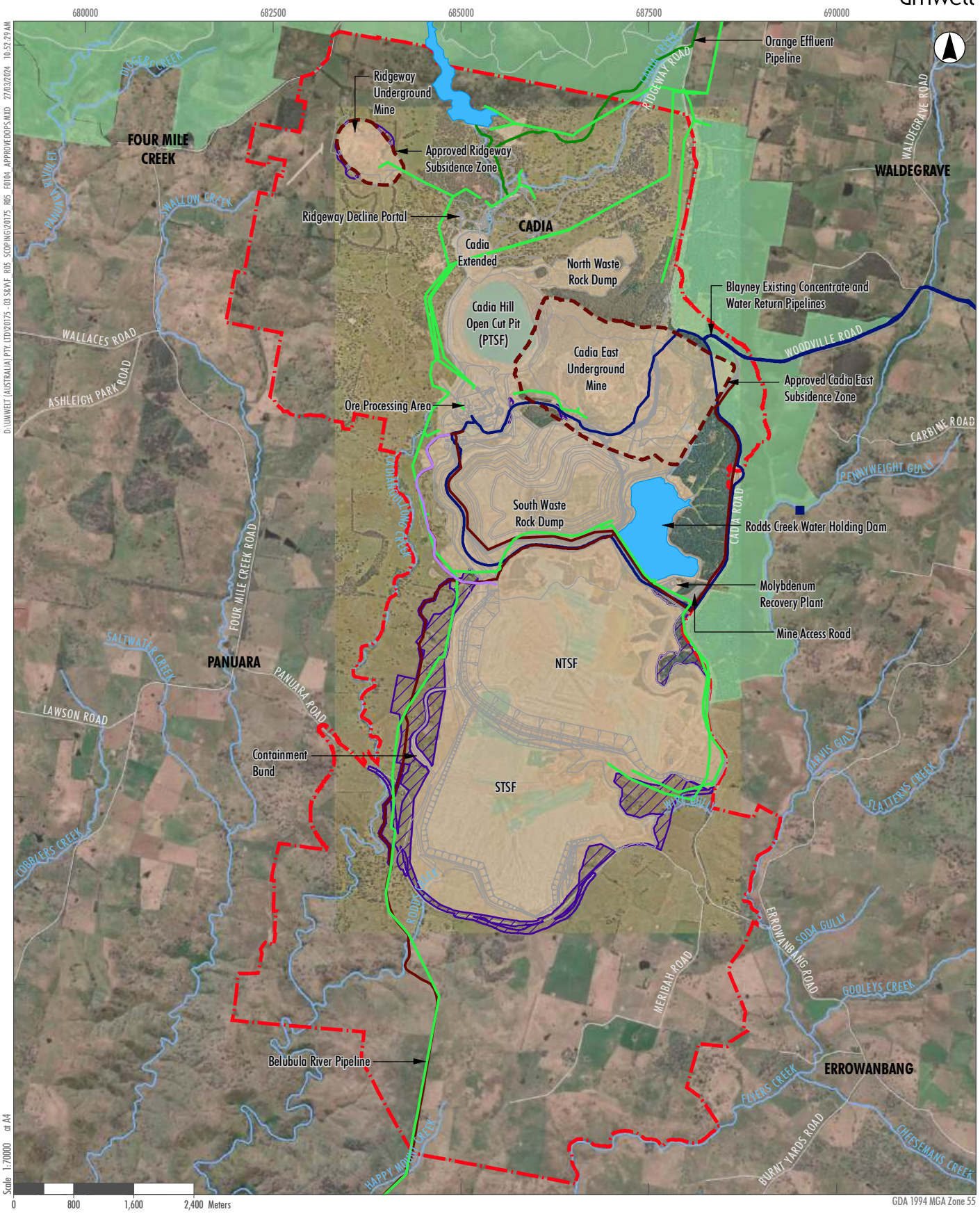
- CCOP Project Area
- State Forest
- Road
- Creek/River

Cadia Mining and Exploration Tenements

- Cadia Exploration
- Cadia Operations
- Forest Reefs Tenure (Joint Venture with Newmont and Other Parties)
- Junction Reefs Tenure (Joint Venture with Newmont and Other Parties)

FIGURE 1.3

Cadia Mining and Exploration Tenements



Legend

- CCOP Project Area
- Mod15 Assessment Area
- Approved Subsidence Zone of Influence
- Existing/Approved Mine Infrastructure and Landforms
- Cadia 33kV Powerline Distribution Network
- Existing Tails Pipe Route
- Blayney Existing Concentrate and Water Return Pipeline
- Orange Effluent Pipeline
- Belubula River Pipeline
- Flyers Creek Weir
- State Forest
- Creek/River
- Road

FIGURE 1.4

Approved Operations

Note: Modification 15 is currently under assessment

Image Source: ESRI Basemap, Newmont (2023) Data source: DSFI (2022), Newmont (2023)

Cadia Document Number: 730-17062-EN-DDG-2003

1.3.2 Existing Operations

The key existing and approved operations and infrastructure at Cadia are identified on **Figure 1.4** with the main features described in the following sections.

1.3.2.1 Mining Operations

Cadia Hill Open Cut Pit

Approved in September 1996; open cut mining commenced in 1998 and continued to June 2012. The ore resources within the Cadia Hill Open Cut Pit have been extracted and the pit is now being used as a TSF.

Ridgeway Underground Mine

The Ridgeway underground mine is located approximately 2.5 km to the northwest of the Cadia Hill Open Cut Pit (refer to **Figure 1.4**). Ridgeway was approved in October 2000 and commenced operations in 2002 with approval for mining by sublevel caving methods. A modification to deepen the Ridgeway mine was obtained in March 2005. Subsidence associated with the Ridgeway underground mine has largely occurred as initially predicted (refer to **Figure 1.5**).

Active mining ceased at Ridgeway in September 2017 and this mining area is currently under care and maintenance, however mining is proposed to recommence in Ridgeway as part of Modification 15 (subject to market conditions, further studies and internal and regulatory approvals).

Cadia East Underground Mine

Cadia East involves panel cave mining for ore containing primarily gold, copper and molybdenum. Commercial operations of the Cadia East commenced in January 2013 and are ongoing. As of 2023 there are approximately 1 billion tonnes (Bt) of remaining ore reserves.

1.3.2.2 Processing Operations

Mined ore is crushed underground and is then transported to the surface and stockpiled adjacent to the ore processing facilities. The ore is processed at one of Cadia's two concentrators, which produce both gold doré and a gold rich copper concentrate. The location of the ore processing facilities and waste dumps is provided on **Figure 1.4**.

The copper rich gold concentrate is pumped in a slurry form to the Molybdenum Processing Plant and processed to produce a molybdenum concentrate for transport via truck to Port Kembla for export to international markets. The remaining gold rich copper concentrate is pumped via a buried concentrate pipeline to the Cadia Dewatering Facility east of Blayney for dewatering and loaded into containers for transport by rail to Port Kembla and export to international markets. The water is returned via a pipeline to Cadia for re-use.

1.3.2.3 Tailings Management

After the gold, copper and molybdenum is recovered from the ore, the remaining crushed rock and water mixture referred to as tailings is deposited in purpose-built facilities. Cadia currently maintains three TSFs (i.e. NTSF, STSF and PTSF) for the deposition of tailings (refer to **Figure 1.5**).

Tailings deposition to the NTSF and STSF is currently suspended following a slump on part of the NTSF embankment. Works are ongoing to enable the return to operation of the STSF and NTSF.

1.3.2.4 Existing Environmental and Social Management and Monitoring

Operations at Cadia are currently managed under a range of environmental and social management plans, procedures and environmental monitoring programs. The management and monitoring plans have been developed to address environmental issues relevant to the operations and meet the requirements of the relevant Project Approval, EPL and mining lease conditions. The environmental management plans and monitoring programs for Cadia are available on the Cadia website (Environmental management | Cadia Valley Operations | Newmont environmental-management).

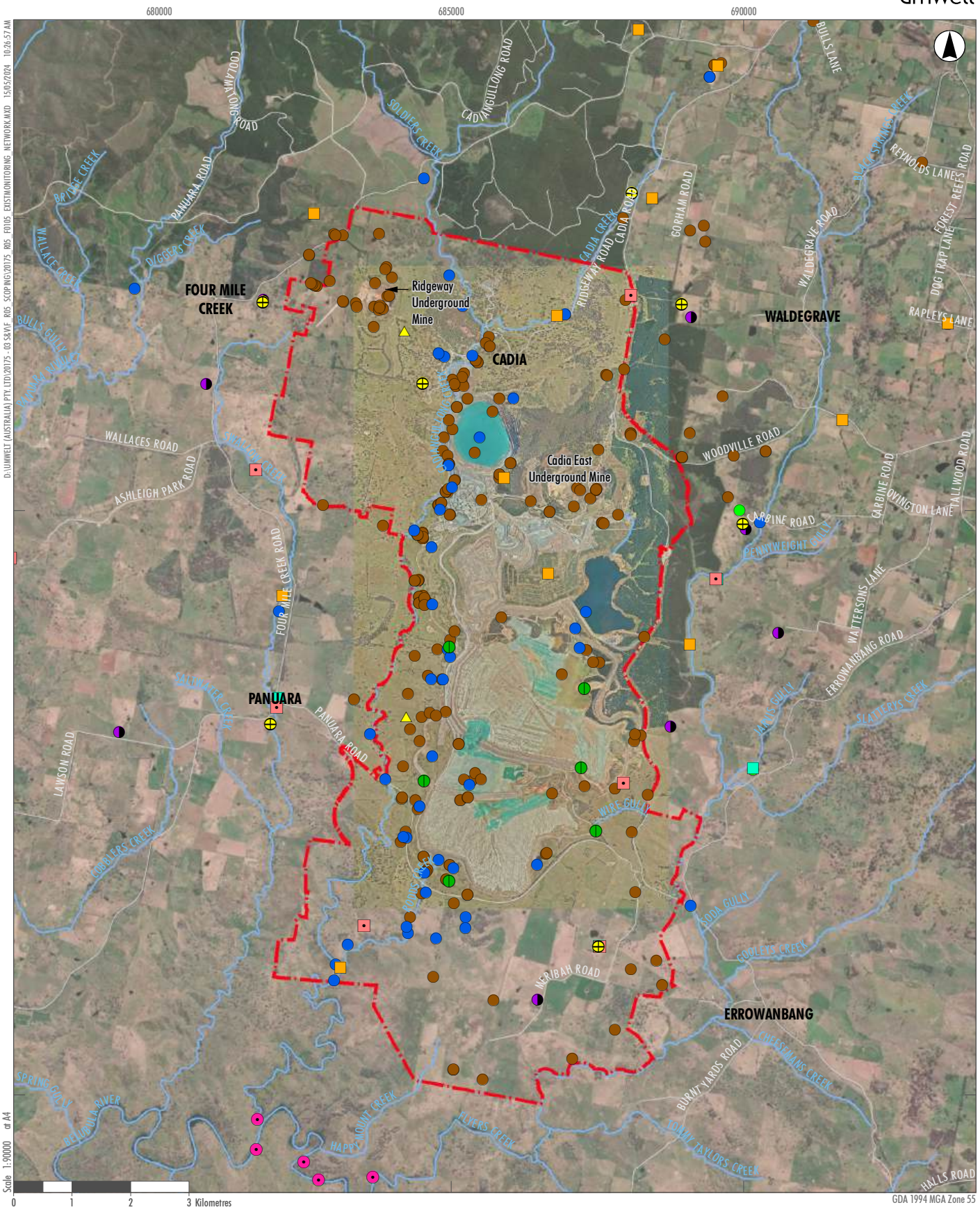
CHPL is committed to strong environmental management, sound environmental performance and transparent community liaison. The Environmental Management System (EMS) aligns to the international standard ISO 14001:2015 Environmental Management Systems framework. Cadia's EMS provides the strategic framework for Environmental Management at Cadia which has three specific purposes:

- Meet all legal and other requirements.
- Manage environment and community risks.
- Demonstrate continuous improvement in environmental and social performance.

To monitor the environmental performance of its operations and measure compliance, CHPL operates an extensive environmental monitoring network across the site and surrounding areas. This includes meteorological, air quality, noise and vibration, aquatic ecosystem, land and biodiversity, and surface water and groundwater monitoring programs.

An overview of the existing monitoring network is presented on **Figure 1.5**. Details of the monitoring undertaken at Cadia are available in the plans and programs available on the Cadia website.

The existing Cadia management and mitigation measures contained in the management and monitoring plans will be reviewed as part of the EIS and revised management and mitigation measures will be proposed for CCOP where relevant as part of the EIS.



Legend

- CCOP Project Area
- Road
- Creek/River
- Hivol Monitoring
- BAM Monitoring
- Pluviometers
- Surface Water Monitoring
- Weather Station
- Groundwater Monitoring
- Noise Monitoring
- Depositional Dust Monitoring
- Enviro Suite Dust Monitoring
- Blast Monitoring
- Belubula Monitoring

FIGURE 1.5

Existing Monitoring Network

Image Source: ESRI Basemap, Newmont (2023) Data source: DSFI (2022), Newmont (2023)

Cadia Document Number: 730-17062-EN-DDG-2011

1.4 Purpose of the Document

As the CCOP is a SSD, an Environmental Impact Statement (EIS) will be prepared to accompany the Development Application for CCOP. This Scoping Report has been prepared to provide a description of the project to allow NSW government agencies to identify the key environmental and social matters of relevance to the project to inform the preparation of the Secretary's Environmental Assessment Requirements (SEARs) for the EIS.

This Scoping Report has been prepared in consideration of State Significant Development Guidelines – preparing a scoping report (Appendix A to the state significant development guidelines), (NSW Department of Planning and Environment [DPE], October 2022) and Social Impact Assessment Guideline for State Significant Projects (DPE, February 2023).

1.5 Structure of the Report

An overview of the structure of the report is provided below.

Section 1 introduces CCOP, the Applicant, provides background information, site information including address, current operations and provides an outline of the structure of the document.

Section 2 outlines the strategic context, including the justification, a summary of the locality and an overview of the environmental and social context for CCOP.

Section 3 contains a description of the main CCOP elements, including an overview of alternatives considered.

Section 4 summarises the relevant State and Commonwealth planning provisions applicable to the approval process for CCOP.

Section 5 describes the stakeholder engagement program for CCOP and identifies the environmental and social issues identified during the scoping phase for further consideration in the EIS.

Section 6 contains an analysis of the environmental and social issues relevant to CCOP and the proposed assessment to be completed as part of the EIS.

Section 7 provides a summary of the abbreviations used in this Scoping Report.

Section 8 provides a list of the references used in this Scoping Report.

2 STRATEGIC CONTEXT

2.1 Justification

2.1.1 Commonwealth Policy Context

The Australian government recognises the importance of continued investment in critical and high technology related mineral mining and the associated economic benefits.

The Department of Industry, Science, Energy and Resources, 2020 *Australia's Global Resources Statement* highlights the Australian Government's commitment to a technology-led approach to lowering Australia's greenhouse gas emissions, including a strong focus on minerals and high-technology metals within the mining sector.

The *Critical Minerals Strategy 2023-2030* (Commonwealth of Australia, 2023) identifies copper as a key energy transition metal. Cadia is a significant producer of copper. In the context of the global energy transition, demand for copper will continue to escalate and Cadia is well placed to meet part of this demand.

The Australian Government's Critical Minerals Prospectus 2023 also identified Cadia as Australia's only molybdenum producer in the context of molybdenum being added to Australia's critical mineral list, noting: *"Production of molybdenum resumed in Australia in 2022 for the first time since 1978, when Newcrest's Cadia operations in New South Wales commissioned its processing plant to extract molybdenum from copper concentrates. Cadia is currently Australia's only mining operation reporting molybdenum production."*

2.1.2 NSW Strategic and Regional Context

As identified in the *NSW Minerals Strategy* (NSW Government, 2019), the minerals industry plays an important role in regional NSW as a major employer and as the backbone of many regional communities. As an established operation with access to significant ore reserves beyond the currently approved Project Approval term, the continued operation of Cadia fits with the goal of the NSW Minerals Strategy which is:

"To significantly grow investment in mineral exploration and mining in NSW to position the State as a major global supplier of metals for the economies of today and the future."

The NSW Minerals Strategy highlights the importance and project demand growth for selected minerals, including both copper and molybdenum which are important product streams from Cadia. The projected increase in demand for copper associated with the rise in renewables technology such as wind turbines and electric vehicles is specifically identified in the strategy. Cadia is highlighted as an existing producer of 'high-tech metals' and central to the largest gold and copper deposit zone of NSW.

Establishing NSW as a world leader for investment in sustainable mining is a key priority for the NSW Government. Consequently, the NSW Government has released the *Critical Minerals and High-Tech Metals Strategy* (NSW Government, 2021). The Strategy outlines the NSW Government's vision to build on its existing potential and position NSW as a major global supplier and processor of critical minerals and high-tech metals well into the future. Forecast demand growth for critical minerals (including copper and molybdenum which are produced by Cadia), presents an important economic opportunity for NSW, providing a key source of economic growth needed for a decarbonized future.

The continued operation of Cadia also aligns with the policy aims of the *State Environmental Planning Policy (Resources and Energy) 2021*, including:

- To provide for the proper management and development of mineral, petroleum and extractive material resources for the purpose of promoting the social and economic welfare of the State:
    - As an existing operation, Cadia has demonstrated the ability to productively mine the State's resources in a safe, productive and commercially viable manner to generate significant economic benefits to the region and the state. Over the last 25 years Cadia has been a significant contributor to the region and the state through generating jobs, supporting local businesses, stimulating economic development and investing back in the region.
- To facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources:
    - Cadia has demonstrated over 25 years the ability to extract the State's minerals reserves in a manner which has maximised economic benefits to the NSW taxpayer and local and regional economies. Newmont has strived to deliver these significant economic benefits whilst undertaking its operations in a fair and equitable manner and seeking to minimise adverse impacts to the environment and community.
- To promote the development of significant mineral resources:
    - Since commencement, Cadia has sought to maximise the recovery of the identified gold, copper and molybdenum resources, as demonstrated by the progressive development of the Cadia Hill Open Cut, Ridgeway Underground and Cadia East Underground Mine. Cadia is recognised as a highly productive mine using modern techniques to facilitate the efficient extraction of the State's resources. According to Conte (2022), Cadia in 2021 was the globe's seventh largest gold producing mine.
- To establish appropriate planning controls to encourage ecologically sustainable development through the environmental assessment, and sustainable management, of development of mineral, petroleum and extractive material resources:
    - Cadia has implemented design features, operational controls and safeguards to minimise adverse impacts on the surrounding environment and is currently striving to improve these measures to further minimise its impacts.

Within the *Central West and Orange Regional Plan 2041* (DPE, 2022), Cadia is specifically identified as a key contributor to the Blayney and Cabonne Local Government Areas (LGAs) economies, with mining and mining support identified as a key contributor to the Gross Regional Product (GRP) generated by Orange City LGA. The sustainable management of mineral resources is highlighted in the *Central West and Orana Regional Plan 2041* as underpinning many local communities and a driver to continued growth. The continuation of operations at Cadia will allow for the economic benefits generated by the mine to continue.

As outlined above, ongoing mining in a safe, efficient and responsible manner is consistent with the NSW Government's strategic objective and regional plans.

2.1.3 Need for CCOP

The CCOP provides for the continuation of mining at a well-established, productive mine in an established metalliferous mining region and would facilitate continued employment of the Cadia workforce, providing job security for local mine employees and contractors and continuing to stimulate demand in the local and regional economy.

The CCOP is driven by the need to provide for ongoing operations beyond the term of the current Project Approval to efficiently and sustainably recover these state-owned mineral resources, the need for additional tailings storage capacity and the need for improved water security. These three aspects are discussed below.

- The need to align the term of the Project Approval more closely to the known ore resources and life of mine of Cadia.

At current processing rates, Newmont has estimated the known reserves at Cadia would provide for more than 25 years of operations. Currently PA 06_0295 permits mining operations until 30 June 2031. Given that mining approvals in NSW are not typically granted for periods longer than 25 years, Cadia is seeking an approximately 25-year approval for the CCOP. This approval is being sought to allow mining in all currently approved areas plus extending the Cadia East and Ridgeway mining areas.

- The need to secure additional tailings storage capacity to allow for the continued processing of ore and deposition of tailings for approximately 25 years of operations.

To secure the long-term future of Cadia, additional tailings storage capacity is required beyond the currently approved capacity as the current capacity is insufficient to support the future operations beyond the consent period. In addition, the construction of a new facility is required to commence before the end of the current consent period, bringing forward the timing of this proposal.

- The need to provide improved water security for future Cadia operations.

Experience gained over the 25 years of operation at Cadia, including through the 2001-2009 drought and below average rainfall between 2017 and 2020, has shown that water availability could constrain production in the future if not addressed.

2.2 Project Location

Cadia is an existing mining operation which holds significant mining and exploration tenements (refer to **Figure 1.3**). Resource projects are located where economically mineable resources exist. Cadia has extensive confirmed mineable resources of gold, copper and molybdenum, all of which are required for a range of products and uses and are in high demand.

Cadia has good access to services and infrastructure to support the operation and is located close to regional centres that can provide staff, accommodation and services. Established road, rail and other infrastructure enables efficient and low impact delivery of products to market and transport of people and goods to and from Cadia.

2.3 Local Setting

2.3.1 Community

The CCOP is located within the Cabonne and Blayney LGAs. Several small communities neighbouring Cadia's mining operations including Cadia and Four Mile Creek which fall within the Cabonne LGA and

Panuara, Burnt Yards, Errowanbang and Forest Reefs which fall within the Blayney LGA. The small community of Mandurama straddles both the Blayney and Cowra LGAs.

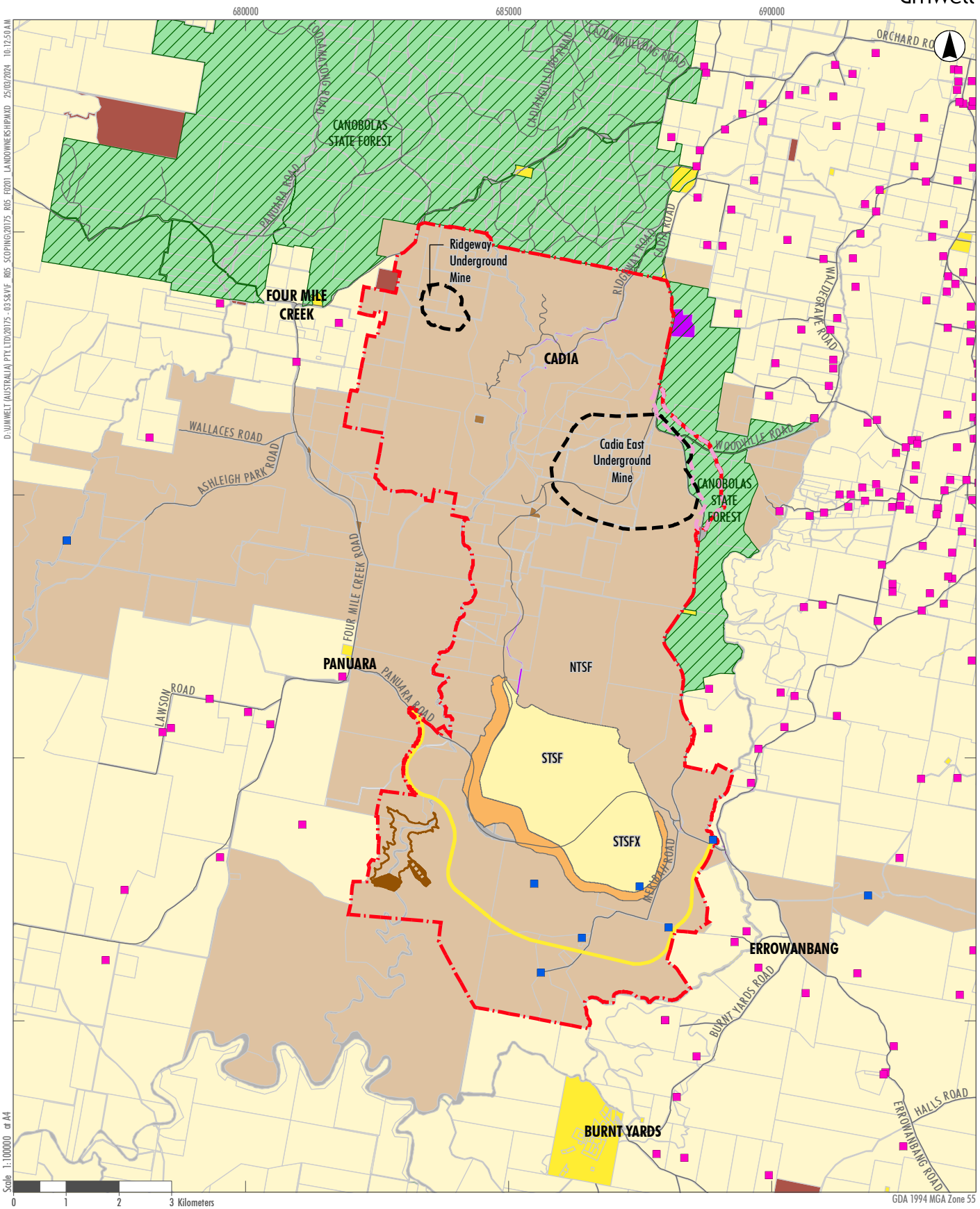
Cadia is a substantial land owner in the region and typically agists the land outside of its mining leases to local landholders. Excluding the road easement of Panuara Road and the proposed realignment of Cadia Road and other Crown land associated with Forestry Corporation of NSW, Crown road reserves and creek easements, the CCOP is located on land owned by CHPL (refer to **Figure 2.1**). The surrounding land that is not owned by CHPL consists of variously sized parcels of private freehold land with agricultural land uses, including cropping and grazing.

Cadia strives to be an environmentally and socially responsible operator including building and maintaining strong connections to the local community. Cadia has also been a long-term employer within the local area, with around 62 per cent of its employees living in the Orange LGA.

Local sentiment towards Cadia has been generally positive with the operation well supported by the Blayney Shire, Cabonne and Orange City Councils. Opportunities for improvement raised by community stakeholders in relation to the existing mine have included the management of dust emissions following the cessation of tailings deposition to the NTSF and STSF and from the ventilation rises which connect to the Cadia East underground operation, specifically Ventilation Rise 8. Cadia is working with independent experts, the NSW government and the local community to better understand and seek to reduce these dust emissions and has made substantial progress on its commitments.

Cadia has and continues to implement dust management measures to minimise dust emissions from its operations. For the STSF and NTSF this includes the application of hydromulch and dust suppressants (surface and aerial applications), routine monitoring of the efficacy of the hydromulched areas and the installation of a centre pivot irrigation system on the NTSF. Underground dust scrubbing units have also been installed to further minimise dust emissions from underground operations and monitoring systems installed to assist in the minimisation of emissions from the ventilation rises associated with its underground operations.

Further discussion regarding local community and other stakeholders is provided in **Section 5** and the Social Impact Scoping Report provided as **Appendix B**.



Legend

- CCOP Project Area
- Cadia Road Realignment Study Area
- Indicative Subsidence Zone of Influence
- Indicative Panuara Road Realignment
- Indicative South Water Storage Inundation Area and Access Road

Indicative Southern Tailings Storage Facility Extension (STSFX)

- Proposed Final Tailings
- Proposed Hydrocycloned Sand Embankment

Land Ownership

- Cadia Owned
- Cadia Owned/Crown
- Crown
- Local Government Authority
- NSW Government
- Private
- Private/Crown
- Unknown

- Cadia Owned Residence
- Private Residence
- State Forest
- Road

FIGURE 2.1

Land Ownership

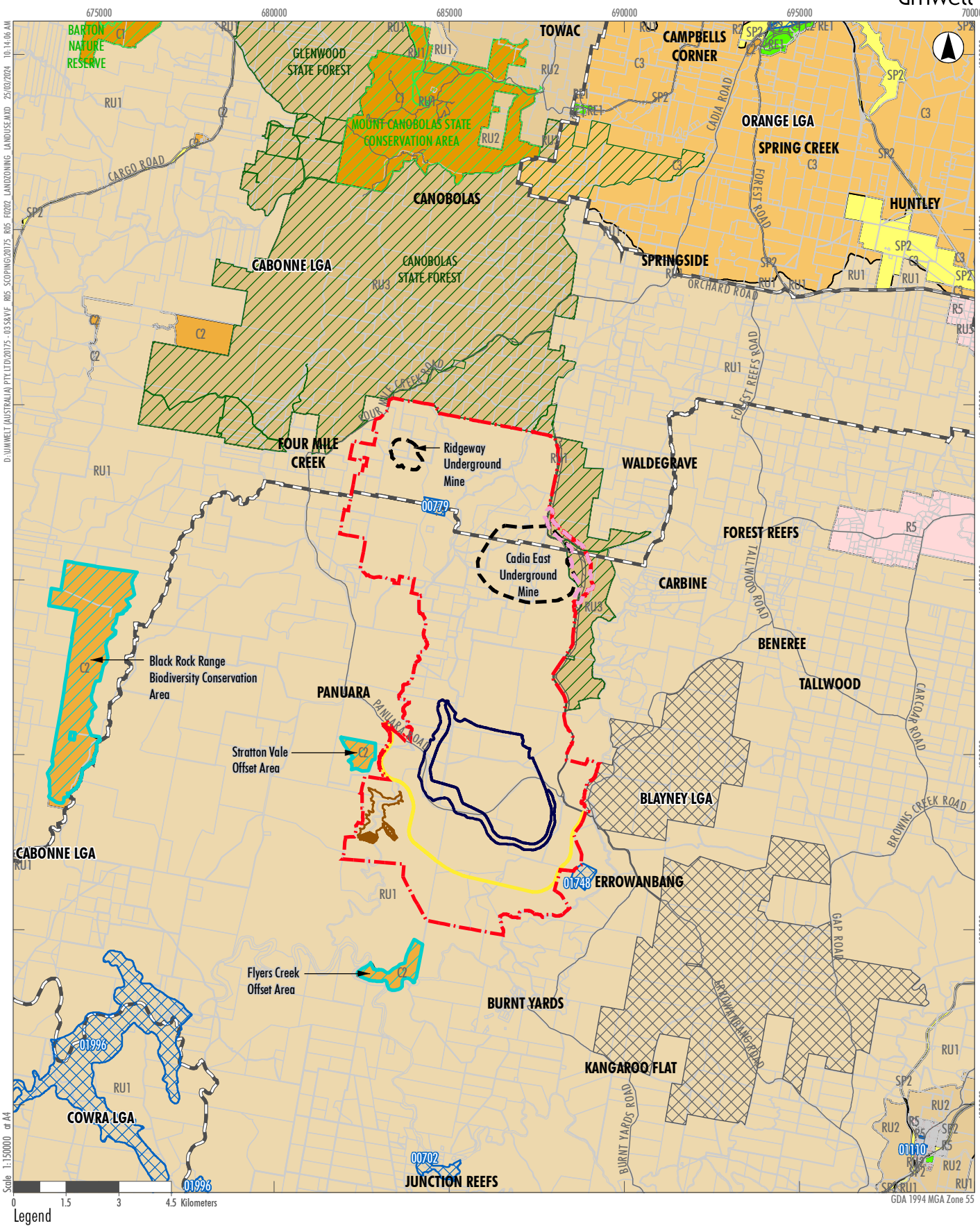
2.3.2 Land Use

Cadia is located on land zoned RU1 (Primary Production) under both the *Blayney Local Environment Plan 2012* and *Cabonne Local Environment Plan 2012* (refer to **Figure 2.2**). Land use surrounding Cadia is dominated by agriculture (including grazing and cropping) and smaller rural holdings (refer to **Figure 2.3**). CHPL owns the land on which the proposed STSFX and South Water Storage will be constructed, which like the surrounding rural properties is currently used for agricultural purposes and agisted for grazing purposes.

In addition to the extensive agricultural land uses surrounding Cadia, other important land uses in the local setting include:

- Forestry, most notably the softwood pine plantation of Canobolas State Forest.
- Biodiversity conservation (as shown on **Figure 2.2**) including:
    - Canobolas SCA located approximately 6 km north of the CCOP Project Area
    - native vegetation of Canobolas State Forest located immediately to the north of the CCOP Project Area
    - Black Rock Range biodiversity conservation area established by Cadia, located approximately 8 km to the west of the CCOP Project Area
    - Stratton Vale Offset Area, located to the immediate west of the CCOP Project Area
    - Flyers Creek Offset Area, located approximately 2 km south of the CCOP Project Area.
- Heritage conservation, with several identified local and State listed heritage sites located within the local setting, namely:
    - Errowanbang homestead, outbuildings, garden and woolshed (locally listed – Blayney LEP 2012; the woolshed is also listed on the State Heritage Register).
    - Flyers Creek Mining Area (locally listed – Blayney LEP 2012).
    - Cadia Engine House (locally listed – Cabonne LEP 2012).
    - Cliefden Caves (listed on State Heritage Register). The Flyers Creek Wind Farm, which was approved in March 2014 for development of 38 wind turbines and electricity transmission infrastructure, commenced construction in March 2022 and is expected to be operational by the first half of 2024. **Figure 2.2** identifies these land uses.

The Cadia Dewatering Facility is located on land zoned IN1 (Light Industrial) under the Blayney Local Environmental Plan 2012. Land use surrounding the existing facility is largely rural landscape and agriculture, as well as the existing rail infrastructure facilities, with the township of Blayney approximately 1 km to the west of the facility.



Legend

- CCOP Project Area
- Cadia Road Realignment Study Area
- Indicative Subsidence Zone of Influence
- Indicative Panuara Road Realignment
- Indicative South Water Storage Inundation Area and Access Road
- Indicative Southern Tailings Storage Facility Extension (STSFX)
- Local Government Area (LGA)
- (SHR) Heritage
- Existing Biodiversity Offset Area
- Flyers Creek Wind Farm (SSD MP 08_0252)
- Cadastre Boundary
- State Forest
- National Parks (NPWS Estate)
- Road

Zoning

- C1 - National Parks and Nature Reserves
- C2 - Environmental Conservation; C2, Environmental Management
- C3 - Environmental Management
- C4 - Environmental Living
- R2 - Low Density Residential
- R5 - Large Lot Residential
- RE1 - Public Recreation
- RU1 - Primary Production
- RU2 - Rural Landscape
- RU3 - Forestry
- RU5 - Village
- SP2 - Infrastructure

FIGURE 2.2

Land Zoning and Land Use

Image Source: ESRI Basemap, Newmont (2023) Data source: DSFI (2022), Newmont (2023)

Cadia Document Number: 730-17062-EN-DDG-2019

2.3.3 Natural Environmental Features

Topography

The Cadia Valley is located on the western side of the Great Dividing Range. Elevations within the valley generally range from approximately 600 to 1,000 m Australian Height Datum (m AHD). Elevations at Cadia range from approximately 930 m AHD near the headwater of Rodds Creek to approximately 640 m AHD at the confluence between Rodds Creek with Cadiangullong Creek. **Figure 2.3** illustrates the topographic setting of Cadia.

Hydrology (Drainage)

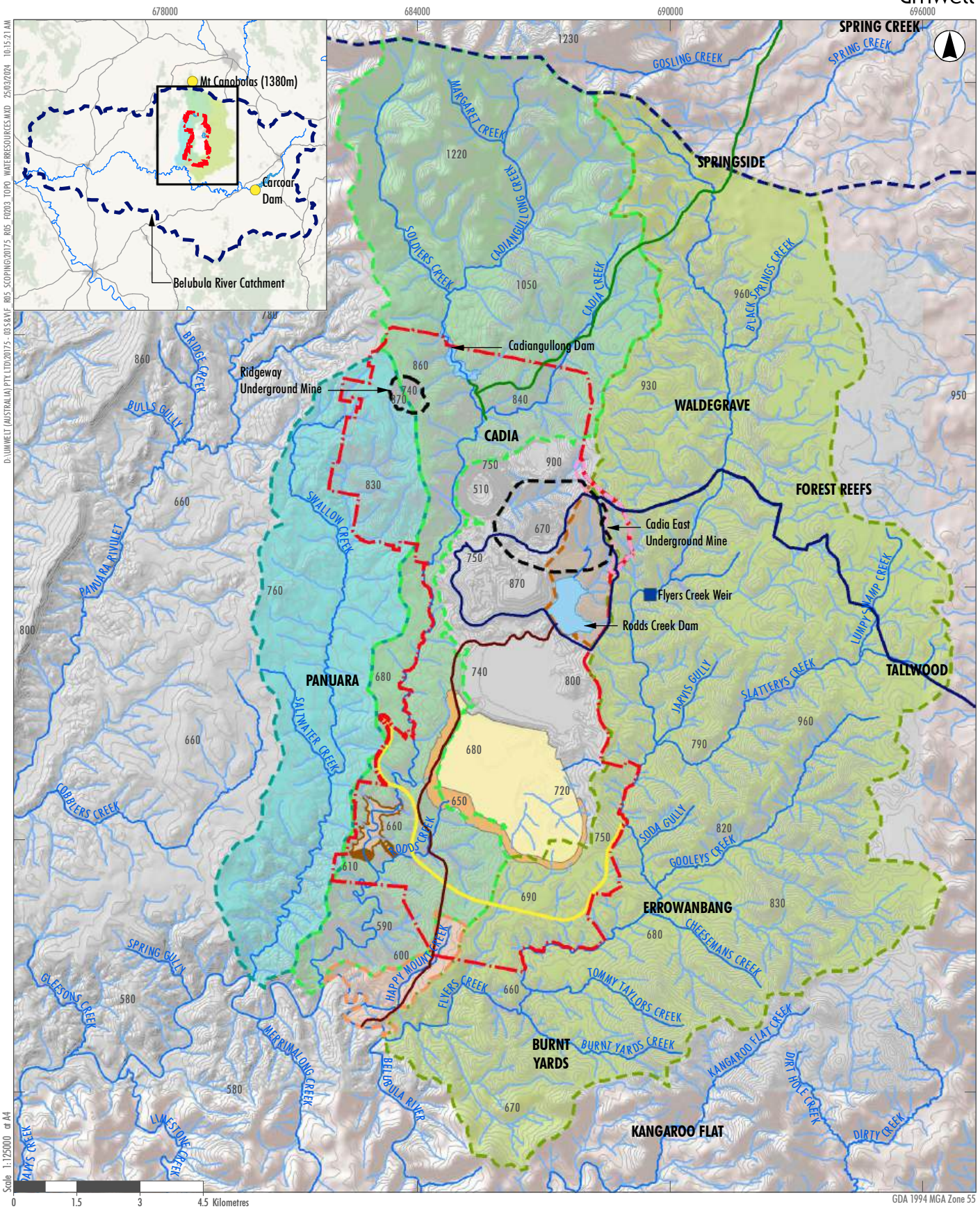
Figure 2.3 identifies the catchments and key drainage lines of the local setting. The existing Cadia operations are located within the Cadiangullong Creek, Rodds Creek, Flyers Creek and Swallow Creek catchments. The CCOP will extend operations into parts of the Happy Mount Creek catchment. All these creeks drain to the Belubula River (which forms part of the Lachlan River catchment). The Belubula River is unregulated in this section of the catchment below Carcoar Dam, however provides water to local landholders via licensed abstraction.

Hydrogeology

A number of landowners have access to groundwater for stock, domestic or commercial use. Three main aquifer systems have been identified within the Cadia mining leases, as described below:

- Tertiary Basalt (Orange Basalt) is situated predominately throughout the northern portion of Cadia, with small, isolated outliers to the east, west and south. The regional groundwater level within this unit is generally 20 m below ground level, i.e. between 880 to 955 m AHD. Groundwater quality is typically fresh.
- Silurian Sediments are a fine-grained low permeability unit with groundwater intercepted within the fractured sandstone/siltstone and limestone layers. Groundwater depths range from 25 to 64 m below ground level. Groundwater quality is typically fresh and calcium-bicarbonate dominant.
- Ordovician Volcanics are a low yielding groundwater source associated with the fractured basement rocks. Occurring predominantly within faults and fractures, groundwater levels in the Ordovician basement rocks are variable, ranging from 592 to 969 m AHD within bores monitored by Cadia. Groundwater is typically brackish to saline, calcium-magnesium-sulphate dominant and flows to the south-west.

Water contained within sedimentary limestone of the Silurian sediments to the east of Cadia is known to discharge at surface and provides base flows to Flyers Creek.



Legend

- CCOP Project Area
- Cadia Road Realignment Study Area
- Indicative Subsidence Zone of Influence
- Indicative Panuara Road Realignment
- Indicative South Water Storage Inundation Area and Access Road

Indicative Southern Tailings Storage Facility Extension (STSFX)

- Proposed Final Tailings
- Proposed Hydrocycloned Sand Embankment

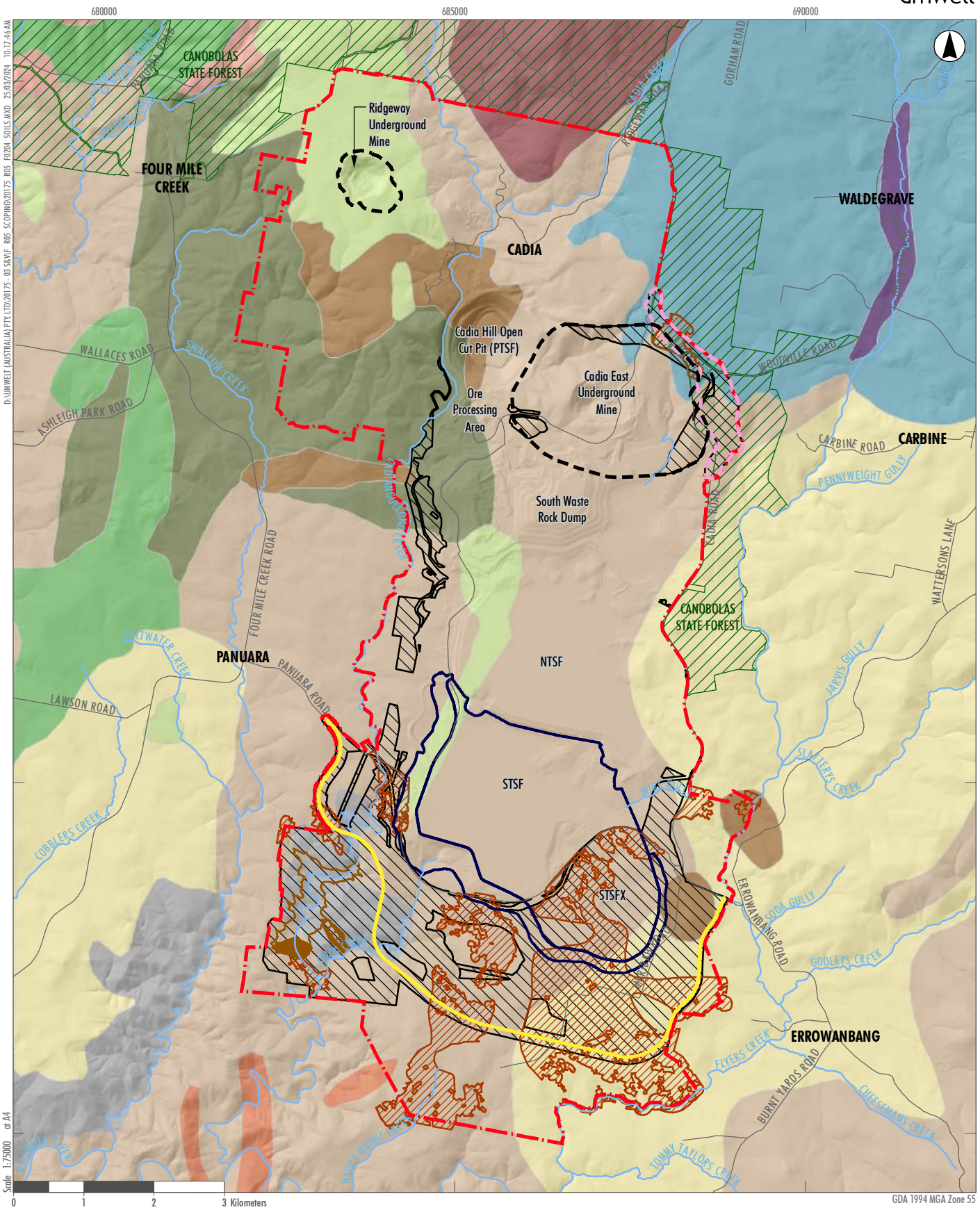
- Belubula River Catchment
- Cadiangullong Creek Catchment
- Flyers Creek Catchment
- Happy Mount Creek Catchment
- Rodds Creek Catchment
- Swallow Creek Catchment

- Blayney Existing Concentrate and Water Return Pipeline
- Belubula River Pipeline
- Orange Effluent Pipeline
- Flyers Creek Weir
- Contour (10m Interval)
- Dam
- Creek/River
- Drainage Line

FIGURE 2.3

Topography and Water Resources

Image Source: Data source: Geoscience Australia; DSFI (2017); Newcrest (2020)



Legend

- CCOP Project Area
- Cadia Road Realignment Study Area
- Potential Additional Disturbance Area
- Indicative Subsidence Zone of Influence
- Indicative Panuara Road Realignment
- Indicative South Water Storage Inundation Area and Access Road
- Indicative Southern Tailings Storage Facility Extension (STSFX)
- Verified BSAL

NSW Soil Landscapes

- Borenore-Lyndhurst
- Brinsley
- Canobolas
- Lees Mountain
- Macquarie
- Panuara
- Quarry
- Razorback
- Spring Hill
- Stoke-Burnt Yards
- Towac
- Vittoria-Blayney

- State Forest
- Road
- Creek/River

FIGURE 2.4

Soil Landscapes and Biophysical Strategic Agricultural Land

Image Source: ESRI Basemap, Newmont (2023) Data source: DSFI (2022), Newmont (2023)

Cadia Document Number: 730-17062-EN-DDG-2007

Soils and Agriculture

As noted in **Section 2.3.2**, the majority of land in the local setting is zoned RU 1 (Primary Production) and has historically been cleared and used for the grazing for beef and lamb on a rotational grazing method, with the primary activities being the breeding and fattening of steers. Annual cropping for fodder (hay and silage) is also undertaken over a portion of the area.

Following detailed field survey undertaken in accordance with the *Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land* (OEH/OAFS, 2013), approximately 470 ha of the potential additional disturbance area has been verified as Biophysical Strategic Agricultural Land (BSAL) (refer to **Figure 2.4**). The verified BSAL, occurring as both chromosol and dermosol soil types, occurs principally as the Panuara and Vittoria-Blayney Soil Landscapes (refer to **Figure 2.4**).

Hazards and Risks

With areas of remnant or plantation vegetation, bushfire presents a potential hazard for the CCOP Project Area. Further, surface impacts from mining related subsidence is an associated impact of the CCOP. The EIS will include an assessment of potential hazards associated with the Project. This is discussed further in **Section 6.2.13**.

2.3.4 Built Environment Features (Major Infrastructure)

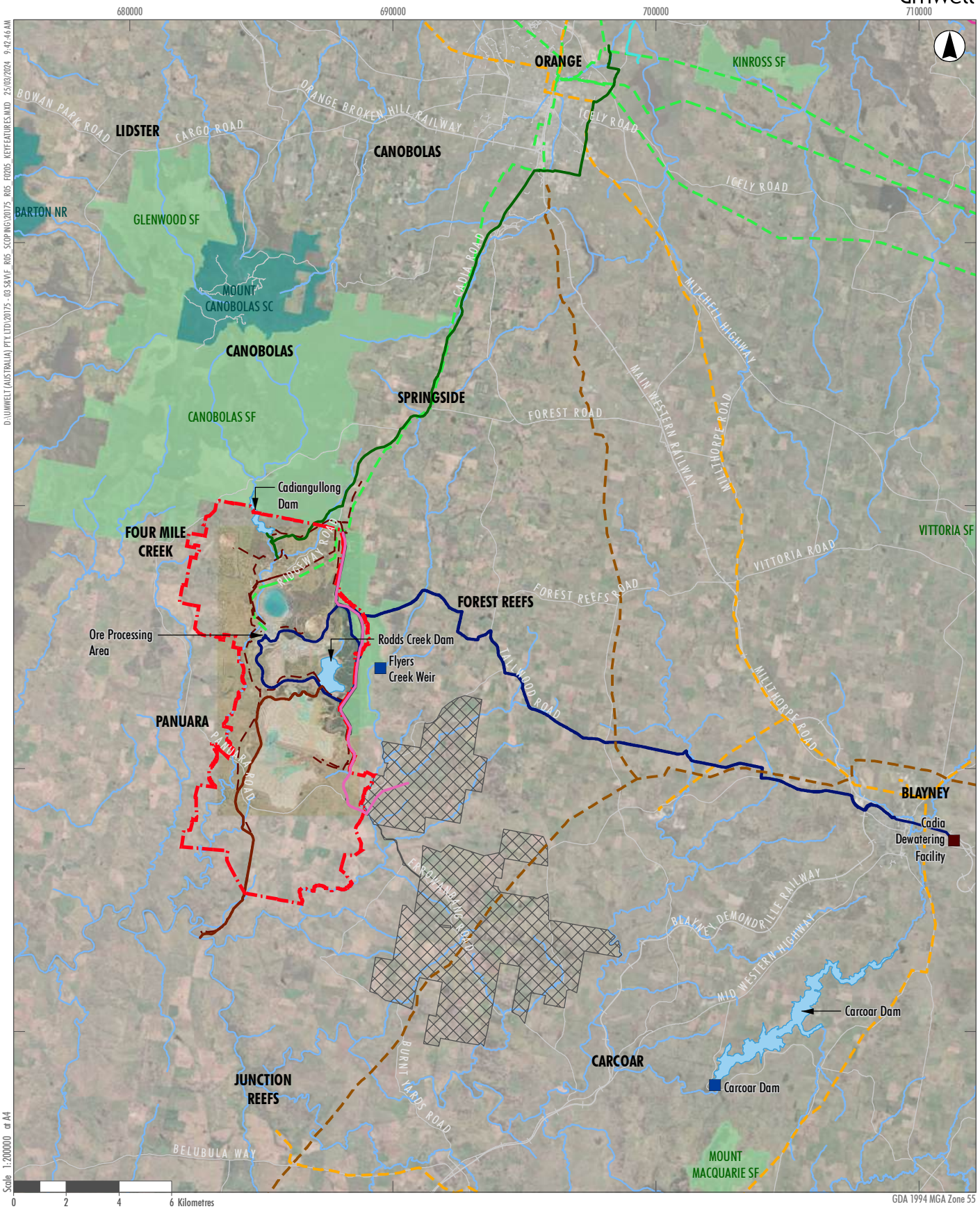
An overview of the key features of the built environment relevant to the CCOP are discussed below and identified on **Figure 2.5**.

Road Infrastructure

Access to Cadia is via local roads which are maintained and managed by local councils. The principal roads used by staff, visitors and suppliers to Cadia are:

- Ridgeway Road: the main vehicular access to Cadia which terminates on the Cadia site. Ridgeway Road intersects with Cadia Road.
- Cadia Road: provides an emergency access point to the Cadia site but principally provides a link from Ridgeway Road to Forest Road. It also the primary access for the Molybdenum plant.
- Forest Road (MR245): connects Cadia Road (and the Cadia site) to Orange.

Mine-related traffic makes up a significant proportion of traffic on these roads, most notably Ridgeway Road which is almost solely used by Cadia traffic. As Forest Road gets closer to Orange, more non-mine related traffic uses this road to access local properties, Orange Airport, Orange Hospital, the village of Spring Hill and locality of Spring Terrace.



Legend

- CCOP Project Area
- Cadia 33kV Powerline Distribution Network
- Orange Effluent Pipeline
- Belubula River Pipeline
- Existing Concentrate Pipeline
- Dewatering Facility
- Weir
- Gas Pipeline (Below Ground)
- Water Pipeline (Below Ground)
- 132kV Transmission Line
- 330kV Transmission Line
- 66kV Transmission Line
- Flyers Creek Wind Farm Powerlines
- Flyers Creek Wind Farm (SSD MP 08_0252)
- NPWS Reserve
- State Forest
- Dam
- Creek/River
- Road
- Railway

FIGURE 2.5

Key Features of the Built Environment

Rail Infrastructure

There is no rail infrastructure in the immediate vicinity of Cadia, however, the Main Western Railway which passes through Blayney is critical infrastructure for Cadia as dewatered concentrate at the Cadia Dewatering Facility is loaded onto the rail network for transport to Port Kembla.

Electricity Infrastructure & Water Pipelines

132 kilovolt (kV) and 33 kV electricity transmission lines pass through Cadia. Key aspects of the high voltage network within the CCOP Project Area are shown in **Figure 2.5**. The Flyers Creek Wind Farm powerlines run adjacent (north to south) to the east of Cadia (refer to **Section 2.4**).

Key water pipelines associated with Cadia are also shown on **Figure 2.5**, including:

- From the Belubula River to Cadia to supply supplementary water for use at the mine site under licence.
- A treated effluent water pipeline from Orange to Cadia to provide recycled effluent water for use at Cadia.
- Between the mining operations and the Cadia Dewatering Facility at Blayney, a dual pipeline is maintained to transfer copper concentrate to the Cadia Dewatering Facility and return water back to the mine.
- Between the Flyers Creek Pump Station and Rodds Creek Dam to supply water under licence for use at the mine site.

2.4 Cumulative Impacts

Cumulative impact assessment is an important component of the environmental and social impact assessment process and will be undertaken as part of the EIS. There are a number of developments or activities in the immediate vicinity of Cadia or the CCOP Project Area which may result in cumulative impacts, and which will be considered in the EIS cumulative impact assessment. In accordance with the requirements of the *Cumulative Impact Assessment Guidelines for State Significant Project* (DPIE, 2021b) the EIS will consider as relevant other construction, industrial and job generating projects within the locality. In this regard the following will be considered with respect to cumulative impact assessment in the EIS:

- The approved Flyers Creek Wind Farm, which is located to the east of Cadia and CCOP (refer to **Figure 2.5**). Flyers Creek Wind Farm is a 145 Megawatt (MW) project and comprises 38 wind turbines and associated infrastructure. Impacts associated with traffic, noise, visual and social impacts will be considered as part of the EIS.
- The land to the immediate east of the CCOP Project Area is owned by NSW Forestry. It is understood that this land may be subject to harvesting and replanting by NSW Forestry during the life of the CCOP. Engagement with NSW Forestry has commenced (refer to **Section 5.2.2**) and impacts associated with traffic, noise, air quality and visual will be considered as part of the EIS.
- Demand for infrastructure, services and employees associated with the proposed McPhillamy's Gold Mine, a State Significant mining project located at Kings Plains, approximately 6 km northeast of Blayney.
- Demand for accommodation, both permanent and temporary, associated with existing industry such as tourism, future industry (e.g. McPhillamy's Gold Mine) and natural population growth.

- Demand for water from both surface and groundwater supplies. The EIS will identify and consider key agricultural or other water users, consider their requirements and provide assessment of any impacts on supply which could result from the CCOP.

Cumulative impacts will be assessed as part of each of the technical assessments as relevant in the EIS considering the above aspects and projects, along with other identified projects that may result in cumulative impacts as per the Cumulative Impact Guidelines.

2.5 Planning and Other Agreements

Cadia currently has a Voluntary Planning Agreement (VPA) with Blayney Shire, Cabonne and Orange Councils which provides for both one-off payments to these councils as well as contributions made on an annual basis towards the maintenance of local roads and infrastructure. The terms of the VPA will be reviewed, and either an updated or new agreement negotiated with each council for the CCOP.

Cadia maintains the Black Rock Range, Belubula River/Flyers Creek and Stratton Vale Offset Areas as required by Condition 38 of Schedule 3 of PA 06_0295. Totalling 966 ha, these offset areas are recognised under the *Blayney Local Environment Plan 2012* as land zoned E2 (Environmental Conservation). Cadia is in the process of establishing a Conservation Agreement (CA) in consultation with the Biodiversity Conservation Trust (BCT) for these offsets. A Planning Agreement had been drafted with DPE (now DPHI) for this purpose following the Cadia East EA approval (2010), however, in early 2022 DPE (now DPHI) advised that the most appropriate method of providing security for these offsets sites was through a CA.

3 CADIA CONTINUED OPERATIONS PROJECT

3.1 Project Summary

As discussed in **Section 1.2**, the CCOP includes:

- Continuation of existing operations beyond 2031 for a period of approximately 25 years from the date of approval of the CCOP (nominally to 2050).
- An extension to the existing STSF, to provide additional storage capacity for the tailings to be generated by the continued processing of the identified reserves of Cadia East and Ridgeway.
- An additional water storage to provide improved security of water security (identified as the SWS) to be located on Cadiangullong Creek.
- Continuation of underground mining within the already approved Cadia East Underground Mine (Cadia East) area with a refinement of the predicted subsidence zone due to increased footprint of underground mining areas.
- Continuation of underground mining within the already approved Ridgeway Underground Mine (Ridgeway) area with an extension to underground mining known as Lift 2. This is not expected to result in a change to the predicted subsidence zone as defined in Modification 15.
- Realignment of a portion of Panuara Road and a portion of Cadia Road and other infrastructure to account for the project features listed above.
- Changes to site infrastructure and facilities for ongoing mining operations.

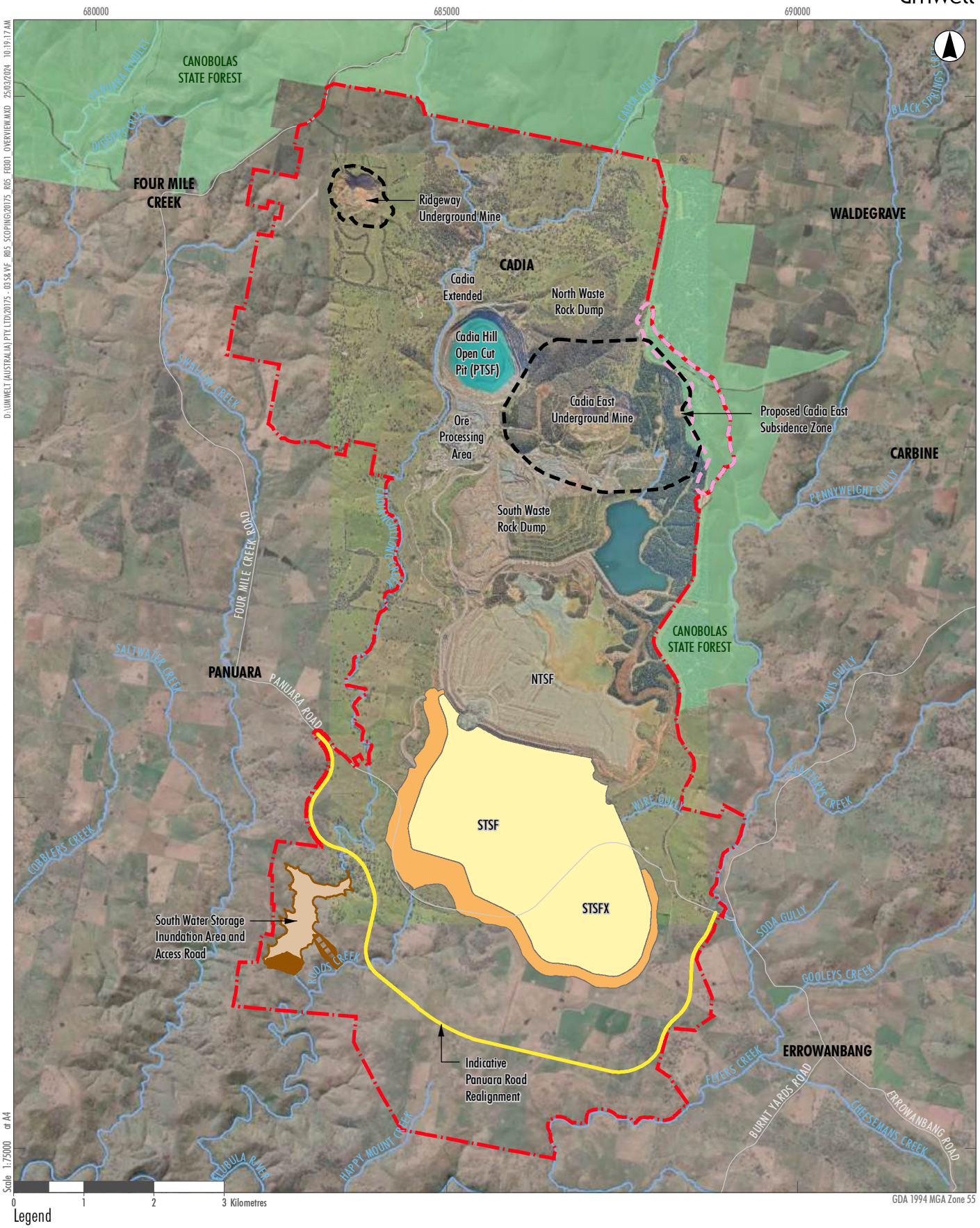
Planning and design of these components of the CCOP is ongoing, with an overview of each provided in the following sections. **Figure 3.1** also provides an overview of the key components of CCOP.

The CCOP also includes all ongoing and approved activities at Cadia including the Cadia Dewatering Facility located near Blayney and the Cadia Concentrate and Return Water Pipeline which connects Cadia to the Dewatering Facility to the east of the approved Cadia East subsidence zone. No changes are proposed to the Dewatering Facility.

It is proposed that all other approved operations at Cadia not specifically identified to change as part of the CCOP would continue generally in accordance with PA 06_0295, which would be surrendered and replaced by a new development consent should the CCOP be approved.

The CCOP will impact on areas currently approved for mining related disturbance and will also involve additional disturbance of land. The areas of land that may be impacted by the CCOP that are not currently approved for disturbance are referred to in this Scoping Report as the Potential Additional Disturbance Area (refer to **Figure 3.2**). The disturbance area associated with the CCOP will be further refined throughout the EIS process and will be defined in the EIS.

Table 3.1 provides a comparison of the CCOP with the approved Cadia operations (including the proposed PA 06_0925 Modification 15 changes).



Legend

- CCOP Project Area
- Cadia Road Realignment Study Area
- Indicative Subsidence Zone of Influence
- Indicative Panuara Road Realignment
- Indicative South Water Storage Inundation Area and Access Road

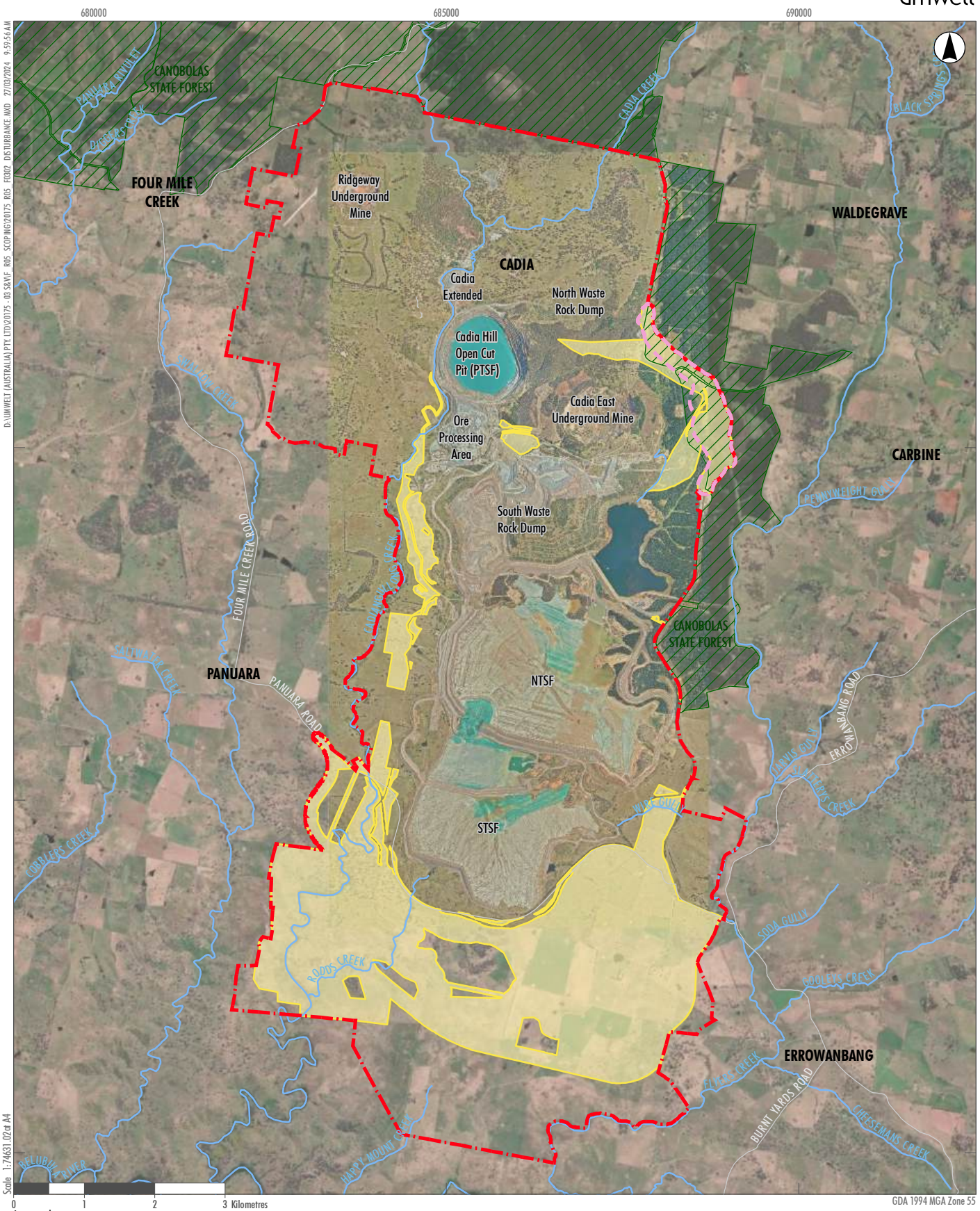
Indicative Southern Tailings Storage Facility Extension (STSFX)

- Proposed Final Tailings
- Proposed Hydrocycloned Sand Embankment
- State Forest
- Road
- Creek/River

FIGURE 3.1

Cadia Continued Operations Project

Image Source: ESRI Basemap, Newmont (2023) Data source: DSFI (2022), Newmont (2023)



Legend

- CCOP Project Area
- Cadia Road Realignment Study Area
- Potential Additional Disturbance Area
- State Forest
- Road
- Creek/River

FIGURE 3.2

Potential Additional Disturbance Area

Image Source: ESRI Basemap Data source: NSW DSFI (2021), Newcrest (2023)

Table 3.1 Overview of Approved Operations and Proposed CCOP

Project Component	PA 06_0295 Approved Operations	PA 06_0295 Modification 15 (Mod 15) (in progress)	Cadia Continued Operations Project (CCOP)
Ore Production	Cadia East: Approximately 525 Mt. Ridgeway: Approximately 96 Mt	No change.	Cadia East: Approximately 1150 Mt in total (625 Mt increase from current approval) Ridgeway: Approximately 156 Mt in total (60 Mt increase from current approval)
Approved Operating Life	Mining up until 30 June 2031. Project Approval to 30 June 2031.	No change (potential restart of Ridgeway to facilitate mining of the 15Mt of approved resource) (subject to market and operating conditions, further studies and appropriate internal approvals)	Additional approximately 25 years life (from date of approval – nominally mining until approximately 2050)
Mining Methods	Ridgeway – underground sub-level and block caving with development of associated surface subsidence zone. Cadia East – underground panel caving with development of associated surface subsidence zone.	No change.	No change
Mining Area	**Cadia East** Panel cave development in three lifts (i.e. Lifts 0, 1 and 2). **Ridgeway** The top of the Ridgeway deposit is about 500 m below the surface and has approximate dimensions of 450 m east-west, 250 m north-south and extends about 1,000 m below the surface.	No change to either Cadia East or Ridgeway mining areas.	**Cadia East** All existing mining areas plus continuation of the mining areas laterally and deeper than identified for the original Cadia East development. **Ridgeway** A second lift (Lift 2 production) to deepen the extraction level of the mine by approximately 300 m (subject to market and operating

Project Component	PA 06_0295 Approved Operations	PA 06_0295 Modification 15 (Mod 15) (in progress)	Cadia Continued Operations Project (CCOP)
			conditions, further studies and appropriate internal approvals).
Subsidence	Subsidence predictions for Cadia East and Ridgeway underground mines have been defined as part of the original Cadia East application. Subsidence is required to be contained within the approved limit of mining.	Recommencement of mining the Ridgeway orebody would lead to some minor changes to the northeast and southwest of the approved subsidence zone. However, the overall footprint of the predicted subsidence zone is smaller than the approved subsidence zone.	**Cadia East** Updated subsidence predictions which indicate a change to the footprint of the subsidence zone **Ridgeway** Updated subsidence predictions for Ridgeway Mine due to the proposed additional Lift 2 mining subsidence are being undertaken and will be incorporated into the EIS.
Mine Ventilation	The mining complex includes several ventilation adits/shafts for ventilation of underground mining areas. Decommissioning and closure of existing adit VR101 located within the Cadia Hill Open Cut Pit. Installation of a ventilation adit within the current approved disturbance footprint to replace adit VR101.	Two additional Cadia East underground mine upcast surface ventilation fans.	Changes to the locations of ventilation adits/shafts is likely to allow for the extended mining operations of the CCOP. Mine design work is ongoing to confirm ventilation needs and will be further defined in the EIS.
Waste Rock Management & Sourcing of Rock for STSFX Construction	Deposition in the North and South Waste Rock Dumps and mined-out void of Cadia Extended open pit. Cadia East waste rock to be deposited in the South Waste Rock Dump. Material for the construction of the NTSF encapsulation and STSF embankment construction to be sourced from non-acid	No change.	Ongoing use of the existing rock dumps for the life of CCOP with changes to accommodate the site waste rock balance, and potential relocation of existing rock dump due to subsidence impacts. Material for the construction of STSFX and future capping and rehabilitation to be sourced from the footprint of the proposed

Project Component	PA 06_0295 Approved Operations	PA 06_0295 Modification 15 (Mod 15) (in progress)	Cadia Continued Operations Project (CCOP)
	forming material from the site waste rock dumps.		STSFX, non-acid forming waste rock material from existing waste rock dumps and possibly other locations within areas of disturbance in the CCOP Project Area (subject to ongoing investigations). Excavated rock from the STSFX footprint would be stockpiled to provide a supply of rock for future embankments, external drainage layers and future capping and rehabilitation of the TSF.
Ore Processing	Processing of up to 35 Mtpa of ore. **Gold/copper** The low- and high-grade processing plants use a gravity circuit to produce a gold doré and flotation cells to produce a gold/copper concentrate slurry. **Molybdenum** Molybdenum Recovery Plant with a feed capacity of 500,000 tpa.	Upgrades to the Potassium Amyl Xanthate (PAX) facility. Two HydroFloat® cells located within the existing Cadia Ore Processing Facilities' disturbance footprint.	No change to ore processing rate. Minor processing amendments associated with: management and distribution of tailings, process water and runoff ponds, and other minor process plant and infrastructure modifications.
Process Consumables	Construction and operation of a Sodium Hydrosulphide Solutioning Plant (located adjacent to the Molybdenum Recovery Plant) to produce sodium hydrosulphide on-site to meet Cadia's operational requirements. All other consumables to be delivered to the site for storage and use.	20% increase in PAX consumption.	No change.

Project Component	PA 06_0295 Approved Operations	PA 06_0295 Modification 15 (Mod 15) (in progress)	Cadia Continued Operations Project (CCOP)
Concentrate Dewatering and Transport	Gold/copper concentrate is transported from the ore processing facilities via a concentrate pipeline to the Cadia Dewatering Facility. Water is returned to Cadia for inclusion in the consolidated water management system of the mine. Dewatered gold/copper mineral concentrate is transported by rail to market or ports for export. Molybdenum concentrate is dewatered within the Molybdenum Recovery Plant (located at Cadia). Dewatered molybdenum is transported from site by truck to market.	Changes to the operation of the Cadia Dewatering Facility to allow train arrival and departures during evening and night time hours. Minor administrative changes to remove conditions relating to the former Blayney Dewatering Facility from PA 06_0295.	No change to concentrate delivery. No change to the configuration of the trains (i.e. number of locomotives (3) and wagons (56)), movements or loading hours. Realignment of a small section of the concentrate and dewatering lines to and from Cadia Dewatering Facility around the Cadia East subsidence zone.
Tailings Management	Production of conventional slurry tailings. Deposition in Cadia Hill Open Cut Pit to full capacity to a level of 713 m AHD. Tailings deposition NTSF and STSF with embankments to be progressively raised by centreline/downstream lifts. Cumulative tailings disposal volume of approximately 674 Mt.	Changes to the embankment footprint of the NTSF and STSF. Construction of a trial tailings embankment from hydrocyclone sands sourced on site. Change to working hours for TSF construction into the evening.	Initially, ongoing use of existing tailings management systems and disposal strategies. Construction and operation of an extension to the STSF (STSFX) and associated tailings delivery infrastructure and Tailings Separation Plant (TSP) for separating the tailings slurry into coarse (sand) for construction of STSFX and fine tailings. This method of embankment construction is known as hydrocyclone sands. Storage/stockpiling of HydroFloat Tailings and/or coarse sand tailings within existing TSF areas. Construction and operation of STSFX to complement the residual capacity of the STSF

Project Component	PA 06_0295 Approved Operations	PA 06_0295 Modification 15 (Mod 15) (in progress)	Cadia Continued Operations Project (CCOP)
			to allow for the storage of tailings until nominally 2050. Construction, operation and maintenance of downstream drainage and water return infrastructure for STSFX, including a minor realignment of a section of Cadiangullong Creek. Revision to proposed final levels for all Tailings Facilities. Construction and operation of haul roads and access roads for the STSFX and supporting infrastructure. Stockpiling of recovered topsoil from within the footprint of the STSFX. The emplacement of coarse tailings on the NTSF and PTSF surface. This material will be used to establish a final landform profile which is consistent the stated rehabilitation objectives.
Water Supply and Management	Water supply sourced from the Cadiangullong Dam, Flyers Creek Weir, Cadia Creek Weir, Orange Sewage Treatment Plant treated effluent, Blayney Sewage Treatment Plant treated effluent, return water from the Cadia Dewatering Plant (including Modification 3 realignment of a section of the Cadia Concentrate and Return Water Pipelines), on-site groundwater bores, Belubula River, Cadia Extended open pit and site runoff. Internal	Further realignment of the Belubula River pipeline.	Ongoing use of the existing water management system. Construction and operation of the SWS and water transfer systems for improved water security. Realignment of a section of the Cadia Concentrate and Return Water Pipeline adjacent to Cadia Road.

Project Component	PA 06_0295 Approved Operations	PA 06_0295 Modification 15 (Mod 15) (in progress)	Cadia Continued Operations Project (CCOP)
	tailings return water pipeline and pumping systems from Cadia Hill Open Cut Pit.		
Power supply	Construction of 132 kV electrical substation.	Expansion of the existing 132 kV electrical substation.	Additional transmission and distribution infrastructure relating to additional infrastructure (Tailings Separation Plant and pumping infrastructure, additional water pumping associated with movement of water from the SWS, and potential future electrification of fleet as part of Cadia's decarbonisation pathway).
Site Access	The principal route used to access Cadia is from Orange via Forest Road and Cadia Road. The existing Cadia site access road is located off Ridgeway Road which intersects with Cadia Road approximately 3.4 km northeast of the Cadia entrance. Access to Cadia is to revert to Cadia Road following the construction of a new site access road to the south of Cadia Road/Woodville Road intersection. Ridgeway Road to be retained as an emergency access to Cadia.	No change to general site access.	Ridgeway Road access point will remain the main site access for Cadia with alternative access via the Molybdenum Plant Access Road, as required. Realignment of a section of Panuara Road required to allow for construction of STSFX. Minor new maintenance access points off Cadia Road and Panuara Road to access STFSX, SWS and TSP. Realignment of a section of Cadia Road and the Cadia Rd/Woodville Rd intersection required due to potential subsidence surface expression impacts.
Hours of Operation	Mine complex operations; dewatering facilities – 24 hours, 7 days per week Cadia Dewatering Facility – train loading – daytime, 7 days per week	Changes to the operation of the Cadia Dewatering Facility to allow train arrival and departure to occur during evening (i.e. 6pm-10pm) and nighttime hours (i.e. 10pm-6am).	No change to hours of operation (including Mod 15 updates) proposed. Construction hours for STSFX and the SWS are currently under review and will be subject to further noise impact assessment.

Project Component	PA 06_0295 Approved Operations	PA 06_0295 Modification 15 (Mod 15) (in progress)	Cadia Continued Operations Project (CCOP)
		Construction works for TSF in the evening period (i.e. 6 pm-10 pm).	
Workforce	An average of approximately 1,430 full-time equivalent jobs (including 945 Newmont employees) with an additional construction/development workforce of up to approximately 860 personnel. Occasional shutdown maintenance workforce of between 300 and 700 personnel.	An average of approximately 1090 to 1140 employees (i.e. an additional 150-200 personnel associated with the recommencement of Ridgeway) with an additional construction/development workforce of up to approximately 970 personnel (i.e. an additional 110 personnel associated with the TSF construction works). No change to the intermittent shutdown workforce personnel.	Ongoing employment for an additional 25 years for the existing workforce. No anticipated change to operational workforce numbers beyond those proposed in Mod 15, however, further studies to be completed for the EIS. The construction workforce for the STSF and NTSF embankment works is expected to transition to STSFX later in the decade and decline in the early 2030s. The mining development workforce (panel caves) will increase and decrease over the life of the operation based on Work requirements but will not be larger than already approved. The Ridgeway workforce will maintain current Mod 15 numbers and then fall away once work is complete early in the 2030s. The workforce required for the SWS construction works will be defined in the EIS.
Final Landform/ Rehabilitation	Following completion of tailings deposition embankments will be stabilised with the application of topsoil and direct seeded and/or planted with endemic tree and shrub species and grasses with a final land use of occasional/opportunistic and controlled grazing.	A change to location of the subsidence impacts from Ridgeway mining. The total area of predicted subsidence impact is smaller than that approved.	Overall approach to rehabilitation and final landform is proposed to be consistent with that of the approved operations. Extension to the footprint of the combined TSF complex to accommodate processing of ore with the final landform to be left safe, stable, non-polluting and maximise the potential final land use/reuse options.

Project Component	PA 06_0295 Approved Operations	PA 06_0295 Modification 15 (Mod 15) (in progress)	Cadia Continued Operations Project (CCOP)
	The final landform of Cadia Hill Open Cut Pit would be a pit lake. The surface above the Ridgeway and Cadia East mining areas will be subject to subsidence with the final landform created as depressions which will accumulate water over time. No intersection between the Cadia East underground mine subsidence zone and Cadia Hill Open Cut Pit in the long term and, therefore, two separate final void waterbodies.		Additional subsidence associated with Cadia East will result in modifications to the landform which will require rehabilitation, with the subsidence void planned to remain as final void waterbodies. CCOP Project Area will include storage locations for all stockpiles of topsoil and subsoil and excavated materials to be re-used for closure and rehabilitation.

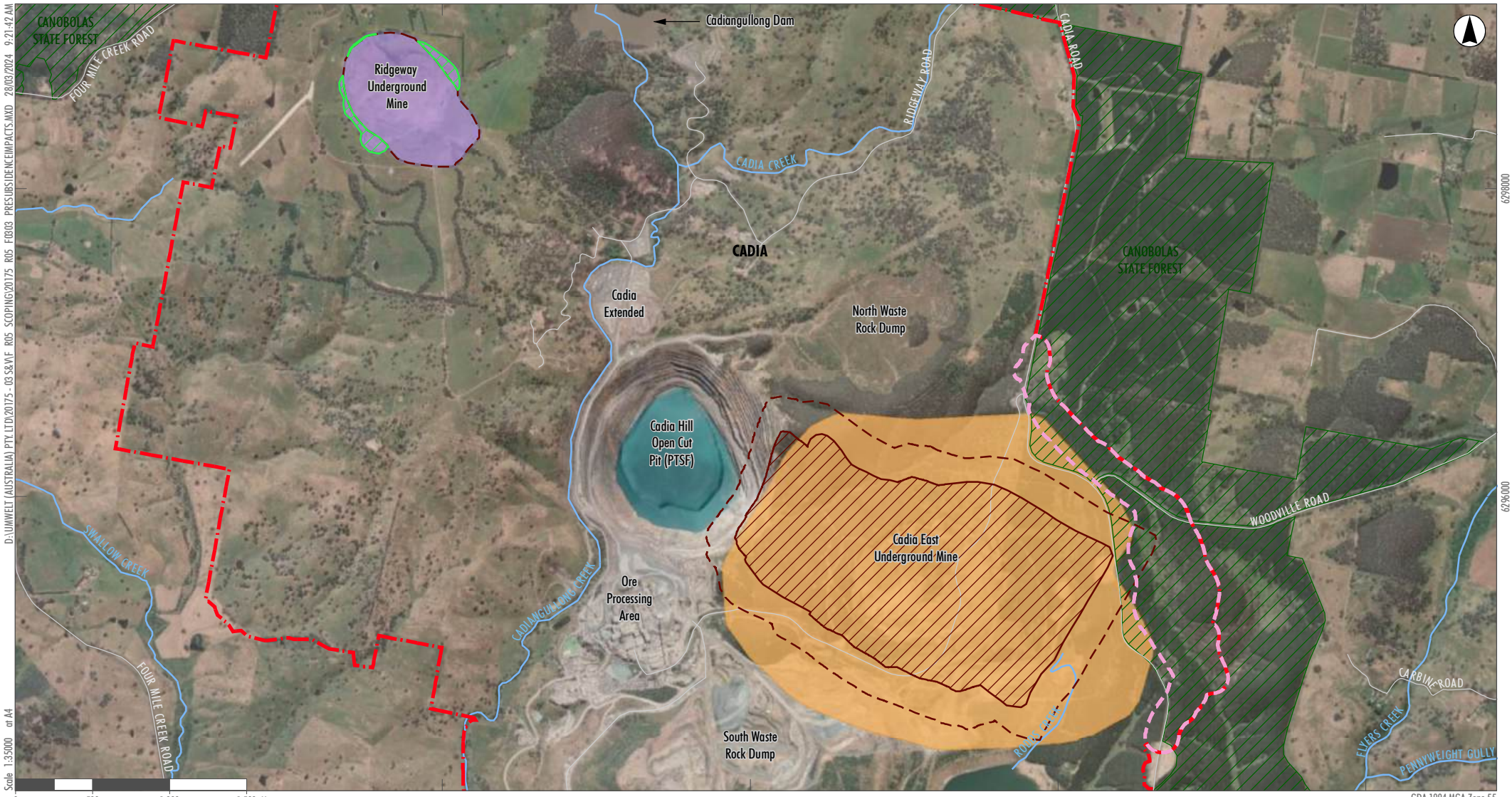
3.2 Subsidence

In response to the proposed extension of mining operations for approximately 25 years from the approval date, the subsidence predictions have been remodelled.

While subject to ongoing review and further engineering studies to finalise the extent of subsidence, the indicative subsidence areas are shown on **Figure 3.3**. These indicative subsidence predictions show that the predicted subsidence areas will extend beyond Cadia's existing mining lease boundaries in a small area to the east of Cadia East.

As a result of the revised subsidence predictions associated with the CCOP, a section of Cadia Road will require realignment (refer to **Section 3.5.2**). A section of transmission lines associated with the Flyers Creek Wind Farm Project may also be affected by subsidence. Further investigation of potential impacts associated with the transmission line will be undertaken as part of the EIS. Engagement with the owners of this infrastructure has commenced and will continue throughout the assessment process.

Updated subsidence predictions for Ridgeway are still being finalised but are predicted to have limited change to surface expression above that assessed as part of Mod 15.



Legend

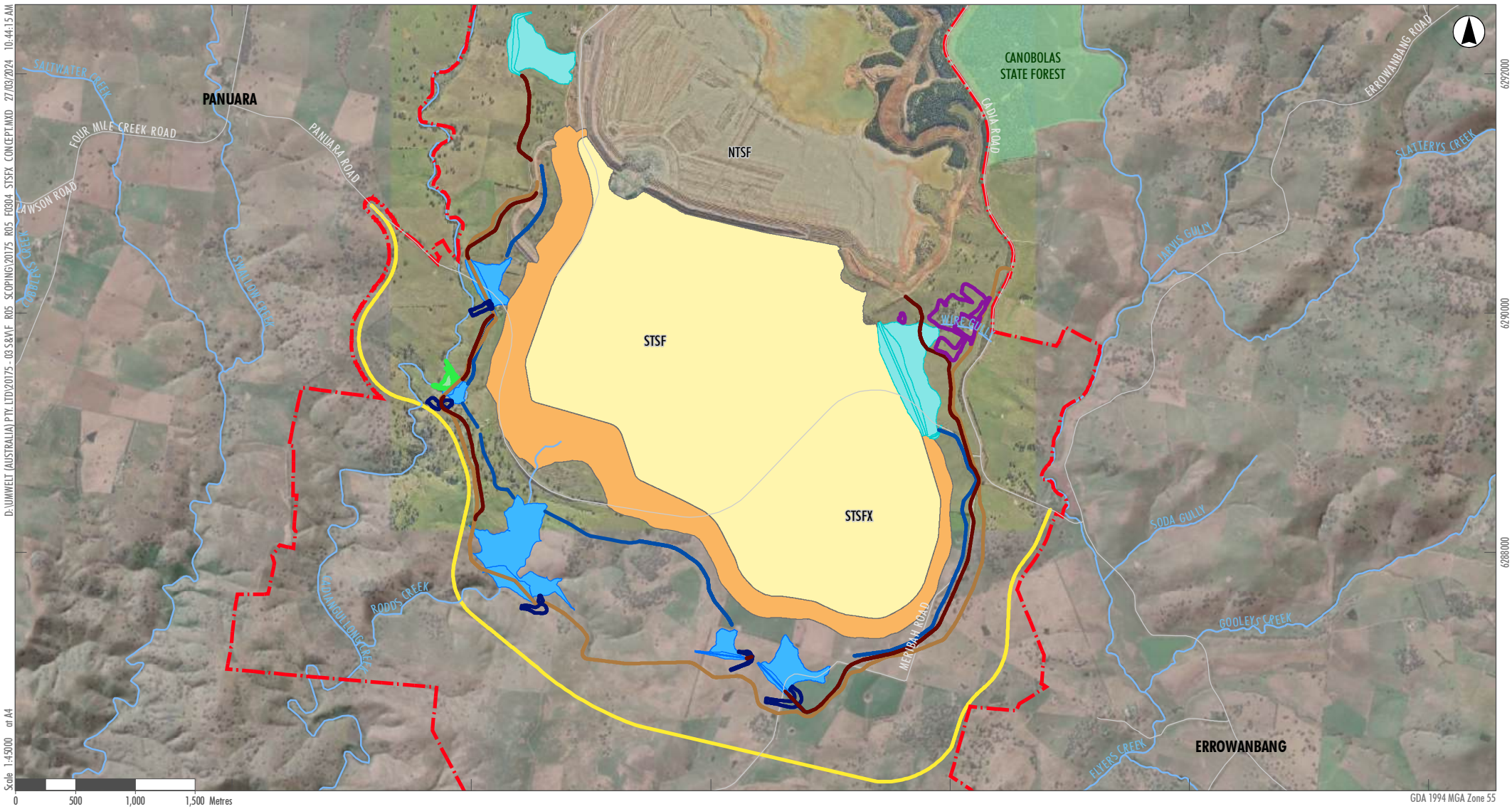
- CCOP Project Area
- Cadia Road Realignment Study Area
- Approved Subsidence Zone
- Approved Subsidence Zone of Influence
- Mod 15 Subsidence Zone
- Indicative Cadia East Subsidence Zone of Influence
- Indicative Ridgeway Subsidence Zone of Influence
- State Forest
- Road
- Creek/River

Note: Mod 15 is currently under assessment and is subject to separate application.

Image Source: ESRI Basemap, Newmont (2023) Data source: DSFI (2022), Newmont (2023)

FIGURE 3.3

Predicted Subsidence Area Impacts



Legend

- CCOP Project Area
- Indicative Panuara Road Realignment

Indicative Southern Tailings Storage Facility Extension (STSFX)

- Proposed Final Tailings
- Proposed Hydrocycloned Sand Embankment
- Indicative Cadiangullong Creek Diversion
- Indicative STSFX Reclaim Pond
- Indicative Return Water Pond
- Indicative STSFX Reclaim Pond Spillway
- Indicative STSFX Tailings Separation Plant
- Indicative STSFX Perimeter Road
- Indicative STSFX Utilities Track
- Indicative STSFX Perimeter Drain
- State Forest
- Road
- Creek/River

FIGURE 3.4

STSFX Concept Layout

Image Source: ESRI Basemap, Newmont (2023) Data source: DSFI (2022), Newmont (2023)

3.3 Tailings Storage and Management

Newmont has undertaken detailed studies to identify the preferred solution for the storage of tailings to support ongoing mining operations at Cadia. These studies considered a range of locations, disposal methods and facility designs, refer to **Section 3.8.1**. During these studies, there has been ongoing consultation with the Cadia Consultative Committee (CCC) and local community regarding the proposed design and Cadia has modified the proposed tailings storage strategy in response to the feedback received.

As noted in **Section 3.1**, the proposed tailings storage solution is an extension to the south-eastern side of the existing STSF on Cadia owned land. This extension is intended to accommodate the additional tailings resulting from the processing of the identified reserves of Cadia East and Ridgeway as part of CCOP. The current conceptual design of STSFX is shown on **Figure 3.4**.

The extent and design of the STSFX will continue to be refined as part of the ongoing design, in consultation with the community. These updates will be documented and the preferred STSFX arrangement presented within the EIS.

3.3.1 STSFX Design and Operation

The proposed STSFX is an extension largely to the east of the STSF, to provide approximately 650MT of additional tailings capacity. The STSFX embankments are planned to be constructed using hydrocyclone sands technology which involves separating the tailings into coarse (sand) and fine components. The sand is used to progressively construct the tailings facility embankments, with the fine tailings emplaced within the facility. The current conceptual design rises to a height of RL 5744m. During the operation of the STSFX the embankment will eventually overtake that of the currently approved STSF as the facilities merge.

The STSFX will consist of a new starter embankment extending mostly east from the existing STSF. The starter embankment is proposed to be constructed from locally sourced borrow material within the footprint of STSFX. The STSFX embankment will then be raised using coarse tailings (sand). The sand embankment will include an underdrainage system to reclaim water from sand placement.

Reclaim water will be collected in reclaim ponds located around the perimeter of STSFX. The reclaim water will then be reused within the process water circuit via a return water pond.

Key features of the STSFX design include:

- a rock starter embankment for initial tailings containment
- a predominately centreline coarse tailings (sand) embankment wall (some sections, where practical, may consider downstream construction)
- sand embankment construction consisting of a combination of individually constructed cells and downslope placement via a pump and piping system
- deposition of the fine tailings fraction within the STSFX impoundment
- excess sand stockpile located along the south west wall of the STSFX
- reclaim ponds for the collection of runoff and drainage from the sand embankment, and the minor diversion of Cadiangullong Creek to facilitate the construction of reclaim pond 4 (refer **Section 3.4.2**)

- return water system
- a perimeter site access road around STSFX and its supporting infrastructure.

In addition, approval is sought for a Tailings Separation Plant (TSP) which may be established to provide additional capacity to separate coarse (sand) and fine tailings. The TSP would also include additional dewatering capability.

To facilitate the construction, operation and rehabilitation of STSFX, various stockpiles for construction materials, soil and vegetation as well as internal roads and drainage lines will be required. The locations of these stockpiles and other disturbance areas will be provided in the EIS.

An initial starter embankment will be constructed using suitable on site material (e.g. waste rock dumps, excavated material from within the footprint of STSFX or disturbed areas within the Project Area.

As of 2023, the remaining economically mineable mineral reserves at Cadia are estimated to be approximately 1 billion tonnes. These mineral reserves exceed the theoretical maximum of mineral reserves which could be mined over the life of the CCOP of 875 mtpa (i.e. 35 mtpa x 25 years). A mine life of approximately 25 years has been nominated as Planning approvals in NSW are typically for a period no longer than 25 years. Should CCOP be granted, Newmont would need to seek a future subsequent planning approval to recover the remaining economically mineable mineral reserves. The tailings generated over the life of the CCOP will be placed within the STSFX and STSF, used to construct the sand embankments, and used to establish the final landform on the surface of the PTSF and NTSF. STSFX has been designed with the objective of providing sufficient tailings storage capacity for the CCOP in combination with the existing TSFs.

With the regard to potential future mining beyond that proposed as part of CCOP and associated tailings storage capacity, the planning process for such a future project would involve Newmont investigating the tailings disposal strategy (i.e. location(s) and technology(ies)) considering the best available technology at that time. Any future planning process would also provide community and government stakeholders an opportunity to provide input and comment during the evaluation and development of the project concept as well as through the environmental assessment process.

3.3.2 PTSF and NTSF Studies

As part of the Project, Newmont is also investigating options to increase the storage of tailings in the PTSF and the placement of coarse (sand sized) fraction of tailings to allow for the reshaping of the NTSF and PTSF to establish a suitable final landform profile.

3.4 Water Management

Cadia currently sources water for its processing operations and wet suppression control measures from a variety of sources, prioritising the reuse and recycling of water to the fullest extent practicable.

There are two key proposed changes to water infrastructure associated with the CCOP:

- construction and operation of the SWS
- Cadiangullong Creek diversion.

3.4.1 South Water Storage

The construction of the SWS within the Cadiangullong Creek catchment of the Belubula River is proposed to provide increased water security for Cadia.

After consideration of several potential locations on Cadiangullong Creek (refer to **Section 3.8**), a location above the confluence of Rodds Creek has been identified as the preferred location (refer to **Figure 3.5**). While the final storage capacity and dam height remain the subject of ongoing investigations, the surface area identified on **Figure 3.5** provides for the inundation footprint of approximately 15 GL.

While the operation of the SWS is subject to further investigations, currently planned key parameters include:

- Water would be captured and contained during periods of high rainfall and flows within Cadiangullong Creek.
- Environmental flows to Cadiangullong Creek will be maintained consistent with current licensing requirements.
- Water would be pumped from the SWS into the Cadia Water Management system as required for use in the operations.

3.4.2 Cadiangullong Creek Diversion

The layout of STSFX and associated water management system will require the realignment of a small section of Cadiangullong Creek. The location of the conceptual realignment is identified on **Figure 3.5**.

3.5 Road Realignments

3.5.1 Panuara Road

The construction of STSFX would require the realignment of a section of Panuara Road approximately 7 km in length, as the current alignment occurs within the proposed STSFX footprint.

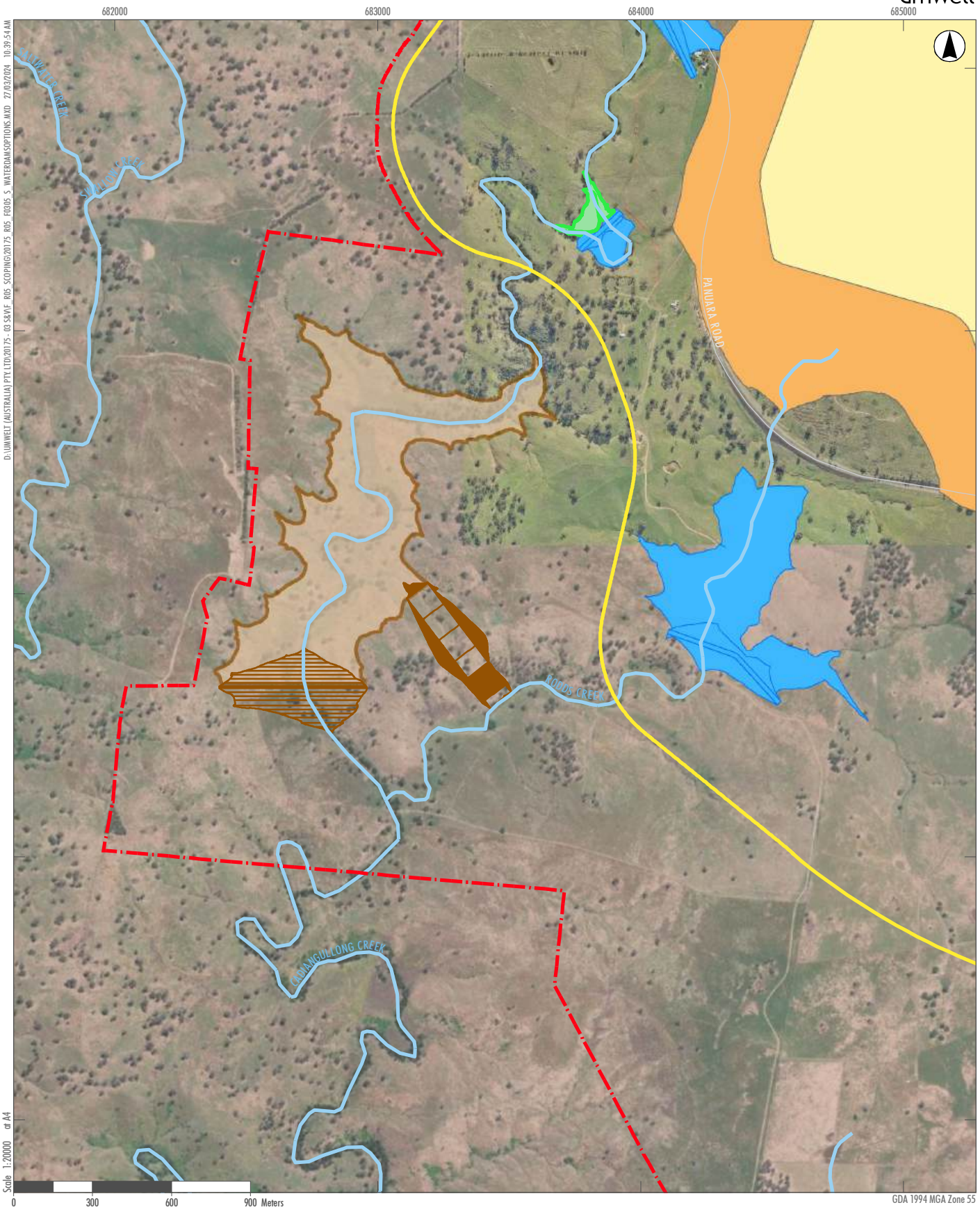
After originally considering six options for the realignment of Panuara Road (refer to **Section 3.8**) and discussing three of these options with the local community, Cadia has identified a preferred realignment route (refer to **Figure 3.6**).

Cadia will continue to review and refine the route for the Panuara Road realignment considering the final design of STSFX and SWS as well as the input of the local community, road users and road authorities. As part of the Panuara Road realignment, telecommunications, local electrical powerlines and other infrastructure will require relocation, with current plans to generally follow the new alignment of Panuara Road.

3.5.2 Cadia Road / Woodville Road

PA 06_0295 provides for the realignment of a section of Cadia Road/Woodville Road to account for the approved subsidence zone for Cadia East (refer to **Figure 1.4**). Due to refinements of the approved Cadia East mine design, the predicted surface expression of the approved Subsidence Zone and the Zone of Influence has not to date extended as far to the east as originally predicted. As a result, Cadia has not to date relocated Cadia Road/Woodville Road as originally approved.

As discussed in **Section 3.2**, the current subsidence modelling for the CCOP indicates subsidence is predicted to extend east beyond what is currently approved under PA 06_0295, and therefore a new realignment of Cadia Road is proposed in the area indicated on **Figure 3.6**. The conceptual design of the realignment is being undertaken and will be assessed as part of the EIS.



Legend

- CCOP Project Area
- Indicative Panuara Road Realignment
- Indicative South Water Storage Inundation Area and Access Road
- Indicative STSFX Reclaim Pond
- Indicative Cadiangullong Creek Diversion

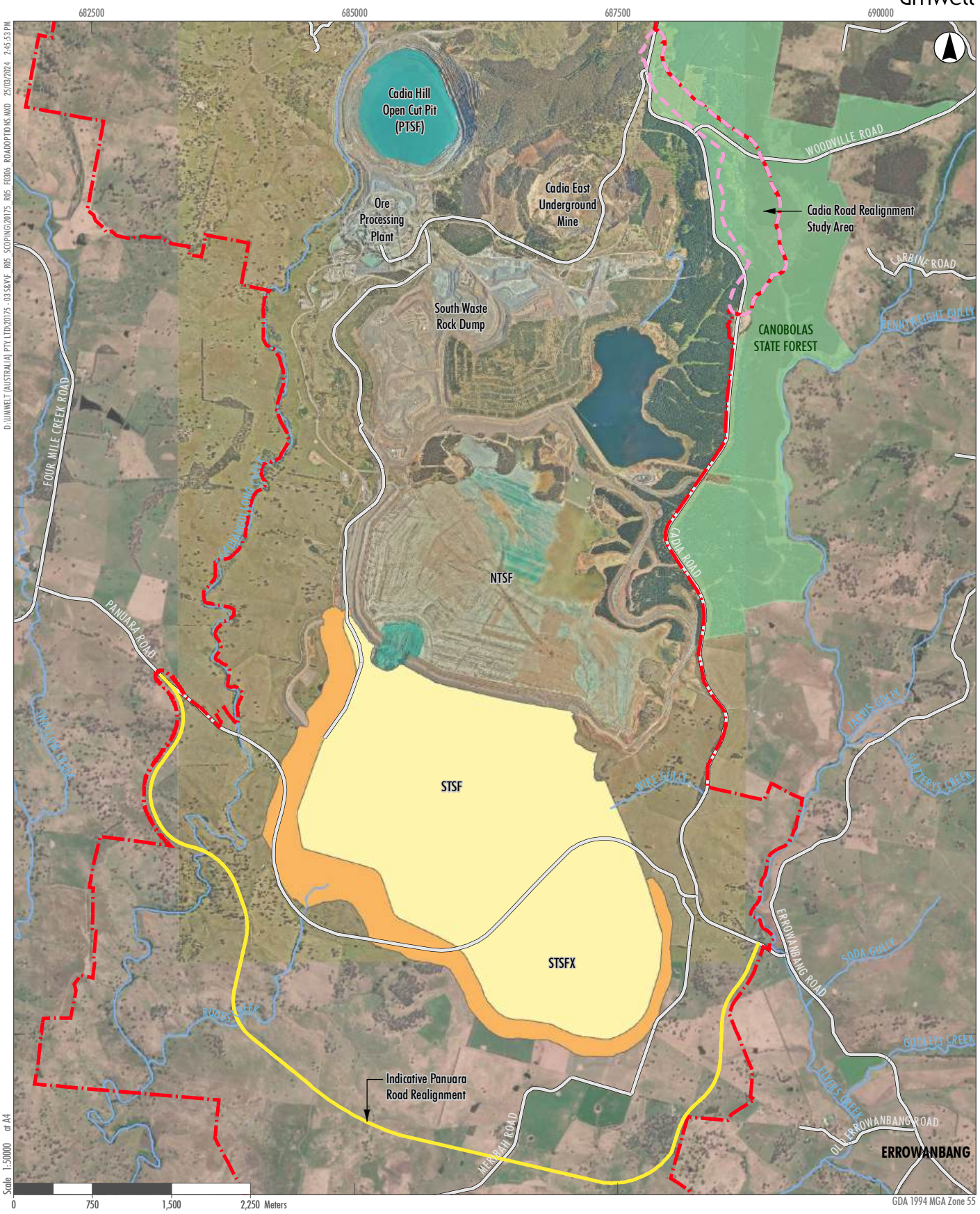
Indicative Southern Tailings Storage Facility Extension (STSFX)

- Proposed Final Tailings
- Proposed Hydrocycloned Sand Embankment
- Road
- Creek/River

FIGURE 3.5

South Water Storage and Cadiangullong Creek Realignment

Image Source: ESRI Basemap, Newmont (2023) Data source: DSFI (2022), Newmont (2023)



Legend

- CCOP Project Area
- Cadia Road Realignment Study Area
- Indicative Panuara Road Realignment

Indicative Southern Tailings Storage Facility Extension (STSFX)

- Proposed Final Tailings
- Proposed Hydrocycloned Sand Embankment

- State Forest
- Road
- Creek/River

FIGURE 3.6

Conceptual Road Realignments

3.6 Infrastructure

In addition to the construction and operation of infrastructure associated with STSFX and the SWS identified above, additional infrastructure required as part of the CCOP will include:

- Additional internal roads and water management system infrastructure including pipelines and temporary pumping facilities.
- Upgrades and modifications to underground mining infrastructure, such as the underground conveyor system and ventilation rises.
- Internal roadways and water management infrastructure associated with pre-conditioning drilling.
- Additional power lines or power distribution infrastructure to supply the required power for the CCOP and to allow for Cadia's proposed decarbonisation pathway.
- Additional telecommunications infrastructure.
- Construction facilities including offices and laydown areas.
- Material stockpile areas.
- Telecommunications infrastructure to provide mobile and/or radio communication for the proposed STSFX and SWS and ongoing operations.
- Coarse ore stockpiles near the Ridgeway mine portals.
- Potential realignment of Flyers Creek Wind Farm powerlines as a consequence of Cadia East mining subsidence zone impacts.
- Continued use of approved and existing surface facilities and ancillary activities and construction and use of new surface facilities and ancillary activities to support the above-mentioned operations.

Further investigation of required infrastructure for the CCOP will be progressed throughout the assessment process and will be identified in the EIS.

3.7 Decomissioning and Rehabilitation

Rehabilitation at Cadia is currently undertaken in accordance with the conditions of PA 06_0295. The decommissioning and rehabilitation of the additional structures associated with the CCOP, namely the STSFX, SWS and associated infrastructure, as well as the existing Cadia mining operation will be integrated into the rehabilitation strategy for Cadia, which will be developed as part of the EIS.

Rehabilitation activities at Cadia aim to generate safe and sustainable landforms at the mine site and Cadia owned land, by rehabilitating land disturbed by mining to:

- add value to the current vegetation corridor programme (ecological value)
- allow for the future land use of grazing, where appropriate and sustainable (agricultural value)
- retain areas that may be important for future industry and infrastructure needs.

Cadia aims to provide a balanced rehabilitation outcome, recognising the varied land uses that exist in the region and aims to establish a combination of grazing land and native vegetation on final landforms. Native vegetation areas would be created to contribute to the local and regional habitat corridors.

The final land use will be a mix of native vegetation, agriculture (grazing), mine subsidence voids, water management, water storage and heritage management/conservation areas.

Cadia will continue to engage with community on rehabilitation options. This includes consideration of staged rehabilitation of areas of the site including the NTSF, noting this is subject to the grant of the CCOP development application.

3.8 Alternatives

Several alternatives have been considered in the CCOP conceptual design process and material changes made in response to stakeholder feedback including changes in the size, location and design of STSFX. Further alternatives will be considered in the ongoing design process, including options based on community and other stakeholder feedback.

Alternatives that have been considered as part of the CCOP are discussed below with relevant locations identified on **Figure 3.7**, **Figure 3.8** and **Figure 3.9.** These and other alternatives will be further assessed as part of the comprehensive environmental and social impact assessment undertaken as part of the EIS.

The alternative of not proceeding with components of the CCOP has also been considered, however, based on the significant benefits associated with ongoing operations at Cadia, Newmont proposes to proceed with the CCOP. The benefits of the CCOP are discussed in **Section 3.9**.

An option of proceeding with a modification to extend the current Project Approval beyond 2031 has also been considered however this is not considered to be appropriate at this time as:

- The current TSFs will not be able to extend the life of the Cadia operation beyond the current consent period.
- The construction period for bringing a new TSF into operation is significant and a new facility is required near the end of the current consent period in order to avoid significantly disrupting the employment of personnel onsite.
- Certainty is required for ongoing capital investment in new tailings facilities to enable Cadia to operate until approximately 2050.
- A modification would not provide the opportunity to simplify and modernise the Project Approval.
- A shorter extension of the Project Approval would not change the footprint of new tailings facility alternatives due to the controlling factors around topography and rate of rise of tailings in the facility.

3.8.1 STSFX Alternatives

3.8.1.1 TSF Site and Technology Review

Cadia engaged WSP in 2023 to complete a Tailings Storage Facility Site and Technology Selection Report. This report offers detailed insights into the considerations made during the assessment of various options for tailings management, providing additional clarity on the site and technology selection process. This report was submitted to DPE (now DPHI) for its consideration. Following this, DPHI commissioned a peer review by two independent experts to assess the chosen location, technology and associated documentation, ensuring the proposed site and technology represent the most optimal choice.

The peer review agreed that the proposed STSFX location is the most suitable option for the new TSF. It was deemed to have the least effect on both community and habitat, being owned by Cadia, and provides sufficient storage for the proposed term of the CCOP. Further, the review supported the hydrocyclone sand dam option as the preferred tailings containment and delivery strategy. The peer review provided a number of recommendations, including the development of a larger-scale cyclone sand pilot plant being necessary to confirm the sand production methodology. Further discussion on this process and the outcomes will be provided in the EIS.

3.8.1.2 Location

Since 2005, extensive studies have been conducted to assess potential locations for a new TSF. These studies have considered over 15 potential sites and have involved wide-ranging site searches within a 40 km radius around Cadia. These studies did not identify any credible alternatives to a new TSF in the area proposed for STSFX. The site selection process for the new TSF was guided by a comprehensive set of technical, social, and environmental design requirements, including:

- Capacity for tailings storage to meet the remaining life of mine.
- Selection of a suitable site(s), both topographically and geotechnically.
- Suitable TSF construction methods.
- Appropriate management of technical risks associated with these construction methods, execution and long-term stability.
- Consideration of the capital and operating costs of the TSF construction methods.
- Minimisation of:
    - Disturbance area and biodiversity impacts.
    - Noise and dust emissions associated with the operation of the TSF.
    - Impacts on existing water bodies – both quality and quantity.
    - Impacts to the visual amenity of neighbouring landholders.

Prior to the land immediately south and east of the STSF being identified as the preferred location for an extended TSF, six potential areas for tailings disposal were considered. These locations, as identified in **Figure 3.7**, were as follows:

- North: extending from the Cadia Hill Open Cut Pit TSF into Cadiangullong Creek catchment and extending over Cadiangullong Creek Dam and into the Mount Canobolas State Forest.
- West (Upper, Middle and Lower): within Swallow Creek to the west of current operations.
- South: the currently proposed locations immediately south and east of the STSF.
- Far South: taking in portions of Rodds Creek and Cadiangullong Creek to the south and west of the STSF.
- East: within Gooleys Creek on the eastern side of Cadia Road.
- Areas within the existing mining operations such as Ridgeway or Cadia East subsidence zones.

Most of the sites considered in the studies had a limited storage capacity, so a combination of two or more potential TSF locations would have to be operated simultaneously to meet the expected tailings output. In addition, these potential TSF locations had a very limited tailings tonnage they could accept in their early years, due to the narrow valley topography. It was also not preferred to extend disturbance into another catchment which reduced the favourability of the West, East and Far South locations.

Following consideration of these six options, Cadia narrowed the site options being considered to the North site (Cadiangullong creek) and the South site (proposed STSFX location). A multi-criteria analysis considering the design and operability factors was completed to assist in selecting the preferred option. A summary of some selected key factors is included below:

- Extending tailings disposal to the north into Mount Canobolas State Forest would:
    - result in tenure issues associated with Crown Land and land use conflicts (with the State Forest)
    - require significant water diversions
    - require replacement of Cadiangullong Dam leading to further environmental and social impacts
    - potentially sterilise future ore resources
    - carry increased dam safety and failure risks
    - have higher impacts on biodiversity.
- The embankment for the north site would be founded on loosely backfilled mine waste over the Cadia north pit and would be extremely technically challenging.
- The North site would require a major diversion channel and drop structure to carry runoff upstream of the TSF. This infrastructure would redirect the runoff around the TSF and into the Cadiangullong diversion channel, bypassing the Cadiangullong creek.

Ultimately, extending the existing STSF was considered the most suitable option and one which allowed for best management of risk.

3.8.1.3 Tailings Disposal Method and TSF Design

Cadia currently use the conventional slurry method of tailings deposition. For the CCOP, initially four methods of tailings disposal were considered, each requiring a different footprint and method of construction. The four options considered included:

- Thickened slurry/paste deposition with rock wall embankment.
- Dry Stack.
- Mixed Placement – Co-Dispose/Co-Mingle/Co-Place.
- Engineered Sand wall using coarse tailings (hydrocyclone sand).

The placement of tailings into the void spaces created through underground mining has also been considered. These five options are addressed in **Table 3.2**.

Table 3.2 Tailings Disposal Method and TSF Design Options Considered

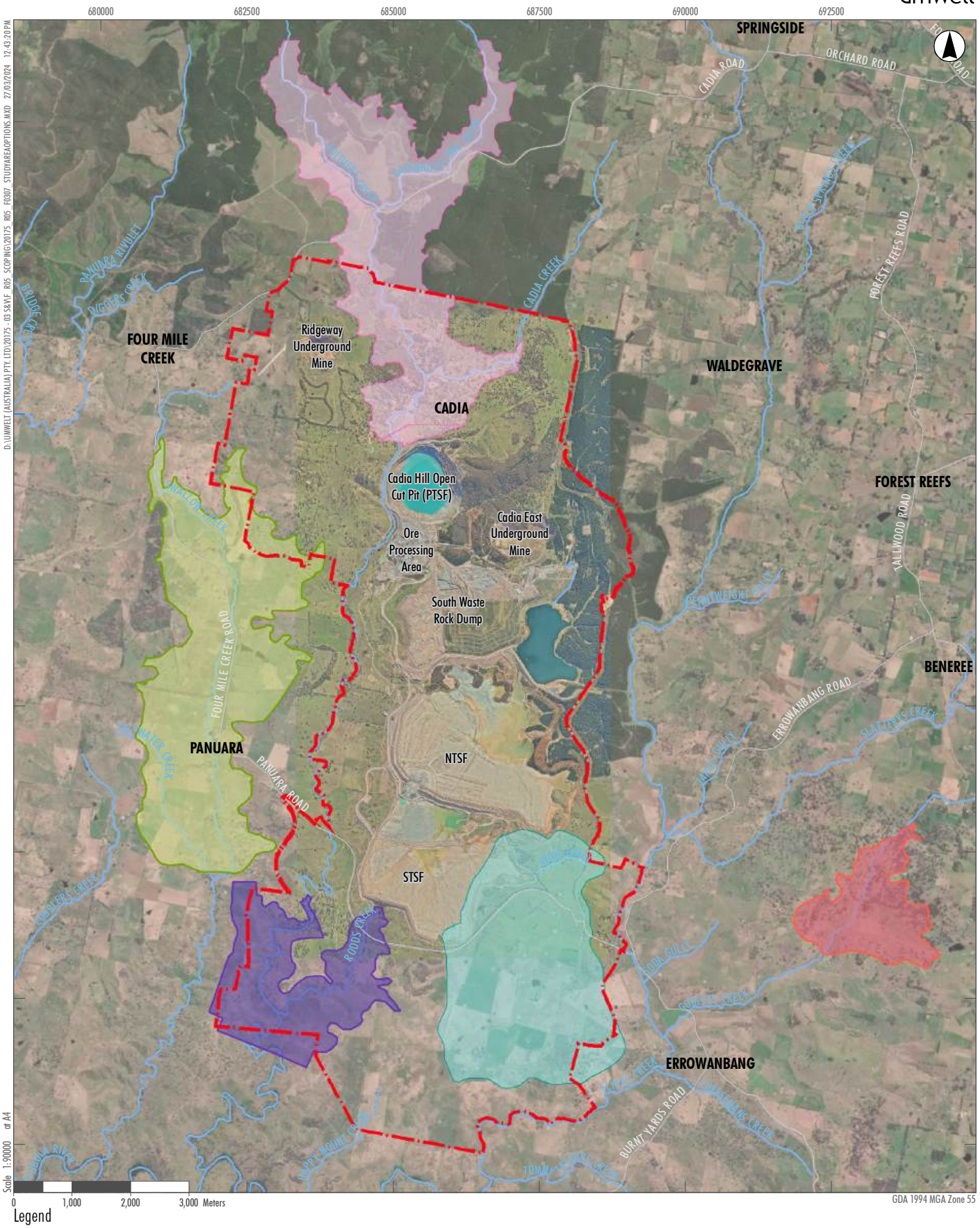
Option	High Level Review Finding
Thickened slurry/paste deposition with rock wall embankment	This option would require large volume of rock and other materials to construct the facility with sourcing this significant volume of material requiring either a large increase in the CCOP impact area or supply from another commercial quarry. An initial investigation of possible sources identified that there are currently no viable commercial sources of the volume of material required.
Dry Stack	This option was identified as likely to result in an increase to noise and dust impacts in surrounding areas and nearby neighbours. This technique has not been proven viable at the throughput level required by Cadia.
Mixed Placement – Co-Dispose/Co-Mingle/Co-Place	This technique is reliant on both waste rock and tailings streams and is not a suitable option for Cadia as the current mining method and plan does not produce sufficient waste rock or overburden.
Engineered Sand wall using coarse tailings (hydrocyclone sand)	While the hydrocyclone technology is new to NSW, it has been implemented successfully in other jurisdictions. This technique was identified as resulting in the TSF option with the smallest impact footprint, allows for greater control over the moisture content of tailings deposited and repurposes a portion of the tailings as a construction material. This was the technology selected for STSFX.
Underground placement of tailings into void spaces	While the option of underground placement of tailings will continue to be reviewed over the life of the CCOP, it is currently considered unfeasible due to ongoing mining activities and connectivity between underground cave zones creating a safety hazard so cannot be undertaken concurrently with active or future mining in a particular mining area. It is also noted that these options could become available towards the end of the proposed life extension as the storage capacity required at this time would be significantly less. The available capacity within the underground void spaces is also insufficient to meet the requirements for the CCOP.

Following detailed review and in combination with the site selection hydrocyclone sands technology was the preferred selection.

Hydrocyclone technology is used in many operations around the world for construction of tailings dams including Canada, United States of America, Mexico, Peru and Chile. The majority of recent tailings dams in South America are, or have been constructed using hydrocyclone sands. This technology is used by major mining companies including Freeport-McMoRan, BHP, Cudelco, Anglo-American & Teck Resources.

Typically, this construction method is adopted for copper-porphyry deposits where throughputs are higher and grind size is coarser.

Currently Newmont operates cyclone sands dams at both its Red Chris and Penasquito mines. As such, Newmont has global experts with experience in the design and operations of dams using material produced from hydrocyclones.



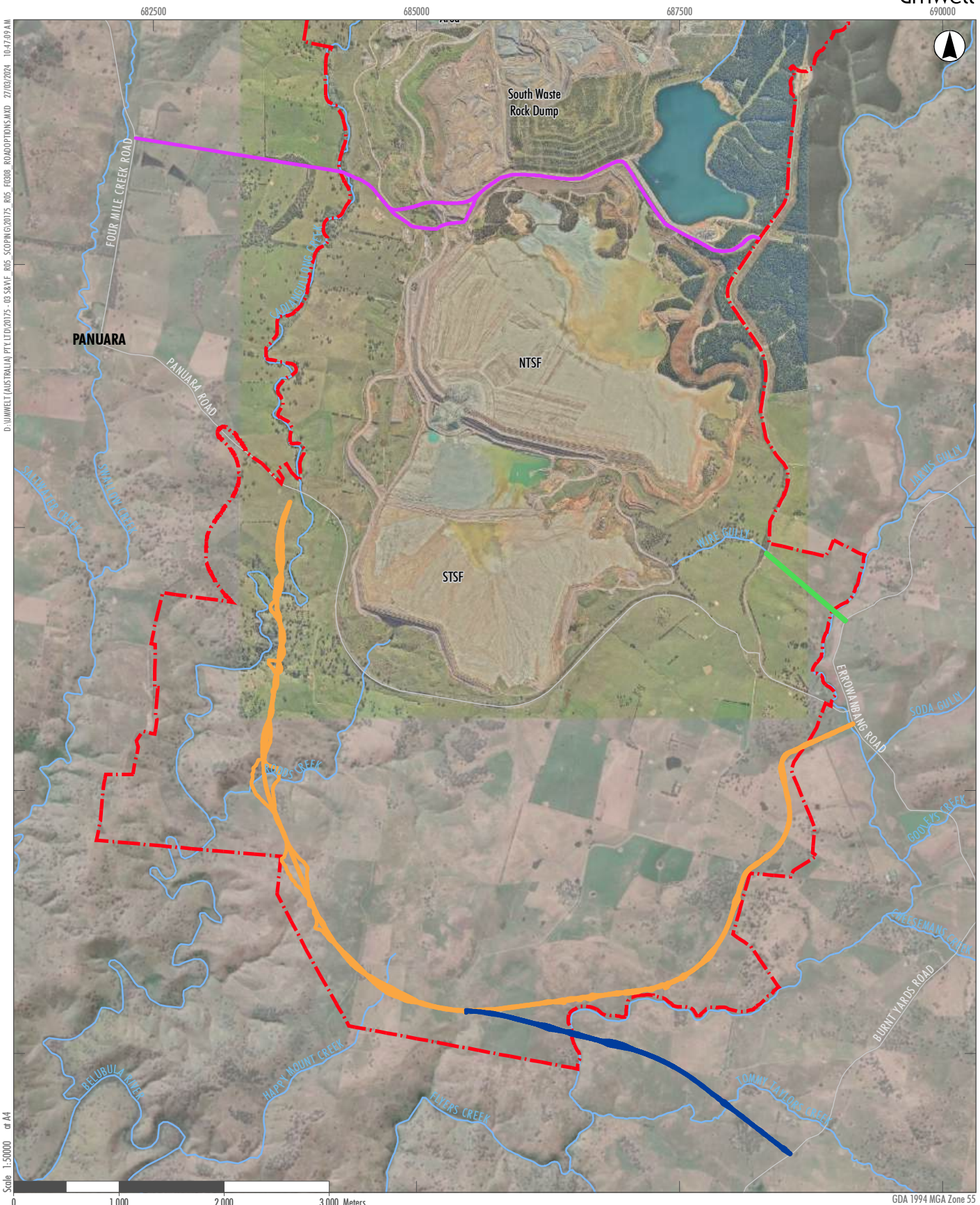
Legend

- CCOP Project Area
- TSF Study Area Options
  - East (Gooleys)
  - Far South (Lower Cadiangullong Creek)
  - North (Upper Cadiangullong Creek)
  - South (Errowanbang)
  - West (Swallows Creek)
- Road
- Creek/River

FIGURE 3.7

Alternative Investigation Locations for STSFX

Image Source: ESRI Basemap, Newmont (2023) Data source: DSFI (2022), Newmont (2023)



Legend

- CCOP Project Area
- Road
- Creek/River

Road Realignment Options

- Cadia Rd Realignment
- Panuara Road - Option 1
- Panuara Road - Option 6
- Alternate Panuara Road Realignment

FIGURE 3.8

Alternative Locations for Road Realignments

Image Source: ESRI Basemap, Newmont (2023) Data source: DSFI (2022), Newmont (2023)

3.8.2 Panuara Road Realignment

Initially six options for the realignment of Panuara Road (or realignment of transport operations) were considered.

Following an internal evaluation considering engineering, environmental, social, and cost factors, Options 3, 4, and 5 were ruled out due to either impractical implementation or cost considerations relative to potential benefits for road users and landowners. **Figure 3.8** identifies Options 1 and 6 which were presented to the local community (Option 2, which provided an alternative north-south connection of Davies Creek Road to Four Mile Creek Road with a crossing of the Belubula River to the southeast of the Project Area, was also presented to the community but is not shown).

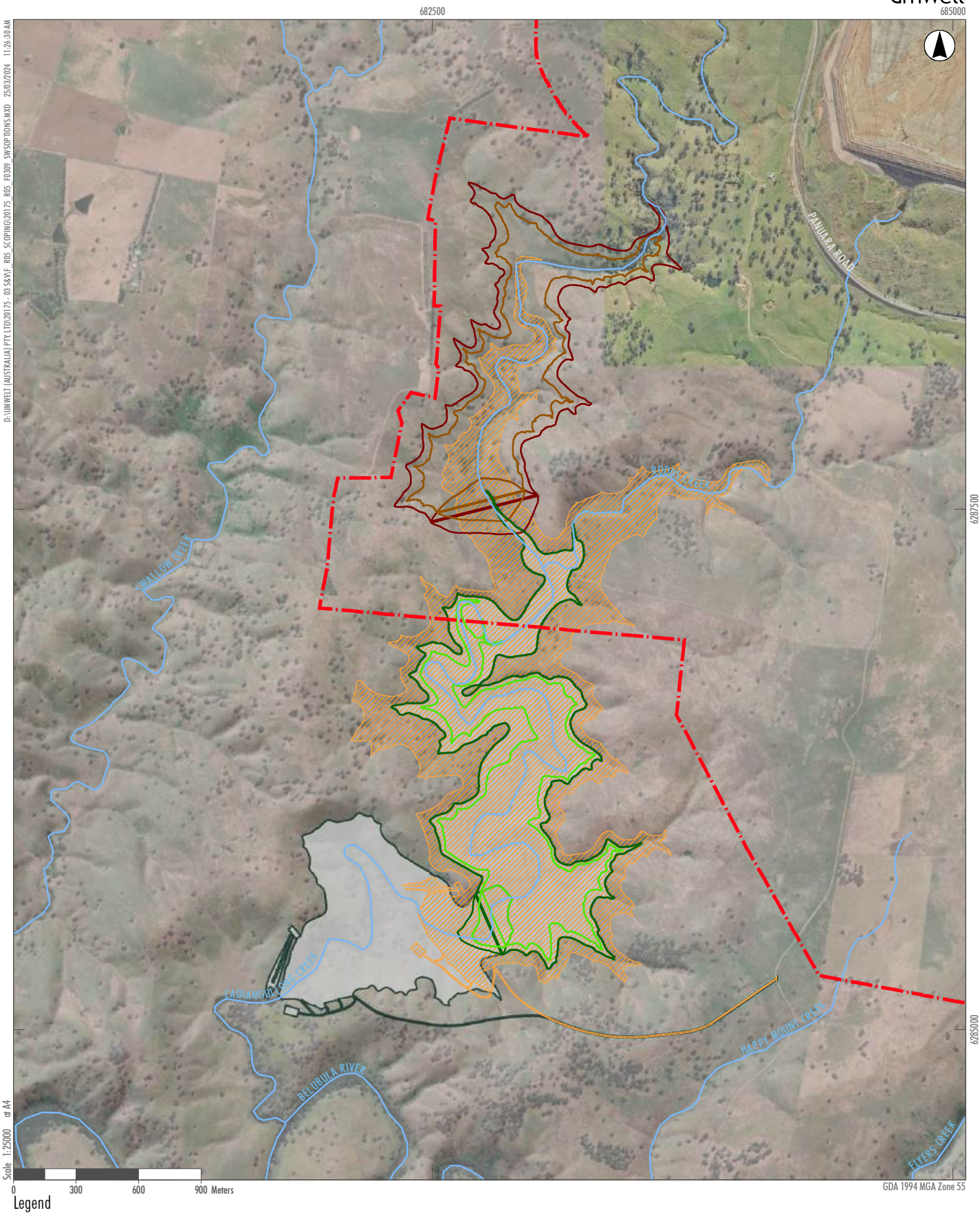
Following consultation with the local community, a seventh realignment option was also investigated (also identified on **Figure 3.8**, 'alternate Panuara Road realignment'). This option was a community suggestion and involved the construction of a public road from Cadia Road to Four Mile Creek Road through the Cadia mine site. This option was discounted due to safety risks from a public road passing through an active mine site, frequent closures from daily operations, ownership and liability issues from the perspective of both the Council and Newmont, the challenge of relocating an explosives storage plant without suitable locations and potential regulatory issues.

Initial consultation with local landowners provided minimal support for Option 2 because of the additional travel time it would add for a number of landowners. Strategic regional benefits which were also considered a potential benefit for improved north-south distribution of traffic (Option 2) were not identified as a benefit through this consultation. Option 2 also presents challenges associated with:

- Interaction with a state listed heritage site (Cliefden Caves).
- Interaction with additional roads and road users south of the Belubula River.
- Construction of another crossing of the Belubula River.
- Interaction with additional tributaries of the Belubula River to the south.
- Incursion into another LGA (Cowra Shire).

Option 6 was also less favoured than Option 1 by those consulted as it required the purchase of private land, as well as a new intersection and use of an additional road (Errowanbang Road). Therefore, Option 1 was identified as the preferred option.

The Preferred Panuara Road Realignment (Option 1) alignment continues to be refined with input from community stakeholders and will be further defined in the EIS including moving the road closer to the STSFX on the eastern side.



Legend

- CCOP Project Area
- Water Storage Options
  - Water Storage Option 2
  - Water Storage Option 2A
  - Water Storage Option 2C
  - Water Storage Option 3
  - Water Storage Option 5A
  - Water Storage Option 5C
- Road
- Creek/River

FIGURE 3.9

Alternative Locations for SWS

Image Source: ESRI Basemap, Newmont (2023) Data source: DSFI (2022), Newmont (2023)

3.8.3 South Water Storage Alternatives

Cadia conducted a thorough study to identify and collate plausible water supply options, with the goal of minimising the operational risk of a water shortage. A total of 73 surface and groundwater sources within 150kms from Cadia were explored. Out of all of the options considered, the proposed SWS was found to be the strongest and most reliable option. Six locations for the SWS were originally considered between the current Cadiangullong Dam and Belubula River (including a portion of Rodds Creek).

These six options were eventually narrowed to three options, with varying storage capacity and dam heights considered at each location (refer to **Figure 3.9**).

The option presented in **Figure 3.5** was identified as the preferred option as it:

- Avoids the more environmental sensitive areas near the confluence of Cadiangullong Creek with the Belubula River.
- Provides a better volume to storage area ratio when compared to the other options.
- Does not impact on the preferred locations for STSFX and Panuara Road realignment.

3.9 Project Benefits

Cadia is a highly productive mine that produces high-quality metals and concentrates which are in strong demand. The NSW Government has highlighted the ongoing need for development of these resources to position the State as a major global supplier of metals for the economies of today and a net zero future. As an existing productive mining operation with defined resources for mining for decades to come, Cadia is well placed to meet this need.

The CCOP would provide for the ongoing viability of Cadia and establish the basis for Newmont to invest in the long-term planning and operation of the mine.

The CCOP would provide for the continuation of the social and economic benefits of Cadia through ongoing annual expenditure on wages, goods and services, and payment of royalties, rates and other contributions to local councils and to NSW.

As one of the largest gold mining operations in Australia, Cadia contributes significantly to both the regional NSW and NSW economies, as discussed in **Section 2.1**. In 2020, a Socio-Economic Study completed by Umwelt identified Cadia as the largest employer in the local area and the region, employing 1,830 people or 1,430 full time equivalent jobs representing 4.4% and 1.8% of the local and regional workforce respectively.

Cadia's operations also contribute to the local community through the community partnerships programs providing support to schools, health facilities and community groups in Orange, Cabonne and Blayney. Employees also voluntarily support many community organisations and are further supported by Cadia's community support programs.

Ultimately, the CCOP would allow for the continuation of mining in an established metalliferous mining region. The CCOP would provide ongoing secure high-paying jobs for the Cadia workforce and contractors and continue to stimulate demand in the local and regional economy.

4 STATUTORY CONTEXT

The relevant statutory requirements for the CCOP are summarised in the following sections.

4.1 Commonwealth Legislation

4.1.1 *Environment Protection and Biodiversity Act 1999*

The *Environment Protection and Biodiversity Act 1999* (EPBC Act) prescribes the Commonwealth's role in the environmental assessment of impact, management, and protection of areas of national significance and biodiversity conservation. The EPBC Act is administered by the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

Under the EPBC Act, the approval of the Commonwealth Minister for the Environment and Water is required for any action that may have a significant impact on matters of prescribed national environmental significance (MNES). The MNES are identified as:

- World Heritage properties.
- National heritage places.
- Wetlands of international importance (listed under the Ramsar Convention).
- Threatened species and communities listed under the EPBC Act.
- Migratory species listed under the EPBC Act.
- Nuclear actions.
- Marine areas or reserves.
- A water resource, in relation to coal seam gas development and large coal mining development.
- Commonwealth land.

The Cadia East Project was referred to the then Department of Energy and the Environment and determined to be a controlled action under the EPBC Act due to the potential impact on threatened species and communities. Approval Decision (EPBC 2006/3196) for the Cadia East Project was granted on 18 February 2010, and Cadia's operation continues to be carried out under this Approval.

The CCOP has the potential to impact on some biodiversity MNES including potential impacts on listed threatened communities. A referral is in preparation and will be submitted to DCCEEW to determine whether the CCOP is a Controlled Action requiring approval from the Minister.

Should it be determined that the CCOP is a Controlled Action, is it intended that it will be assessed under the NSW/Commonwealth bilateral agreement with the required EPBC assessments integrated into the EIS, including into the Biodiversity Development Assessment Report.

4.1.2 *Native Title Act 1993*

The Commonwealth *Native Title Act 1993* (NT Act) has potential implications for the granting of mining leases under the *Mining Act 1992* where native title has not been extinguished within the lease application area. The relevant provisions of the NT Act will be addressed through the mining lease application process.

4.2 NSW Approval Pathway

The EP&A Act is the primary instrument which regulates the environmental impact assessment and approval process for development in NSW.

A new development consent will be sought for the CCOP under Part 4 of the EP&A Act. Being development for the purpose of mining with a capital investment of more than $30 million, the CCOP is declared to be SSD under the provisions of the Planning Systems SEPP.

Section 4.42 of the EP&A identifies a range of further approvals that must be applied consistently with a development consent granted for SSD. Specific regulatory measures applying to the CCOP include the grant of mining leases, environment protection licences and section 138 consents under the *Roads Act 1993*.

If approved, the new development consent will encompass the CCOP and supersede the existing Project Approval (PA 06_0295) for Cadia. This consolidation will streamline future operations at Cadia under a modernized single consent framework.

The consent authority for SSD is either the Independent Planning Commission (IPC) or the Minister.

4.2.1 Permissibility

The CCOP Project Area is subject to the Cabonne Local Environmental Plan 2012 (Cabonne LEP) and Blayney Local Environmental Plan 2012 (Blayney LEP). The Project Area is located on land zoned RU 1 (Primary Production) under these LEPs. Mining is permissible with consent within this zone under both LEPs and therefore the CCOP is permissible.

In regard to the Cadia Dewatering Facility located on land subject to the Blayney LEP, this existing facility is located on land zoned IN2 (Light Industrial). The Cadia Dewatering Facility is consistent with the objectives of the IN2 zone, including "to provide a wide range of light industrial, warehouse and related land uses". There are no changes to this facility as part of the CCOP.

4.2.2 Gateway Process

Part 2.4 of the *State Environmental Planning Policy (Resources and Energy) 2021* requires new State significant mining proposals to consider impacts on strategic agricultural land and its associated water resources (via a Gateway assessment). Strategic agricultural land comprises:

- Biophysical strategic agricultural land (BSAL).
- Critical Industry Cluster (CIC) land – a concentration of significant agricultural industries potentially impacted by coal seam gas or mining development.

The gateway process applies to proposed mining development located on BSAL and CIC land outside of existing mining lease areas. A project that triggers the gateway process must obtain a Gateway Certificate.

Components of the CCOP would be constructed on BSAL. No areas of CIC are impacted by the CCOP.

As BSAL will be impacted in an area where a new mining lease is proposed, a Gateway Certificate will be required for the CCOP. An application for a Gateway Certificate is in preparation and planned to be submitted at a similar time as this scoping report.

4.2.3 Other NSW Legislation

In addition to development consent under the EP&A Act, a number of other NSW Acts are applicable or potentially applicable to the CCOP. **Table 4.1** identifies other key NSW Acts and their applicability to the CCOP.

Table 4.1 NSW Legislation

Legislation	Applicability to the CCOP
***Biodiversity Conservation Act 2016* (BC Act)**	The general purpose of the BC Act is to maintain a healthy, productive, and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development (ESD). Under the BC Act, biodiversity assessment in accordance with the Biodiversity Assessment Method (BAM) is required for any SSD project. The CCOP (as SSD) will trigger the need to prepare a Biodiversity Development Assessment Report (BDAR) in accordance with the BAM. The EIS will include a BDAR.
***Contaminated Land Management Act 1997* (CLM Act)**	The CLM Act establishes the process for investigating and if required, remediating land that the NSW EPA considers to be contaminated significantly enough to require regulation under Division 2 of Part 3. The Project Area does not contain land listed on the Contaminated Lands Register. Cadia has a range of mitigation and management measures in place to address potential contamination issues including provisions for appropriate handling of hydrocarbons and other chemicals. Contamination issues will be further considered in the EIS.
Crown Land Management Act 2016 (Crown Land Management Act)	The *Crown Land Management Act* provides for a consistent approach to management, facilitation of community involvement and future use of Crown land, with consideration of the environmental, social, cultural heritage and economic factors and the spiritual, social, and cultural importance of Crown land to Aboriginal people. Crown land may not be occupied, used, sold, leased, licensed, dedicated, reserved or otherwise dealt with unless authorised by the Crown Land Management Act. There are some areas of Crown Land (e.g. Crown road reserves) within the Project Area and should any works be proposed in these areas an approval would be obtained.
***Dams Safety Act 2015* (DS Act)**	The objectives of the DS Act are to ensure that any risks that may arise in relation to dams are of a level that is acceptable to the community, promote transparency in the regulation of dam safety, encourage proper and efficient management of dam safety and ensure that any risks relating to dams are within a level acceptable to the community. Based on the concept designs, STSFX will likely meet the definition of a declared dam under the DS Act and must therefore comply with the regulatory requirements applied by the DS Act. The proposed SWS may also meet the definition of a declared dam. Cadia will consult with Dams Safety NSW as part of the design process for the CCOP.
Mining Act 1992	Cadia is subject to a number of mining leases that cover the existing mining operations. For the CCOP, a new mining lease under the *Mining Act 1992* will be required for the proposed STSFX, water management infrastructure and additional subsidence.

Legislation	Applicability to the CCOP
***Protection of the Environment Operations Act 1997* (POEO Act)**	The POEO Act regulates pollution to the environment and requires licences for environment protection including waste, air, water and noise pollution control. Mining is a scheduled activity under the POEO Act and requires an Environment Protection Licence (EPL). Cadia currently operates under EPL 5590 which contains conditions relating to emission and discharge limits, environmental monitoring and reporting. A variation to EPL 5590 will be required for the CCOP.
Roads Act 1993 (Roads Act)	The *Roads Act* sets out the rights of the public, adjoining landowners, opening and closing, classification and the distribution of function in relation to public roads. A consent under Section 138 of the *Roads Act* will be required for all works affecting roads and road reserves, including to allow for the proposed realignment of local roads.

The *Dangerous Goods (Road and Rail Transport) Act 2008* and *Pipelines Act 1967* may also be applicable to the CCOP and will be considered as part of the EIS along with other acts and planning policies.

4.3 Statutory Requirements Summary

This section provides an overview of the key statutory requirements for the CCOP. These statutory requirements are categorised as per the DPHI Scoping Guideline (DPIE, 2021).

Table 4.2 Statutory Requirements Summary

Matter	Detail	Comment
Power to grant consent	The legal pathway under which consent is to be sought, why the pathway applies, and who the consent authority is likely to be.	CCOP requires approval under Part 4 of the EP&A Act being SSD. The consent authority will be the IPC or DPHI based on the number and type of any objections to the CCOP or any political donations made by Newmont or related entities.
Permissibility	The relevant provisions affecting the permissibility of the CCOP, including any land use zones. Any provisions or actions being taken that would allow the CCOP to be considered on its merits, where the CCOP would otherwise be partly or wholly prohibited.	The Project Area is zoned 'RU1 Primary Production' within Blayney LEP and Cabonne Shire LEP. Mining is permissible with consent within this zone under both LEPs and therefore the CCOP is permissible.
Other approvals	Other approvals that are required to carry out the CCOP and why they are required.	**Section 4.2.3** provides a list of other NSW approvals required or that may be required for the CCOP. **Section 4.1** discusses potential Commonwealth approvals that may be required for the CCOP.

Matter	Detail	Comment
Pre-conditions to exercising the power to grant consent	Pre-conditions to exercising the power to grant consent for the CCOP that may be relevant to setting the SEARs.	An EIS will be prepared in accordance with relevant legislative requirements and guidelines. No pre-conditions exercising the power to grant consent for the CCOP are currently envisaged.
Mandatory matters for consideration	Matters that the consent authority is required to consider in deciding whether to grant consent to any development application for the Project that may be relevant to setting the SEARs.	Section 4.15 of the EP&A Act describes the matters for consideration in assessing SSD, which includes the provisions of relevant environmental planning instruments, proposed instruments that have been the subject of public consultation, development control plans, planning agreements and statutory regulations. The assessment of SSD must also consider the likely impacts of the development, suitability of the site, any submissions received and the public interest. All relevant matters will be addressed in the EIS based on the outcomes of environmental assessments to be undertaken (refer to **Section 6**).

5 STAKEHOLDER ENGAGEMENT

Newmont is committed to genuine and meaningful engagement with the community, developing long-term relationships and maintaining open lines of communication. In planning and developing the CCOP, Newmont recognised that early and meaningful consultation with the local community and other stakeholders is fundamental to obtain feedback that can be incorporated into the design of the CCOP.

Community engagement for the CCOP has been undertaken since the announcement of the CCOP in November 2021 until the most recent round of engagement in February 2024. This CCOP specific engagement is in addition to the ongoing engagement led by Newmont associated with the existing Cadia operation, which provides Newmont with a strong understanding of the interests and perspectives of key stakeholders.

Newmont has developed a stakeholder engagement plan (SEP) for the CCOP to outline the objectives and approach to community engagement throughout the development process.

The following sections provide a brief summary of the stakeholder engagement plan, engagement undertaken to-date and key issues raised.

5.1 Stakeholder Engagement Plan

The SEP identifies the stakeholder engagement approach and objectives for the CCOP and surrounding communities, throughout the CCOP Assessment Phase.

Through the implementation of the SEP, Newmont aims to:

- keep the community informed about the Project, its likely impacts and likely benefits, through the provision of accurate and timely information
- provide multiple opportunities and mechanisms for meaningful information exchange with stakeholders
- ensure that the team developing the Project fully understands the local context, including any local impacts that it may have or opportunities that it could provide
- integrate feedback received into the Project planning and design as far as possible
- build and maintain positive, trust-based relationships with the local community.
- The SEP and engagement undertaken to-date for the CCOP is consistent with the requirements of the Engagement Guidelines (DPIE, 2021a).

From an EIS assessment perspective for the CCOP, Umwelt is preparing a Social Impact Assessment (SIA) to support the EIS and in accordance with the SIA Guideline (DPIE 2021a) and has prepared a Social Impact Scoping Report (SISR; refer to **Appendix B**) to inform the SIA. The preparation of the SISR has involved key phases of work to inform the CCOP planning and design process including consultation with relevant stakeholders to identify social impacts/issues relevant to the CCOP. Further discussion on the SIA process is provided in **Section 6.2.1**.

5.2 Stakeholder Engagement

Stakeholder and community engagement has been undertaken early in the initial design and scoping phase of the CCOP:

- To proactively inform CCOP design and development.
- To identify perceived issues/impacts.
- To build upon existing and establish new stakeholder relationships with near neighbours and key stakeholders for the CCOP.

Stakeholder and Community engagement has been undertaken both by Newmont personnel, and Umwelt for the purpose of the SIA. Aside from engagement activities specifically undertaken with reference to the CCOP, historical engagement activities have also been drawn on where relevant.

For example, in 2020 Umwelt undertook a socio-economic study for Cadia's existing operations to meet relevant social performance standards which involved consultation with more than 500 community stakeholders and 37 key stakeholders and neighbouring landholders. The outcomes of this previous engagement program have been used to identify current issues of key stakeholder and community concern associated with Cadia's existing operations at that time and perceptions of the company more broadly.

The key stakeholder groups identified for the CCOP are shown in **Figure 5.1**. A complete list of stakeholders associated with the CCOP is identified in the SISR (refer to Table 2.1 of **Appendix B**).

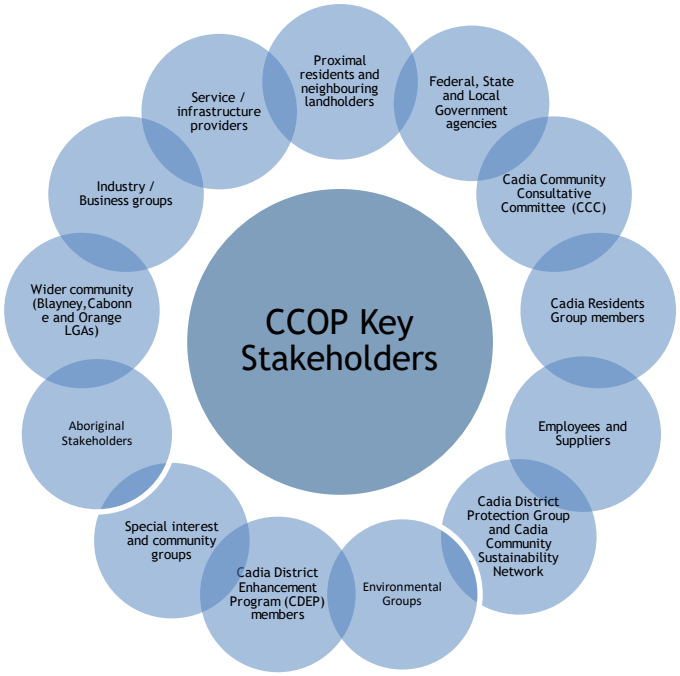


Figure 5.1 Identified Stakeholder Groups

5.2.1 Community Engagement

Community engagement conducted during the scoping phase has consisted of a range of mechanisms across multiple rounds of engagement from 2021, through to 2024. A summary of these mechanisms and the stakeholders targeted is provided in **Table 5.1**.

Table 5.1 Engagement Mechanisms

Mechanism	Description	Targeted Stakeholders
Project briefings	Targeted meetings and briefings with key local, state and Commonwealth government agencies as required.	Local Government State Government Commonwealth Government
Key stakeholder meetings	Meetings and project briefings with key stakeholder groups.	CCC Aboriginal stakeholders CDPG Millthorpe Village Committee Environmentally Concerned Citizens of Orange (ECCO)
Cadia District Residents Meetings	Cadia host regular meetings with Cadia residents as a part of general operations to provide updates on key operational activities. Two CCOP targeted Residents Meeting were held in April 2022 and March 2024 with a number of other Residents Meetings also including the CCOP as a topic. The intent of the sessions was to workshop ideas regarding the CCOP concepts and receive feedback from community members on each of these.	Cadia District residents (which includes approximately 300 neighbouring landholders)
Individual and Personal Meetings	Individual telephone interviews with neighbouring landholders and community groups undertaken by Umwelt utilising structured interview guides. Participants were invited to be involved in interviews through proactive calls and snowball sampling. Individual personal meetings with neighbouring landholders undertaken by Cadia utilising a semi-structured interview guide. Individual personal meetings with neighbouring landholders regrading visuals amenity and CCOP updates.	Proximal landholders Members of the CDPG and CCSN
Project website	Development of a project specific website (Cadia | Umwelt | Community Analytics (caportal.com.au) that includes a project overview, a description of the EIS and SIA process and opportunities to be involved, an interactive map to allow for visitors to make comments on the project and its specific components and project materials such as newsletters, presentations, FAQs, etc. Also provides a link to visitor feedback survey along with a monitored email address for queries.	All stakeholders

Mechanism	Description	Targeted Stakeholders
Project Information Sheets	Distribution of project information sheets (5 in total to-date) via email and post to provide relevant information on the CCOP and relevant updates of the assessment progress. Information sheets were mailed to all landholders within a 4 km radius of the CCOP area and also emailed to all Cadia District residents. Information sheets are located on the CCOP website: (Cadia Continued Operations Project | Umwelt | Community Analytics (caportal.com.au)	Broader community Cadia District residents / neighbouring landholders
Cadia Community Consultative (CCC) Meetings	The Cadia CCC Committee includes: • 7 community representatives • Representatives from Orange, Blayney and Cabonne Shire Councils • 1 Independent Chair. Meetings are held quarterly with meeting minutes published on Cadia's website. All CCC representatives were provided with the opportunity to attend a one-on-one meeting with Cadia to discuss the CCOP.	CCC members
Community drop-in Sessions	Informal public 'drop in' sessions to provide Project information and opportunity for the public to pose questions. Participants were invited to attend the session via: • Project website • Media advertisement • An email distributed to Cadia's residents. The CDPG also encouraged people to attend a session via the Blayney Chronicle and Facebook posts. Sessions were held in: • Millthorpe – 17th November 2021 • Canowindra – 18th November 2021 • Orange – 24th November 2021. The sessions included a poster board display of current Project information.	All Broader community
Survey Instrument	A survey instrument has also been placed on the project website to capture community feedback on the Project and its concepts for incorporation into the SIA Scoping report.	All Broader community
Employee briefings	Inclusion of the CCOP in Panel Start presentations. Presentation of updates relating to the CCOP at Staff Communication Days.	Employees and contractors

Mechanism	Description	Targeted Stakeholders
Cadia Open Day	A community open day held on 22 October 2023 at the Orange Showground. A CCOP dedicated stall featured an animation about proposed dam wall technology, a virtual fly-through of the site, a map of the proposed Project, fact sheet and Frequently Asked Questions hand out.	Broader community
Community Pop-ups	A total of 15 pop ups held in November 2023 across 5 days by Cadia representatives, a further 14 pop ups were held in February 2024. Pop ups occurred in Orange, Milthorpe, Canowindra, Blayney, Molong and Carcoar with newsletters distributed at each event.	Broader community

Further detail on the consultation undertaken is provided in the SISR (refer to **Appendix B**).

5.2.1.1 Engagement undertaken on tailings storage facility options

As an integral component of the community engagement strategy for the CCOP, Cadia has incorporated feedback from local community members into the design phase of STSFX since announcing the CCOP in late 2021. The community engagement has included undertaking residents meetings, one on one landholder discussions and providing information sheets to discuss the site and technology selection for the proposed STSFX. As an outcome of this process, the STSFX footprint has been significantly reduced and further refinements made to move the facility further to the west and away from the residences to the east and southeast. A number of other design changes were also made, with these collective changes reducing the overall disturbance area associated with CCOP. Ongoing consultation with the community is planned as further design and assessment work is completed for the CCOP.

5.2.2 Agency Engagement

The engagement program conducted to inform the scoping phase for the CCOP has included initial briefings with relevant government agencies. These meetings included an overview of the CCOP, discussions on the approvals process and sought feedback on relevant issues considered to be relevant to the EIS. The agencies engaged to date regarding the CCOP are provided in **Table 5.2**.

Table 5.2 Agency Consultation

Agency	Date	Mechanism	Details
Department of Planning, Housing and Infrastructure (DPHI) (formerly Department of Planning and Environment [DPE])	22 November 2021 30 May 2022 17 November 2022 11 May 2023 21 August 2023	Meeting Meeting Meeting Meeting Meeting	Presentation of CCOP concept Provided overview of hydrocyclone sand technology STSFX Site selection Site selection and development of technical report discussion DPHI Inspection of the existing operations and CCOP Project Area.

Agency	Date	Mechanism	Details
Resources Regulator (within the Department of Regional NSW)	30 November 2021 17 November 2022 11 May 2023	Meeting Meeting	Presentation of CCOP concept Provided overview of hydrocyclone sand technology STSFX Site selection and development of technical report discussion
NSW Environment Protection Authority	20 December 2021	Meeting on site	
Mining, Exploration and Geoscience (MEG – agency within the Department of Regional NSW)	9 December 2021	Meeting	Presentation of CCOP concept
DPE – Water	30 November 2021 20 October 2023 9 February 2024	Meeting Meeting Meeting	Presentation of CCOP concept Presentation of Groundwater Modelling methodology Discussion on access to Belubula Source Model
DPE – Biodiversity, Conservation & Science Directorate (BCS)	8 December 2021	Meeting	Presentation of CCOP concept
NSW Department of Climate Change, Energy, the Environment and Water – Natural Resources Access Regulator (NRAR)	30 November 2021	Meeting	(in conjunction with DPE Water)
Dam Safety Committee	30 November 2022	Meeting	Provided overview of hydrocyclone sand technology
NSW Forestry	26 February 2024	Meeting	Briefing on CCOP and realignment of Cadia Road through Forestry Land.

Further engagement is planned to be undertaken with NSW Forestry in regard to the Cadia Road relocation and potential impacts on Forestry land.

CCOP briefings have also been held with the following local councils (as well as monthly updates to Council executive staff):

- Cabonne Council – meeting held 6 November 2021, site visit held 28 February 2024.
- Blayney Shire Council – meeting held 8 November 2021, site visit held 21 February 2024.
- Orange City Council – meeting held 4 November 2021, site visit held 14 February 2024.

Consultation with further agencies will be undertaken throughout the assessment process, in accordance with the SEARs for the CCOP.

5.3 Community Views

The key community views identified in engagement conducted for the social scoping phase are shown in **Figure 5.2** and are discussed in more detail in the SISR (**Appendix B**).

Figure 5.2 represents the number of stakeholders that raised a particular impact, however all impacts have been noted as important to one or many of the stakeholders consulted. The issues identified in green represent those considered positive, whereas those in blue reflect negative or potentially negative impacts.

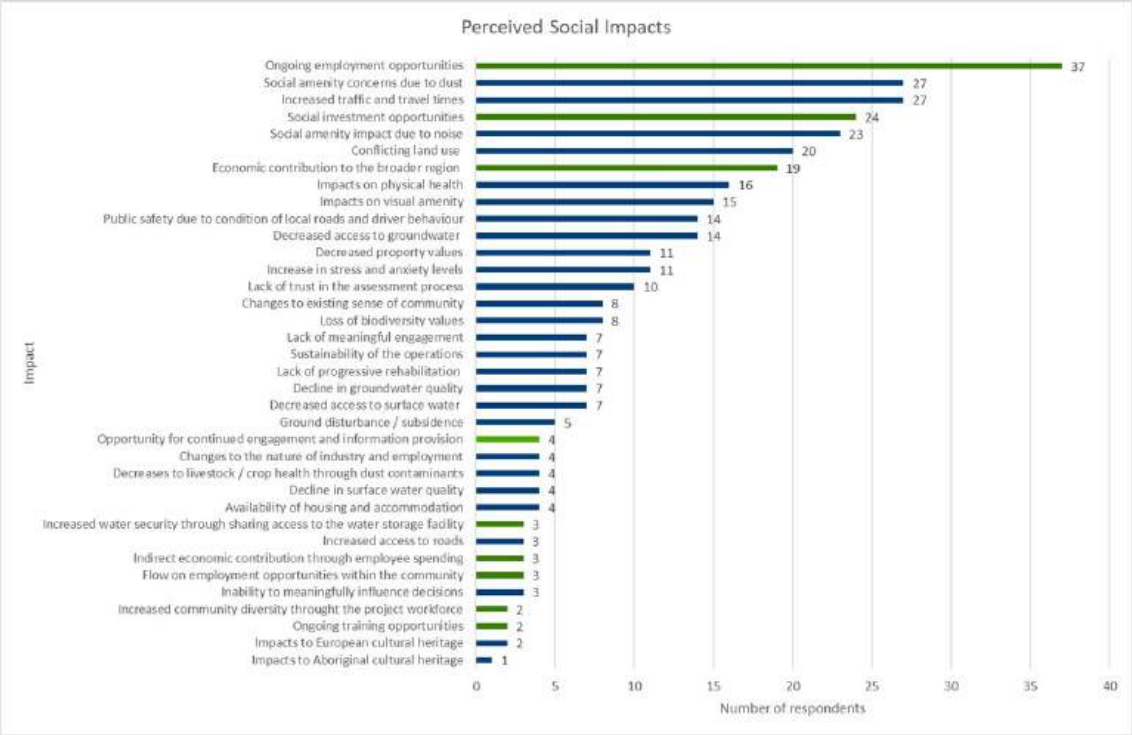


Figure 5.2 Perceived Impacts (frequency of response)
n=59, Source: Umwelt survey data (2022, 2024)

5.4 Further Stakeholder Engagement

Key consultation mechanisms and activities to be undertaken throughout the CCOP assessment phase will include:

- Project information sheets.
- Personal interviews and small group meetings.
- Broader community phone survey.
- Cadia District Resident meetings.
- Employee, contractor and supplier surveys.
- Community information sessions.
- Project briefings to relevant stakeholder groups.
- Maintenance of the CCOP website.

Further detail on planned engagement can be found in the SISR, provided as **Appendix B**.

6 PROPOSED ASSESSMENT OF IMPACTS

6.1 Key Environmental and Social Impacts

A review of the environmental and social matters relevant to the CCOP has been conducted to determine which issues need to be assessed as part of the EIS and the level of assessment that is required. This review has been undertaken with reference to the categories of assessment matters identified by the DPIE Scoping Guideline (DPIE, 2021), with the key issues and the proposed level and scope of assessments discussed in the following sections.

The environmental and social matters relevant to the CCOP are identified and have been characterised (in accordance with DPIE, 2021) as follows:

- Matters requiring further assessment in the EIS (refer to **Section 6.2**).
- Matters requiring no further assessment in the EIS (refer to **Section 6.3**).

For the matters requiring further assessment in the EIS, **Section 6.2** identifies whether detailed or standard assessment is required (as defined by *Appendix D* of the State Significant Development Guidelines – preparing a scoping report [DPIE, 2021]). **Appendix A** presents a Scoping Table Summary showing the outcome of the scoping stage review of matters as required by the guideline.

6.2 Matters Requiring Further Assessment in the EIS

The environmental, social and economic matters discussed in this section have been identified as key issues requiring further assessment as part of the EIS to fully understand the potential impacts and identify project-specific mitigation measures and/or alternatives. Consistent with section 4.63 of the EP&A Act, the EIS will not include a reassessment of impacts associated with the existing approved operations at Cadia but will assess all new proposed activities including the continuation of mining activities beyond 2031.

Newmont is undertaking a robust approach to the EIS assessment by engaging independent specialists to undertake peer reviews of key EIS studies. The following sections outline which studies will include independent peer review.

6.2.1 Social Impacts

As discussed in **Section 5.1**, a SIA will be prepared as part of the EIS and will include further assessment and summary of potential impacts and mitigation options associated with the proposed scope items in CCOP. A detailed assessment will be undertaken which will include cumulative impacts associated with the CCOP. A detailed SISR is provided in **Appendix B**, with a summary of the key outcomes of the SISR and proposed further assessments provided in this section.

6.2.1.1 Potential Impacts

As identified in **Section 5.3** and the SISR (**Appendix B**), the social and community impacts of the CCOP identified as of greatest concern to stakeholders include:

- Decreased social amenity as a result of noise, air quality, and visual impacts.
- Road and traffic impacts relating to the potential for increased traffic and travel time due to the proposed realignment of Panuara Road and increased traffic associated with the CCOP workforce, as well as public safety concerns due to the perceived ongoing deterioration of local roads and driver behaviour.

- Concerns regarding physical health, in relation to air quality and perceived risk of water contamination, and mental health, including an increase in stress and anxiety levels as a result of uncertainty associated with the CCOP.
- Impacts to the values associated with the biophysical environment and setting including impacts on water availability, local historic and cultural heritage, agricultural productivity and biodiversity.
- Economic impacts – direct and indirect costs and benefits of the CCOP to the local and wider community including the delivery of services and infrastructure by local councils and availability and affordability of housing.

6.2.1.2 Assessment Approach

The detailed assessment for the SIA will be conducted with reference to the Social Impact Assessment Guidelines for State Significant Developments (DPIE 2023a), Technical Supplement, Social Impact Assessment Guideline for State Significant Projects (DPIE 2023b), and Undertaking Engagement Guidelines for State Significant Projects (DPIE, 2022a), and includes two key phases:

- The first phase includes initial assessment, refining and planning which has culminated in a SISR (attached in **Appendix B**). The SISR has been prepared to determine the scope and scale of the SIA (second phase) and includes a preliminary assessment of the potential social impacts of the CCOP. As stakeholder engagement is a key channel for input from near neighbours and local and regional stakeholders at all SIA phases, engagement has commenced early to inform social impact prediction and the SIA process early in the project scoping phase.
- The second phase includes the development of a detailed SIA which will include validation and a comprehensive assessment of social impacts identified in the SISR and the development of relevant strategies to mitigate any negative social impacts and enhance positive impacts associated with the CCOP. Consideration of how social impacts will be monitored will also be included in the final SIA. This phase of the SIA program will involve the following key activities:
    - Further validation of the social locality and identification of affected communities and vulnerable groups.
    - An update of the social baseline profile to ensure that any further baseline data relevant to the impacts identified is obtained.
    - Provision of feedback to those consulted during the scoping phase on the outcomes and issues raised and communication of the Project Secretary's Environmental Assessment Requirements (SEARs) (once issued), including an outline of the next steps in the assessment process and opportunities for community input.
    - Further engagement with a range of community and stakeholder groups, including but not limited to proximal landholders, local government, community members, Aboriginal stakeholders, interest groups, local businesses, and service providers. This consultation will focus on further identification of social impacts associated with the CCOP. Further, it will involve the provision of feedback on the outcomes of EIS technical studies and will provide opportunities for community input to the development of appropriate management measures (mitigation and enhancement) to address impacts and residual effects.
    - A further comprehensive assessment and evaluation of social impacts against existing baseline conditions.

An independent peer review of the SIA will also be undertaken as part of the EIS.

6.2.2 Water Resources – Surface Water

Potential impacts on surface water will be a key issue subject to detailed assessment in the EIS, which will include cumulative impacts associated with the CCOP. The specific matters for consideration in the assessment include water quality, flooding, water availability and use, erosion and sedimentation.

As identified in **Figure 2.3**, Cadia is situated across several catchments of the Belubula River, including the catchments of Swallow Creek, Cadiangullong Creek (including tributaries Rodds Creek and Copper Gully) and Flyers Creek. The CCOP includes further development and direct disturbance within the Cadiangullong, Rodds, Happy Mount and Flyers Creek catchments.

Cadia sources water for its operations from a range of locations including water captured on the mine site (including the Upper Rodds Creek Dam and Cadiangullong Dam), groundwater inflows, Orange Council treated effluent and water abstracted from the Belubula River and its tributaries under licence.

6.2.2.1 Potential Impacts

Mining Areas and Ongoing Cadia Operations

Updated modelling has been undertaken to identify potential changes to surface subsidence impacts associated with the underground mining areas. The modelling indicates that subsidence will extend outside currently approved extents and has the potential to affect the flow of water within the affected catchments. Further subsidence modelling is being undertaken and predicted subsidence impacts will be confirmed as part of the EIS.

With the proposed changes to operations, and increased life of operations, there may be changes to the water demand and generation at Cadia which will be assessed as part of the EIS.

The continuation of underground mining also has the potential to interact with local groundwater and subsequent surface expression (spring flow) of this groundwater to creeks and other waterways. Further discussion of interactions with groundwater is provided in **Section 6.2.2**.

STSFX

The construction of STSFX would result in changes to the catchment of Cadiangullong Creek, including the lower section of Rodds Creek which flows into Cadiangullong Creek and Flyers Creek. There is also a proposed small diversion of Cadiangullong Creek. The effective catchments of Cadiangullong and Flyers Creeks would be reduced because of the construction of the new STSFX, Tailings Separation Plant, drainage infrastructure, stockpiling areas and roadways.

Tailings deposition and ongoing operations associated with the progressive development of STSFX has the potential to affect local waterways as a result of erosion and sedimentation or leakage, spillage or seepage of tailings materials from the TSF. STSFX will be designed with appropriate water management controls to mitigate these risks including a leachate collection system and erosion and sediment controls, with the EIS to identify the required controls and assess potential impacts.

South Water Storage

The construction of a new water storage on Cadiangullong Creek would capture some of the flows that are currently flowing to the Belubula River. The construction of the SWS would also create the potential for impact on surface waters during and immediately following construction as a result of erosion and sedimentation and the use of construction equipment in and around the creek.

The SWS would also be managed to provide for environmental flows including potentially during periods of low rainfall. Further work will be undertaken during the EIS to further define impacts and benefits of the SWS.

Road Realignments

Realignment of Panuara Road and Cadia Road would require crossing of local drainage lines (including Cadiangullong Creek) and potentially Woodville Creek to the north-west of the CCOP Project Area. This requires consideration of the potential for impacts on surface water quality during construction and changed flow conditions as a result of alterations to the drainage channel created by the crossings.

6.2.2.2 Assessment Approach

A detailed Surface Water Impact Assessment (SWIA) will be undertaken for the CCOP as part of the EIS considering relevant guidelines including *The Australian and New Zealand Guideline for Fresh and Marine Water Quality* (ANZG 2018), *The NSW Water Quality and River Flow Objectives* (DECCW 2006), *ANZECC Guidelines and Water Quality Objectives in NSW* (DEC 2006) and *Managing Urban Stormwater: Soils and Construction Volume 1* (Blue Book: Landcom 2004). The scope for the SWIA will include the following components:

- Characterisation of existing surface water resources potentially affected by the CCOP, including water quality, water quantity, geomorphic properties, water users, flooding, site water and soil management.
- Completion of a water balance for the operations including identification of potential water shortfalls or surplus and how these would be managed.
- Assessment of the potential impact of the CCOP on water quality, water quantity, water users, flooding and site water management.
- Cumulative surface water impacts due to the CCOP and other existing and approved developments.
- Consideration of surface water management related to final rehabilitation and mine closure.
- An independent peer review of the SWIA will also be undertaken as part of the EIS.

6.2.3 Water Resources – Groundwater

Potential impacts on groundwater will be a key issue subject to detailed assessment in the EIS which will include cumulative impacts associated with the CCOP. The specific matters for consideration in the assessment include groundwater quality, groundwater dependent ecosystems, groundwater drawdown and impact on water availability (including to surface water base flows).

Management of the groundwater at Cadia is captured under the Water Sharing Plan (WSP) of the *NSW Murray Darling Fractured Rock Groundwater Source 2020*. It is understood that local landholders use groundwater for stock water supply, irrigation and domestic water supply.

There are more than 300 registered bores within 10km of the CCOP. The dominant use for bores is household use, followed by irrigation and stock water supply. Bores used for large-scale irrigation purposes were identified on a small number of properties with relatively high yields. **Figure 6.1** provides an illustration of groundwater bores in the vicinity of the CCOP.

Cadia has an extensive groundwater monitoring network consisting of 224 bores. Of these 224 bores, 148 are active, with additional bores recently installed. Cadia conducts routine groundwater monitoring, with 124 bores monitored on a quarterly basis and 53 bores monitored monthly. Groundwater quality samples are taken from 67 of the quarterly monitoring bores and 21 of the monthly monitoring bores.

This extensive monitoring network provides a good understanding of the local groundwater environment including groundwater level and quality. As an outcome of the GWIA, recommendations will be made as to whether additional bores are recommended to be installed as part of this extensive monitoring network.

6.2.3.1 Potential Impacts

Mining areas

Ongoing underground mining as part of the CCOP will continue to intercept groundwater which has the potential to extend impacts beyond those currently approved. The Groundwater Impact Assessment (GWIA) will assess the potential for both direct and indirect impacts to groundwater associated with the mining operations.

STSFX

The development of the new STSFX will include a range of design features to manage potential seepage from emplaced tailings, including a seepage collection system, that are designed to avoid impacts to groundwater.

The GWIA will, however, assess the potential for both indirect and direct impacts on groundwater associated with tailings emplacement, including:

- Risk of seepage and potential for groundwater quality changes.
- Effects on local groundwater levels.
- Potential for any impacts on other groundwater users (including groundwater dependent ecosystems).

South Water Storage

The development of the SWS has the potential to result in changes to local groundwater levels due to creation of a new water body at a surface elevation above the existing topography. The impacts of this change will be assessed as part of the GWIA.

6.2.3.2 Assessment Approach

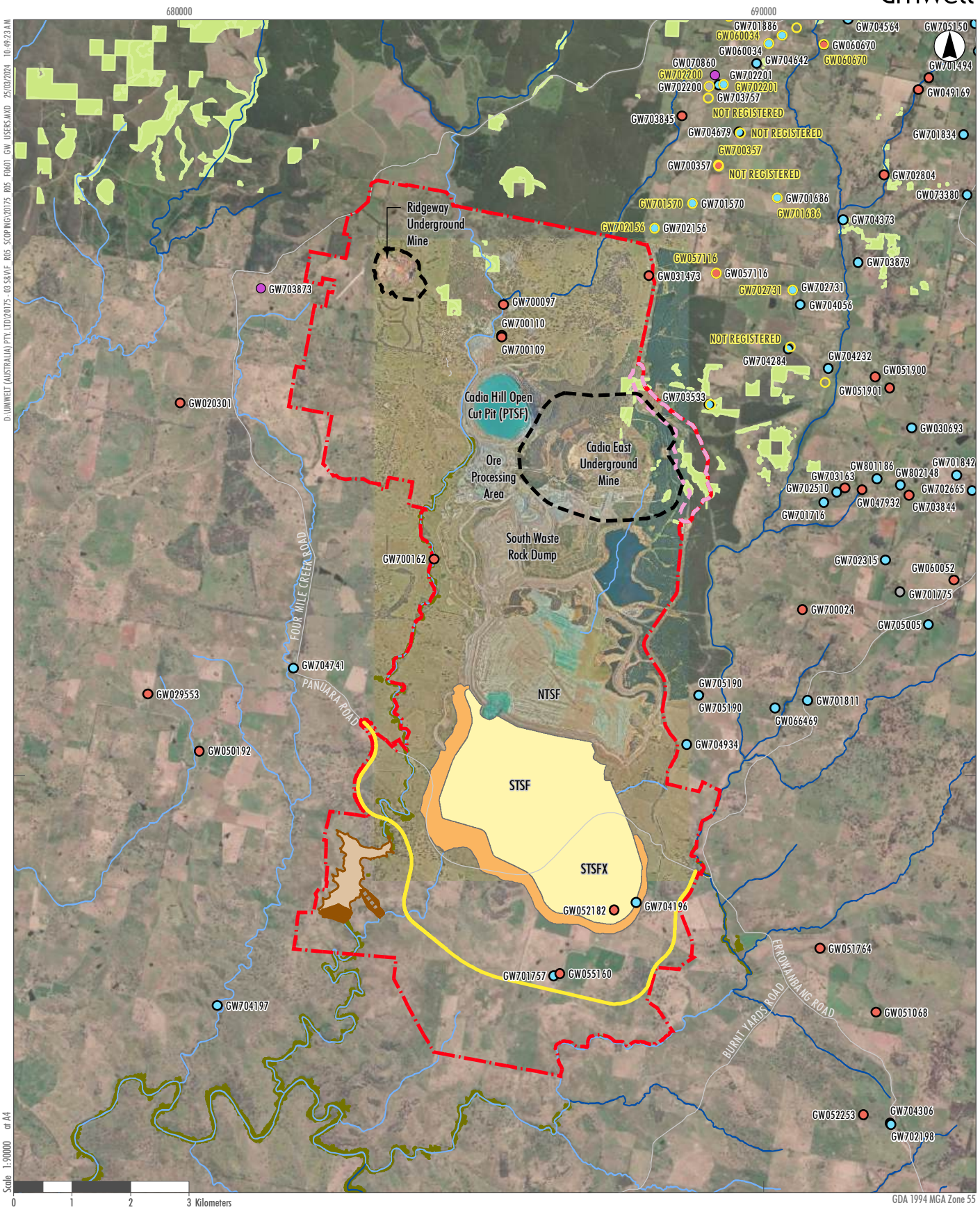
A detailed Groundwater Impact Assessment (GWIA) will be undertaken as part of the EIS in consideration of the *Australian Groundwater Modelling Guidelines* (Commonwealth of Australia, 2012), *NSW Aquifer Interference Policy* (DPI Water 2012), relevant NSW Water Sharing Plans, *Australian and New Zealand guidelines for fresh and marine water quality* (Australian New Zealand Guidelines 2018), *Minimum Groundwater Modelling Requirements for SSD/SSI Projects (*DPE, 2022a), and Guidelines for Groundwater Documentation for SSD/SSI Projects (DPE, 2022b).

The GWIA will include:

- Field investigation programs to define the extent and hydraulic properties and groundwater storage parameters across the Project Area.
- Using the baseline datasets to develop a conceptual hydrogeological model that describes the groundwater regime and identifies areas of potential impact resulting from the CCOP.
- Development of a numerical groundwater model to assess:
    - Groundwater inflow to the mining area.
    - The area of influence of dewatering and the level and rate of drawdown at specific locations.
    - The potential for any impact on alluvial aquifers and surface water.
    - Areas of potential risk where groundwater impact mitigation/control measures may be necessary.
    - Potential for cumulative impacts.
    - Identification and assessment of potential post-mining groundwater impacts.

The GWIA will quantify and assess the CCOP against the requirements of the SEARs and relevant policy and guideline requirements and will be independently peer reviewed.

The GWIA will identify any necessary measures relating to the management of the groundwater resource and groundwater flow and inform licensing requirements.



Legend

- CCOP Project Area
- Cadia Road Realignment Study Area
- Indicative Subsidence Zone of Influence
- Indicative Panuara Road Realignment
- Indicative South Water Storage Inundation Area and Access Road

Indicative Southern Tailings Storage Facility Extension (STSFX)

- Proposed Final Tailings
- Proposed Hydrocycloned Sand Embankment

- Landowner Bores (CVO Identified)

Landholder Bores (NGIS)

- Abandoned
- Proposed
- Removed
- Unkown
- Functioning

Aquatic GDE

- High potential GDE - from national assessment
- Moderate potential GDE - from national assessment

Terrestrial GDE

- High potential GDE - from regional studies
- Low potential GDE - from regional studies

- Road
- Creek/River

FIGURE 6.1

Groundwater Users

Image Source: ESRI (2021) Data source: NSW DFSI (2022), Newmont (2024), Bureau of Meteorology (2023)

6.2.4 Air Quality

Air quality is a key issue of concern for the local community, particularly for nearby landowners. A detailed assessment of potential air quality impacts will be undertaken as part of the EIS which will include cumulative impacts associated with the CCOP.

Newmont acknowledges that dust emissions from Cadia's TSFs and vent rises have created concerns in some parts of the community around the mine. Cadia has taken the community's concerns seriously and implemented a range of additional control measures.

Cadia has worked to reduce emissions from its ventilation rises and taken steps to make the changes a permanent part of its normal operations.

Dust emissions from the existing STSF and NTSF since tailings deposition in these areas was temporarily ceased has been identified as a key issue of concern by local landholders. Cadia has been working to reduce dust emissions on these TSFs by applying both polymer-based binding agents and hydromulch to the surface of these facilities. These additional controls have reduced the dust emissions, however Cadia continues to focus on opportunities to further minimise dust generation from this and other point sources.

6.2.4.1 Existing Monitoring

Cadia monitors air quality at key locations on, and adjacent to the mine site on a 24-hour basis for the following:

- PM10 and PM2.5 Ambient Air Quality Monitoring – BAMs (Beta Attenuation Monitors) provide continuous PM10 and PM2.5 particulate concentration measurements. Eight BAMs are in continuous operation at various locations around the Cadia district.
- Dust Deposition Gauges – (DDGs) are located at eleven sites around the Cadia District and the Cadia Dewatering Facility. The DDGs are analysed monthly for metals and total dissolved and insoluble solids.
- Visual Dust Monitoring – Visual dust is monitored during routine inspections and when complaints are received. Where excessive dust generation has been identified, additional mitigation measures are implemented.
- Meteorological Monitoring – Cadia uses its on-site weather stations as part of its air quality monitoring program.

In regard to monitoring vent emissions, routine testing has been conducted at Vent Rise 8 (VR8) and at other vent rises following approval of the Air Quality and Greenhouse Gas Management Plan. Cadia conducts routine emissions testing at the surface ventilation system, which analyses the air quality of the exhausted air from its underground operations. These monitoring results are reported to the NSW EPA in line with Cadia's EPL.

6.2.4.2 Response to Community and Regulator Concern

In addition to routine monitoring, Cadia has undertaken the following independent scientific studies to address recent concerns relating to air quality from the community and to meet its regulatory obligations:

- In 2022, the Australian Nuclear Science and Technology organisation (ANSTO) undertook a detailed air quality monitoring study. ANSTO collected fine particle samples from four sampling sites (Millthorpe, Mandurama, Panuara and Orange) around Cadia for a 24-hour period twice weekly, during a 12-month period from February 2022 to February 2023, for characterisation of their composition and origin. The ANSTO study found that soil was the only type of particle matter which Cadia had contributed to at three of the four sites (it did not contribute any particulate matter at the fourth site). Further, the soil particles were found to be not harmful in the quantities identified. The lead, nickel, selenium and chromium detected were not associated with any PM2.5 soil fingerprint and were not attributed to Cadia.

- In March 2023, the University of South Australia undertook an isotopic analysis for lead in sludge from water tanks on properties in the vicinity of Cadia. Samples were collected from 88 water tanks around the Cadia region for analysis to determine the isotope composition. The report interpreting the results found that the lead found in 74 of the 88 samples (84% of the total) has no correlation with the signature from Cadia. Of the remaining 14 samples (16% of the total), both the Cadia orebody and district soil samples exhibit similar characteristics, and demonstrate the lowest concentration of lead amongst all the sludge samples. The report determined the likely sources of lead sampled in the water tanks were contained to nearby building materials and/or tank materials.

- In March 2023, Australian Laboratory Services (ALS) were engaged to conduct a five-week water sampling program between March 2023 and May 2023. The program was designed to confirm the suitability of drinking water at properties against the Australian Drinking Water Guidelines (ADWG) for various elements. The program found 17 residences had exceedances in tankwater samples. Of these 17 residences, the analysis found that there were no geographic patterns or clusters, indicating that the exceedances were not a direct result of dust emissions from Cadia.

- Todoroski Air Sciences (TAS) undertook air dispersion modelling to quantify the air quality impacts due to Cadia in the surrounding environment during the January 2022 to February 2023 period. This modelling included contributions from all significant air emission sources at Cadia, including surface activities and upcast ventilation shafts. The study found that the actual ambient monitoring data showed no exceedances of the EPA criteria at any time at any location. This is consistent with the measurements from the concurrent ANSTO study (as outlined above).

- A Human Health Risk Assessment was undertaken by SAGE Environmental Services Pty Ltd (SAGE) in September 2023 to analyse the potential air quality impacts that may arise from the operation of Cadia. The assessment of risks involved the comparison of modelled air emission data and sampled point of use drinking water data to adopted guidelines. This assessment found that the assessment of potential human health risks from Cadia were considered to be low and acceptable.

In addition to these studies being undertaken by Cadia and the relevant independent specialists, the EPA is also undertaking monitoring programs in regard to water tank, air quality, and soil monitoring. Cadia is working with EPA to ensure it meets all requirements relating to air quality.

The findings of the NSW EPA rainwater tank (water) program are included on the NSW EPA website *(NSW EPA website (last updated 17 January 2024), accessed 2 March 2024*) https://www.epa.nsw.gov.au/working-together/community-engagement/updates-on-issues/cadia-gold-mine

which states:

> *"We have collected samples from 97 residential properties to check the concentration of metals in water.*

We have compared the results of the water testing to the national guidelines for drinking water, known as the Australian Drinking Water Guidelines (ADWG).

The majority of results from kitchen tap samples showed metals concentrations below the health-based guideline values.

At three properties, the levels of lead in samples collected from the kitchen tap were at or marginally above the health-based guideline value for lead on the day of sampling. The level of lead in the tank water samples from these three properties did not exceed the health-based guideline value.

At one property, the level of nickel in the sample collected from the kitchen tap marginally exceeded the health-based guideline value for nickel. Nickel was not detected in the water tank sample from this property.

Some water tank samples had levels of lead (14 properties) or cadmium (two properties) or antimony (one property) above the health-based guideline values. Samples taken at the corresponding kitchen tap on these properties did not detect the same metals above the health-based guideline value.

Other metals in tank water samples were below the respective health-based guideline values on the day of sampling.

Some samples also recorded pH in kitchen tap and tank water tap samples outside the range described in the Australian Drinking Water Guidelines, on the day of sampling. This range is based on minimising corrosion and encrustation of plumbing fittings and pipes rather than a risk to human health.

There were some mixed results for aesthetic values (including zinc, colour, copper, total dissolved solids, turbidity, hardness, iron and aluminium) in kitchen tap and tank water samples outside the range described in the Australian Drinking Water Guidelines, on the day of sampling. An aesthetic guideline value is the concentration below which the water quality is considered acceptable to the consumer, for example, appearance, taste and odour.

These results indicate the importance of maintaining tanks and tank water distribution systems in accordance with guidance provide by NSW Health. Property owners might also consider installing filtration and/or first flush systems to reduce potential contamination of their drinking water."

The findings of the rainwater tank (sludge) program are also included on the NSW EPA website which states:

"We understand testing sediment from rainwater tanks is important for the community. We took samples of sediment from rainwater tanks where it was safe to do so. To get safe access, sediment samples were collected from first flush system or with a sampling device direct from the bottom of the rainwater tank. We took samples from 52 properties; 41 samples had sufficient volume for metal analysis.

The EPA analysed 41 sediment samples. The results have been compared to results of other studies of sediment in Australian water tanks. All key metals measured were within typical concentrations found in Australian tanks, with the exception of nickel which was exceeded in two samples. For these two samples nickel did not exceed the health-based guideline value at the kitchen tap.

There are no relevant guideline values comparable to the sediment samples. The Australian drinking water guidelines provide a basis for determining the quality of water to be supplied to consumers in all parts of Australia to ensure safety at the point of use. The Australian and New Zealand sediment quality guidelines are targeted to the protection of aquatic ecosystems and livestock (ANZG 2018). In the absence

> *of suitable guideline values, we compared the concentrations of metals in tank sediments collected around Cadia Valley Operations to those measured in other parts of Australia."*

The NSW EPA's conclusion is:

> *"The test results from our sampling programs, have been broadly compared with sampling results previously undertaken by NSW Health, industry and independently by the community and with other Australian rainwater tank studies.*
>
> *The EPA's Expert Panel has reviewed the summary reports on the results of the water tank water and sediment sampling programs and advised that the conclusions are supported by the data."*

Cadia has also undertaken a number of other actions including:

- Installing additional dust sprays and spray curtains.
- Re-configuring the dust extraction systems.
- Sampling of the vent rise emissions as required by the latest variation to the mine's licence.
- Installing additional dust sampling instrumentation.
- Accelerated additional dust filtration units.

Further information regarding air quality and dust management can be found on Cadia's website: <https://www.cadiavalley.com.au/newcrest/cvo/environmental-management/community-air-and-water-quality-program>.

6.2.4.3 Potential Impacts

The CCOP will result in air quality emissions as a result of ongoing operation of the mine, including the construction, operation and decommissioning activities and the new activities including the STSFX, SWS, road realignments and ongoing mining activities. Cadia will identify the ongoing and new emissions sources and locations and will implement controls to mitigate and manage emissions.

Odour generated by the recently approved and commissioned Molybdenum Plant has been identified by Cadia and has been the subject of further assessment and mitigation works. While the proposed changes to mining, tailings and water management are not anticipated to be odour generating, further assessment of the tailings material is being undertaken to affirm this initial assessment and will be considered in the EIS.

6.2.4.4 Assessment Approach

A detailed Air Quality Impact Assessment (AQIA) will be completed for the CCOP in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA, 2022) (Approved Methods). The AQIA will include:

- A review of air quality monitoring data and meteorological data for the Project Area and surrounding area.
- Identification of all sources of dust/air emissions associated with the CCOP such as earthmoving, blasting, extraction, processing, materials handling, storage, transport operations or rehabilitation and point source emissions such as ventilation shafts.

- Undertake modelling to reflect the proposed construction/development/production sequences for the CCOP to assess the potential impact on local and regional ambient air quality.
- Determine the CCOP specific air quality levels (and comparison with predictions and monitored impacts for approved operations) including an assessment of cumulative air quality impacts. This will include assessment of airborne particulate matter (TSP, PM10 and PM2.5) and depositional dust and consideration of other potential air quality pollutants including nitrous oxides (NOx) and diesel particulates.
- Review of the existing air quality monitoring and management programs and identification of any changes or improvements required to this existing system including dust management for the proposed STSFX.
- In the event that emissions concentrations are predicted to exceed air quality criteria for particulate matter, the methodology for addressing the associated impacts will follow the guidance provided by the Voluntary Land Acquisition and M*itigation Policy* (VLAMP; NSW Government, 2018).

As noted in **Section 6.2.3.1**, the proposed changes to mining, tailings and water management are not anticipated to be odour generating. Further analysis of future tailings preparation and deposition will be included in an odour impact assessment to be completed as a component of the AQIA.

An independent peer review of the AQIA will also be undertaken as part of the EIS.

The potential impact of air emissions from the CCOP will be further considered as part of a Human Health Risk Assessment.

A Greenhouse Gas and Energy Assessment (GHGEA) will also be undertaken for the CCOP to determine its projected energy consumption and greenhouse gas (GHG) emissions. The assessment will include a quantification of the incremental greenhouse gas emissions associated with the CCOP relative to the existing approved operations. The assessment will identify the measures proposed by Cadia to minimise GHG emissions as part of the ongoing operations.

6.2.5 Amenity – Noise and Vibration

The specific matters for consideration within the category of noise and vibration are construction noise, operational noise, traffic noise and blasting and vibration. A detailed assessment will be undertaken as part of the EIS which will include cumulative impacts associated with the CCOP.

Based on noise monitoring undertaken prior to the commencement of mining at Cadia, background noise levels during the day, evening and night-time were generally 30 dBA or less. A review of the local setting completed by acoustic consultants RWDI has indicated that background noise levels excluding the operation of Cadia are unlikely to have changed significantly during that time. The operation of the Flyers Creek Wind Farm to the east of Cadia could influence the local noise environment and this cumulative impact will be considered as part of a Noise and Vibration Impact Assessment to be undertaken for the CCOP (refer to **Section 6.2.4.2**).

Noting the generally low noise environment of the local setting, current noise levels in the local setting surrounding Cadia are influenced by the existing Cadia operations. Other potential sources of background noise include:

- Local traffic.
- Forestry operations.

- Agricultural operations (equipment and livestock).
- Environmental noise sources such as wind and birds.

Noise generated by Cadia is currently managed in accordance with Cadia's *Noise Monitoring Program* and blasting activities (inclusive of vibration generated) are managed in accordance with Cadia's *Blast Monitoring Program*.

6.2.5.1 Potential Impacts

The ongoing operations at Cadia will continue to be a source of noise, with the nature of the noise generated from the mining operations itself likely to be generally consistent with the existing situation. The STSFX and associated infrastructure, the SWS and road realignments represent significant new infrastructure at Cadia which will extend the area of disturbance and operations at Cadia to the south and east and closer to some neighbouring properties and residences to the south, southeast and southwest of existing operations. The construction of these new facilities, including significant earthworks and transfer of construction materials, will be a source of additional noise at Cadia.

Collectively, the ongoing mining operations, changes to operations and new activities have the potential to affect the existing noise and vibration environment. These potential impacts will be assessed in the EIS.

6.2.5.2 Assessment Approach

A detailed Noise and Vibration Impact Assessment (NVIA) will be prepared as part of the EIS considering the *Noise Policy for Industry* (EPA, 2017), *Interim Construction Noise Guideline* (DECC, 2009), *NSW Road Noise Policy* (DECCW, 2011) and *Assessment Vibration: A technical Guideline* (DECC, 2006). The assessment will include:

- Identification of sensitive receivers.
- Confirmation of the existing background and ambient noise levels in the locality of the Project Area and determination of noise criteria.
- Determination of the project-specific noise levels based on the existing intrusive and amenity noise levels.
- Development of a noise model to predict noise levels at surrounding sensitive receivers under a variety of construction and operational scenarios.
- Consideration of feasible and reasonable noise mitigation strategies.
- Review of existing monitoring and reporting programs to determine the effectiveness of mitigation and to verify predictions, including provisions for proactive mitigation strategies.
- An assessment of the cumulative noise impacts.
- An assessment of potential vibration impacts associated with the CCOP including consideration of nearby residential receivers, infrastructure (existing and proposed), heritage items, livestock and cumulative impacts.
- An independent peer review of the NIA as part of the EIS.

6.2.6 Amenity – Visual

Cadia already represents a significant feature of the local visual setting from some viewing locations with the STSF and NTSF visible from local roads such as Panuara Road, Errowanbang Road, Four Mile Creek Road and some local residences.

Excluding the mine site, the local setting of the CCOP is dominated by cleared agricultural land with patches of native vegetation, forestry and private rural land holdings including residences. Wind turbines associated with the Flyers Creek Wind Farm are also a feature of the local visual setting. Significant remnant native vegetation remains in the local setting, in particular within the Mount Canobolas State Conservation Area, Cadia's Black Rock Range biodiversity offset area and along the Belubula River.

To reduce the visibility of the mining operations from sections of local roads not screened by topography, Cadia has completed plantings along key sections of Panuara Road, Cadia Road and Four Mile Creek Road. Natural topography also assists in reducing views of Cadia, in particular from the north and northeast. To the south and southeast, where the landforms generally slope to the south towards the Belubula River, the existing operations are visible to some elevated private landholdings and residences.

A major topographic feature of the region, Mt Canobolas is located approximately 9.5 km to the north of Cadia and has wide views of the surrounding region. Cadia operations are not currently visible from lookouts on Mt Canobolas.

A detailed assessment will be undertaken as part of the EIS which will include cumulative impacts associated with the CCOP.

6.2.6.1 Potential Impacts

STSFX, the SWS and Panuara Road realignments represent significant new infrastructure at Cadia which will extend the area of disturbance and operations at Cadia to the south and closer to some properties and residences in this area. The STSFX may also impact on some of the views from the Old Errowanbang Woolshed, a state and locally listed heritage feature.

STSFX in particular is likely to be readily visible to some landholdings and other vantage points to the south. Cadia has provided information and sought input through the early phase consultation being undertaken with surrounding landholders, including through development of a 3D animation and preliminary photomontages to assist in community consultation. This included consideration of earlier designs of a larger TSF which extended further south than the proposed STSFX and discussions with community members about the balance of footprint and height of the new TSF. The community feedback was considered in finalising the conceptual design of STSFX.

The SWS, to be located within the incised gully of Cadiangullong Creek is unlikely to be as visible, however could be visible to certain vantage points to the south.

There will also be some changes to the visual environment associated with the road realignments and other infrastructure which will be less visually prominent aspects of the CCOP.

6.2.6.2 Assessment Approach

A detailed Landscape and Visual Impact Assessment (LVIA) will be completed for the CCOP including:

- Identifying the location of any other sensitive receivers including rural residences and other public viewing locations.

- Viewshed mapping to define the extent of potential views of the key CCOP components and confirmation of visual catchments surrounding the Project Area.
- Development of a 3D terrain model and identifying key private (residences) and public vantage points, and any other local significant visual features.
- Completion of a visual assessment including preparation of photomontage style interpretations from representative locations.
- A review of any proposed lighting components and potential impact on surrounding residences and public viewing locations.
- Identification of visual impact mitigation measures to be implemented as part of the CCOP.
- Assessment of visual impacts associated with the state and locally listed heritage item, Errowanbang Woolshed.

An independent peer review of the VIA will also be undertaken as part of the EIS.

6.2.7 Biodiversity

A detailed assessment will be undertaken as part of the EIS.

A large proportion of the Project Area (refer to **Figure 3.1**) (outside of the existing mining areas) is agricultural land which has been actively managed as cropping and grazing land. As discussed in **Section 6.2.10.1**, portions of the STSFX and the SWS area have been mapped as Biophysical Strategic Agricultural Land. This includes land mapped as Category 1 land under Section 60H of the *Local land Services Act 2013*, being land cleared of native vegetation as at 1 January 1990.

In addition to the cleared agricultural land, other non-remnant vegetation is evident including planted vegetation, pine plantation and rehabilitated areas.

The Project Area occupies parts of two Interim Biogeographic Regionalisation for Australia (IBRA) regions: NSW South Western Slopes and South Eastern Highlands. In April 2023, the revised NSW Plant Community Type (PCT) classification for the NSW coastal and tablelands bioregions was released, which includes the portion of the site located within South Eastern Highlands, but not the portion within NSW South Western Slopes. At present, all PCTs are assigned in accordance with the PCT classification that applies to the NSW South Western Slopes. A transitional arrangement is in place for east coast PCTs mapped in accordance with legacy PCT classification, however the transitional period lapses on 14 April 2025. Pending consultation with the Biodiversity Conservation Division (BCD), some or all of the PCTs mapped will be reassigned to the east coast PCT classification as part of the biodiversity assessment which will form part of the EIS.

Based on the current PCT mapping in accordance with the legacy PCT classifications, five PCTs occur in varied conditions within the area subject to disturbance relating to the CCOP (refer to **Figure 6.2**). These PCTs are:

- PCT 277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South-western Slopes Bioregion (woodland and planted). The majority of woodland (planted and remnant) is in low or poor condition.

- PCT 266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion (woodland and grassland). Woodland and grassland is generally in low or poor condition.
- PCT 348 – Red Stringybark – Long-leaved Box – Joycea pallida open forest in the Upper Lachlan Catchment, NSW South-western Slopes Bioregion and South Eastern Highlands Bioregion (woodland and grassland). The woodland is in moderate condition with the grassland in poor condition.
- PCT 732 – Broad-leaved Peppermint – Ribbon Gum grassy open forest in the north-east of the South Eastern Highlands bioregion (woodland). This woodland is likely to occur in poor condition as it is fragmented and surrounded by pine plantation.
- PCT 85 – River Oak forest and woodland wetland of the NSW South Western Slopes and South Eastern Highlands Bioregion (forest). The woodland wetland is in low condition.

PCT 277 and PCT 266 are associated with White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland, a critically endangered ecological community (CEEC) listed under the *Biodiversity Conservation Act 2016* (BC Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Preliminary surveys for the CCOP have indicated the presence of low condition remnants and derived native grassland forms of this ecological community containing an understorey dominated by pasture grasses and other exotic species. Further survey work will be completed to assess whether the areas of PCT 277 and PCT 266 within the CCOP Project Area meet the criteria for the EPBC Act listed CEEC.

Preliminary targeted surveys for threatened species have largely been completed, with final surveys planned in 2024. Surveys for the striped legless lizard (*Delma impar*) have been conducted in accordance with the NSW Biodiversity Assessment Method (BAM) with no striped legless lizard detected. To date, two candidate threatened species have been recorded during the targeted surveys, being the Superb parrot (*Polytelis swainsona*), and the Barking owl (*Ninox connivens*).

The list of fauna species provided in **Table 6.1** and flora species in **Table 6.2** below has been compiled from the candidate species output from the BAM calculator, BioNet Atlas threatened species records and the EPBC Protected Matters Search Tool (PMST) (searches undertaken with a 10 kilometre buffer on 5 February 2024). It should be noted that the list may evolve as the assessment continues (including change as a result of reassignment of PCTs to east coast PCT classifications, as discussed above).

Table 6.1 Fauna Requiring Assessment

Scientific name	Common name	BC Status	Commonwealth Status	Source
Fish				
Maccullochella macquariensis	Trout Cod	Endangered (FM Act)		PMST (2024)
Macquaria australasica	Macquarie Perch	Endangered (FM Act)		PMST (2024)
Maccullochella peelii	Murray Cod	Protected	Endangered	PMST (2024)
Frogs				
Litoria castanea	Yellow-spotted Tree Frog	Critically Endangered	Critically Endangered	PMST (2024), BAM-C (2024)
Crinia sloanei	Sloane's Froglet	Endangered	Endangered	PMST (2024)
Litoria booroolongensis	Booroolong Frog	Endangered	Endangered	PMST (2024), BAM-C (2024)
Litoria raniformis	Southern Bell Frog	Endangered	Vulnerable	PMST (2024)
Birds				
Aphelocephala leucopsis	Southern Whiteface	Vulnerable	Vulnerable	BioNet (2024), PMST (2024)
Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not Listed	BioNet (2024)
Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable	Endangered	BioNet (2024), PMST (2024), BAM-C (2024)
Chthonicola sagittata	Speckled Warbler	Vulnerable	Not Listed	BioNet (2024)
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Vulnerable	Not Listed	BioNet (2024), PMST (2024)
Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Listed	BioNet (2024)
Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Listed	BioNet (2024)
Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	Not Listed	BioNet (2024), BAM-C (2024)
Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Listed	BioNet (2024), BAM-C (2024)
Hirundapus caudacutus	White-throated Needletail	Not Listed	Vulnerable	BioNet (2024), PMST (2024)
Melanodryas cucullata cucullata	South-eastern Hooded Robin	Endangered	Endangered	BioNet (2024), PMST (2024)
Neophema pulchella	Turquoise Parrot	Vulnerable	Not Listed	BioNet (2024)
Ninox connivens	Barking Owl	Vulnerable	Not Listed	BioNet (2024), BAM-C (2024)
Ninox strenua	Powerful Owl	Vulnerable	Not Listed	BioNet (2024)
Oxyura australis	Blue-billed Duck	Vulnerable	Not Listed	BioNet (2024)
Petroica boodang	Scarlet Robin	Vulnerable	Not Listed	BioNet (2024)

Scientific name	Common name	BC Status	Commonwealth Status	Source
Petroica phoenicea	Flame Robin	Vulnerable	Not Listed	BioNet (2024)
Polytelis swainsonii	Superb Parrot	Vulnerable	Vulnerable	BioNet (2024), PMST (2024), BAM-C (2024)
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	Vulnerable	Not Listed	BioNet (2024)
Stagonopleura guttata	Diamond Firetail	Vulnerable	Not Listed	BioNet (2024), PMST (2024)
Stictonetta naevosa	Freckled Duck	Vulnerable	Not Listed	BioNet (2024)
Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Critically Endangered	PMST (2024), BAM-C (2024)
Lathamus discolor	Swift Parrot	Endangered	Critically Endangered	PMST (2024), BAM-C (2024)
Calidris ferruginea	Curlew Sandpiper	Endangered	Critically Endangered	PMST (2024)
Rostratula australis	Australian Painted Snipe	Endangered	Endangered	PMST (2024)
Botaurus poiciloptilus	Australasian Bittern	Endangered	Endangered	PMST (2024)
Leipoa ocellata	Malleefowl	Endangered	Vulnerable	PMST (2024)
Pycnoptilus floccosus	Pilotbird	Not Listed	Vulnerable	PMST (2024)
Falco hypoleucos	Grey Falcon	Vulnerable	Vulnerable	PMST (2024)
Grantiella picta	Painted Honeyeater	Vulnerable	Vulnerable	PMST (2024)
Calidris acuminata	Sharp-tailed Sandpiper	Protected	Migratory, Marine, Bonn, CAMBA, JAMBA, ROKAMBA	PMST (2024)
Neophema chrysostoma	Blue-winged Parrot	Vulnerable	Vulnerable	PMST (2024)
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	Protected	Migratory, Marine, Bonn, JAMBA, ROKAMBA	PMST (2024)
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	Vulnerable	Vulnerable	PMST (2024), BAM-C (2024)
Burhinus grallarius	Bush Stone-curlew	Endangered	Not Listed	BAM-C (2024)
Lophoictinia isura	Square-tailed Kite	Vulnerable	Not Listed	BAM-C (2024)
Insects				
Synemon plana	Golden Sun Moth	Vulnerable	Vulnerable	PMST (2024)
Keyacris scurra	Key's Matchstick Grasshopper	Endangered	Not Listed	BAM-C (2024)
Mammals				
Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Vulnerable	BioNet (2024), PMST (2024), BAM-C (2024)

Scientific name	Common name	BC Status	Commonwealth Status	Source
Chalinolobus picatus	Little Pied Bat	Vulnerable	Not Listed	BioNet (2024)
Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	Not Listed	BioNet (2024), BAM-C (2024)
Myotis macropus	Southern Myotis	Vulnerable	Not Listed	BioNet (2024), BAM-C (2024)
Petauroides volans	Southern Greater Glider	Endangered	Endangered	BioNet (2024), PMST (2024)
Petaurus australis	Yellow-bellied Glider	Vulnerable	Vulnerable	BioNet (2024), PMST (2024)
Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Listed	BioNet (2024), BAM-C (2024)
Phascolarctos cinereus	Koala	Endangered	Endangered	BioNet (2024), BAM-C (2024), PMST (2024)
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Vulnerable	BioNet (2024), PMST (2024), BAM-C (2024)
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Vulnerable	Not Listed	BioNet (2024)
Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	Not Listed	BioNet (2024)
Nyctophilus corbeni	Corben's Long-eared Bat	Vulnerable	Vulnerable	PMST (2024)
Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	Not Listed	BAM-C (2024)
Phascogale tapoatafa	Brush-tailed Phascogale	Vulnerable	Not Listed	BAM-C (2024)
Dasyurus maculatus maculatus (SE mainland population)	Spot-tailed Quoll (southeastern mainland population)	Vulnerable	Endangered	PMST (2024)
Reptiles				
Varanus rosenbergi	Rosenberg's Goanna	Vulnerable	Not Listed	BioNet (2024)
Tympanocryptis mccartneyi	Bathurst Grassland Earless Dragon	Critically Endangered	Critically Endangered	PMST (2024)
Aprasia parapulchella	Pink-tailed Legless Lizard	Vulnerable	Vulnerable	PMST (2024), BAM-C (2024)
Delma impar	Striped Legless Lizard	Vulnerable	Vulnerable	PMST (2024)

JAMBA: Migratory species included in the Japan-Australia Migratory Bird Agreement.

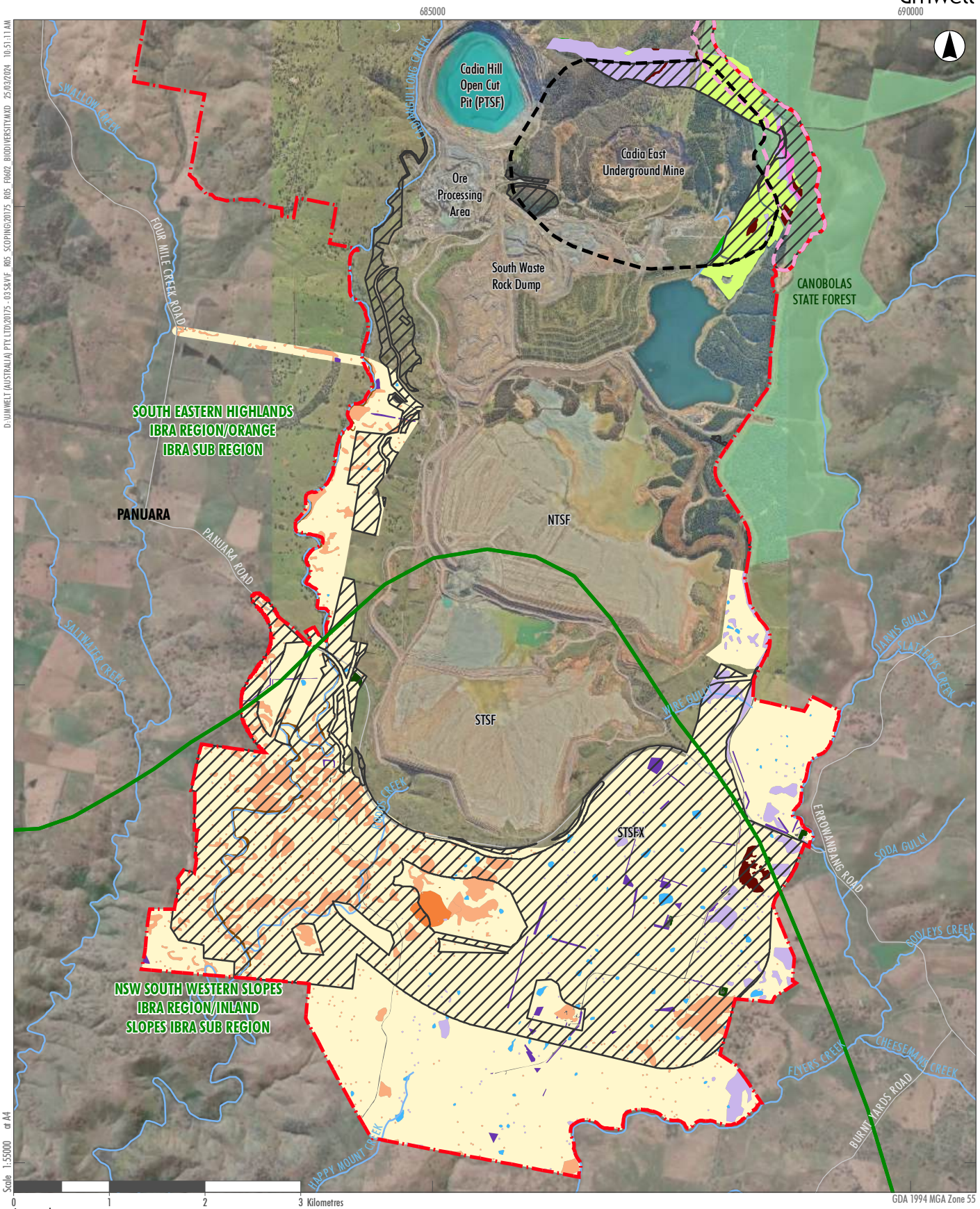
CAMBA: Migratory species included in the China-Australia Migratory Bird Agreement.

ROKAMBA: Migratory species included in the Republic of Korea-Australia Migratory Bird Agreement.

Bonn: Migratory species included in the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals).

Table 6.2 Flora Requiring Assessment

Scientific name	Common name	BC Status	EPBC Status	Source
Flora				
Eucalyptus canobolensis	Silver-Leaf Candlebark	Endangered	Endangered	BioNet (2024), PMST (2024)
Prostanthera gilesii	Prostanthera gilesii	Critically Endangered	Not Listed	BioNet (2024), PMST (2024)
Swainsona sericea	Silky Swainson-pea	Vulnerable	Not Listed	BioNet (2024), BAM-C (2024)
Euphrasia arguta	Euphrasia arguta	Critically Endangered	Critically Endangered	PMST (2024)
Leucochrysum albicans subsp. tricolor	Hoary Sunray	Endangered	Endangered	PMST (2024)
Austrostipa wakoolica	A spear-grass	Endangered	Endangered	PMST (2024)
Prasophyllum petilum	Tarengo Leek Orchid	Endangered	Endangered	PMST (2024)
Swainsona recta	Small Purple-pea	Endangered	Endangered	PMST (2024), BAM-C (2024)
Lepidium hyssopifolium	Aromatic Peppercress	Endangered	Endangered	PMST (2024)
Tylophora linearis	Tylophora linearis	Vulnerable	Endangered	PMST (2024)
Eucalyptus pulverulenta	Silver-leafed Gum	Vulnerable	Vulnerable	PMST (2024)
Ammobium craspedioides	Yass Daisy	Vulnerable	Vulnerable	PMST (2024)
Thesium australe	Austral Toadflax	Vulnerable	Vulnerable	PMST (2024)
Eucalyptus aggregata	Black Gum	Vulnerable	Vulnerable	PMST (2024)
Lepidium aschersonii	Spiny Peppercress	Vulnerable	Vulnerable	PMST (2024)



Legend

- CCOP Project Area
- Cadia Road Realignment Study Area
- Indicative Subsidence Zone of Influence
- Potential Additional Disturbance Area
- IBRA Region/Sub Region

PCT Mapping

- PCT85 River Oak Forest
- PCT266 White Box grassy woodland
- PCT266 White Box grassy woodland_DNG
- PCT277 Blakely's Red Gum - Yellow Box grassy tall woodland
- PCT277 Blakely's Red Gum - Yellow Box grassy tall woodland_planted
- PCT348 Red Stringybark - Long-leaved Box - Joycea pallida grassy open forest
- PCT732 Broad-leaved Peppermint - Ribbon Gum grassy open forest
- Exotic Grassland
- Exotic Planting
- Pine Plantation
- Non-vegetated
- Rehabilitation
- Water
- State Forest
- Road
- Creek/River

FIGURE 6.2

Biodiversity Values

Image Source: ESRI Basemap, Newmont (2023) Data source: DSFI (2022), Newmont (2023)

6.2.7.1 Potential Impacts

While significant areas of the potential additional disturbance area associated with the CCOP consists of cleared and farmed land with limited areas of native vegetation, preliminary vegetation mapping has identified that some areas of native vegetation and associated fauna would be affected. The CCOP, including the SWS, is also likely to result in some changes to local drainage and these impacts will be further considered in the biodiversity assessment and associated documentation provided with the EIS.

Changes to the extent of subsidence associated with underground mining (refer to **Figure 3.3**) also has the potential to impact on native vegetation and fauna habitat although to a limited extent beyond the current approved subsidence zones.

The potential impacts on biodiversity within and surrounding the Project Area are likely to include the following:

- loss of native vegetation and habitat
- direct and/or indirect impacts on aquatic species and GDEs
- indirect impacts (e.g. as a result of noise, vibration, dust or lighting effects) on threatened species
- changed groundwater conditions and drawdown resulting in potential impacts to any GDEs present.

6.2.7.2 Assessment Approach

A detailed assessment of potential impacts to biodiversity from the CCOP will be undertaken in accordance with the NSW *Biodiversity Assessment Method* (BAM – DPIE, 2020) and considering other relevant NSW and Commonwealth survey and assessment guidelines.

A Biodiversity Development Assessment Report (BDAR) will be prepared for the CCOP in accordance with the BC Act and the BAM and will include:

- identification of Category 1 – Exempt Land and Category 2 – Sensitive Regulated Land
- a description of biodiversity values and their condition within the Project Area including native vegetation, habitat for threatened species and GDEs
- assessment of direct, indirect and prescribed impacts to communities, habitat and species listed under the NSW BC Act and Commonwealth EPBC Act
- a discussion about measures taken to avoid, minimise and mitigate direct and indirect impacts
- a table detailing the credits required to offset the Project's residual impacts on biodiversity (following implementation of avoidance and mitigation measures)
- an offset strategy.

Noting the likely impacts on local waterways and aquatic ecology, an Aquatic Ecology Impact Assessment (AEIA) will also be completed. This assessment will include:

- field survey, sampling and habitat assessment to establish the presence/absence of threatened aquatic species and other aquatic ecology values

- an analysis of the potential aquatic ecology (including GDEs) impacts, along with consideration of the reasonable and feasible measures to reduce, mitigate or manage impacts
- description of the measures and controls to be implemented to avoid or mitigate unavoidable impacts
- assessment of the residual impacts on aquatic ecology (including GDEs).

6.2.8 Heritage – Aboriginal

The Project Area is located within Wiradjuri Country and within the governance area of the Orange Local Aboriginal Land Council (OLALC). The traditional owners of this land, past and present, are acknowledged.

Newmont has completed the registration process for interested Aboriginal parties to be engaged in the assessment of the CCOP. Engagement with Registered Aboriginal Parties (RAPs) has been ongoing over the past 18 months including consultation regarding the survey strategy for the Aboriginal heritage survey in the Project Area for the EIS assessment. Engagement with the RAPs will be ongoing throughout the assessment process and will include engagement regarding the cultural values of the Project Area and surrounds.

The following sections provide an overview of the local setting relating to Aboriginal cultural heritage based on reviews of local databases, previous studies and preliminary review and assessment of local land features. A detailed assessment will be undertaken as part of the EIS.

Native Title

A search of the spatial data on the Native Title Tribunal's Native Title Vision website identified that the Project Area is not subject to any registered Native Title claims.

Aboriginal Site Records

A search of the Aboriginal Heritage Information Management System (AHIMS) database was conducted for the Project Area and surrounds and identified a number of previously recorded Aboriginal sites in the local area, including areas of potential archaeological deposit (PAD – as identified in **Figure 6.3**).

Local Features

The archaeological potential of the Project Area has been affected by past agricultural land uses including clearing and ground disturbance such as cultivation, however archaeological potential remains and therefore an archaeological survey will be completed for the CCOP.

6.2.8.1 Potential Impacts

The CCOP will result in additional ground disturbance associated with the construction and operation of STSFX, SWS, road realignments, infrastructure and ongoing mining operations and will result in impacts on some known sites (refer to **Figure 6.3**). Further sites are also likely to be identified within the Project Area as a result of the archaeological survey being undertaken for the EIS assessment and there is the potential that some of these sites may be affected.

The extent and significance of impacts will be determined following the proposed assessment approach nominated in **Section 6.2.7.2** and in consultation with the RAPs for the CCOP.

6.2.8.2 Assessment Approach

A detailed Aboriginal Cultural Heritage Assessment (ACHA) is being undertaken for the CCOP considering the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011), Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010), and Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010).

The ACHA will include:

- Consultation with the RAPs, including consultation to identify the cultural heritage values in the Project Area and surrounds.
- Survey of the Project Area.
- Identification and assessment of the significance of the Project Area and the sites it contains.
- An assessment of likely harm to Aboriginal cultural value as a result of the CCOP.
- Identification of management strategies to avoid harm and where it cannot be avoided, to minimise or mitigate harm.

The ACHA will be prepared with detailed input from Knowledge Holder groups and in consultation with the RAPs.

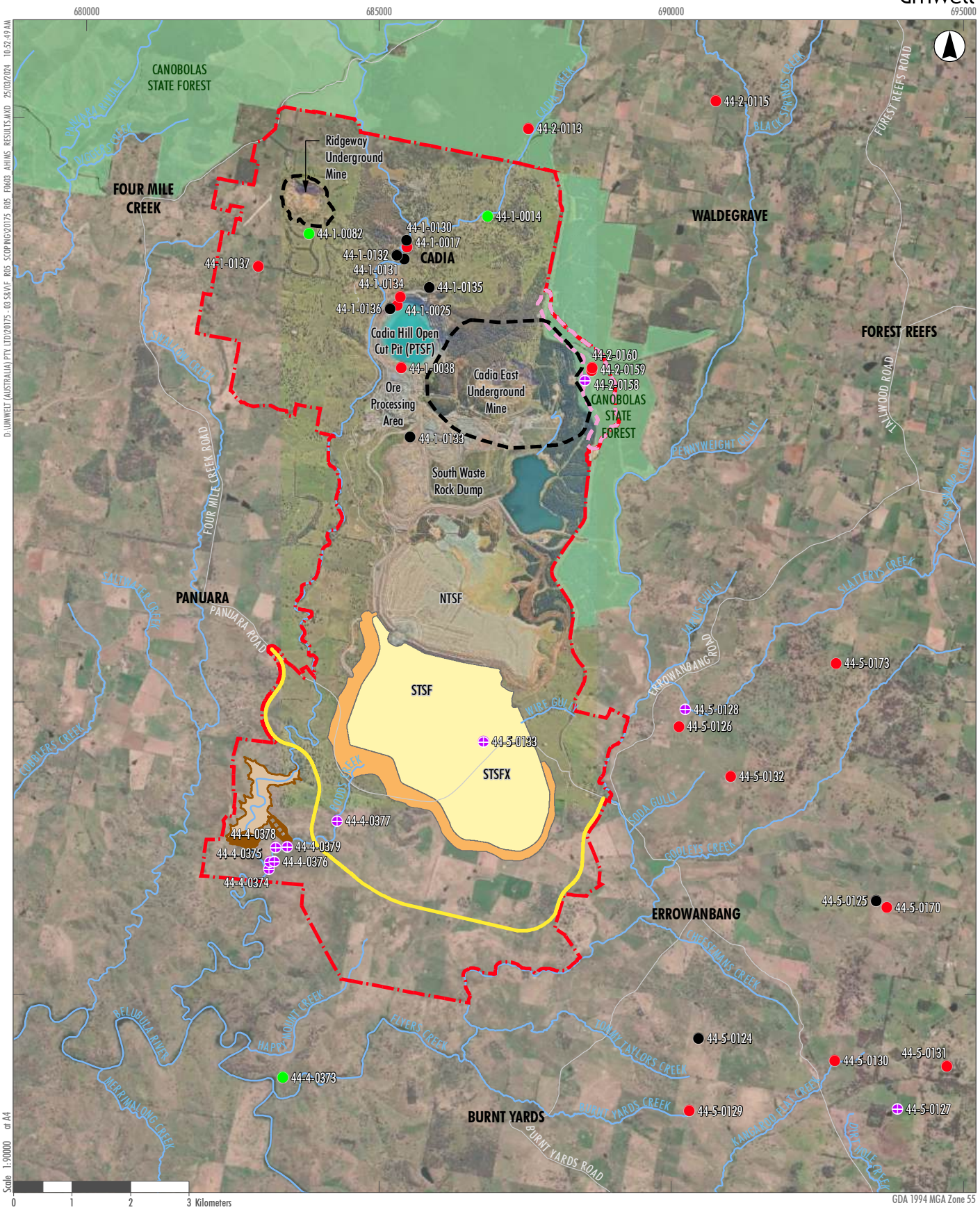
6.2.9 Heritage – Historic

Historic heritage is commonly used to describe heritage that is not Aboriginal heritage (although many historical heritage places have Aboriginal associations and values) and can include buildings, structures, archaeological sites/relics, works (roads, bridges etc.), precincts/conservation areas, rural landscapes and movable items.

Historic heritage at Cadia is managed in accordance with the Cadia's *Historic Heritage Management Plan*.

A search of relevant historical heritage databases, including the relevant local environmental plans (LEPs), the State Heritage Register (SHR), the Commonwealth Heritage List (CHL) and the National Heritage List (NHL) has been undertaken as part of the scoping phase. Other heritage items (listed items) in the vicinity of the CCOP include state and locally listed heritage items. The results of these searches are summarised in **Table 6.3**. Known heritage items are shown in relation to the Project Area in **Figure 6.4**.

A detailed assessment will be undertaken as part of the EIS.



Legend

- CCOP Project Area
- Cadia Road Realignment Study Area
- Indicative Subsidence Zone of Influence
- Indicative Panuara Road Realignment
- Indicative South Water Storage Inundation Area and Access Road

Indicative Southern Tailings Storage Facility Extension (STSFX)

- Proposed Final Tailings
- Proposed Hydrocycloned Sand Embankment

AHIMS Sites

- Artefact Site
- Isolated Artefact
- Modified Tree (Carved or Scarred)
- PAD Site

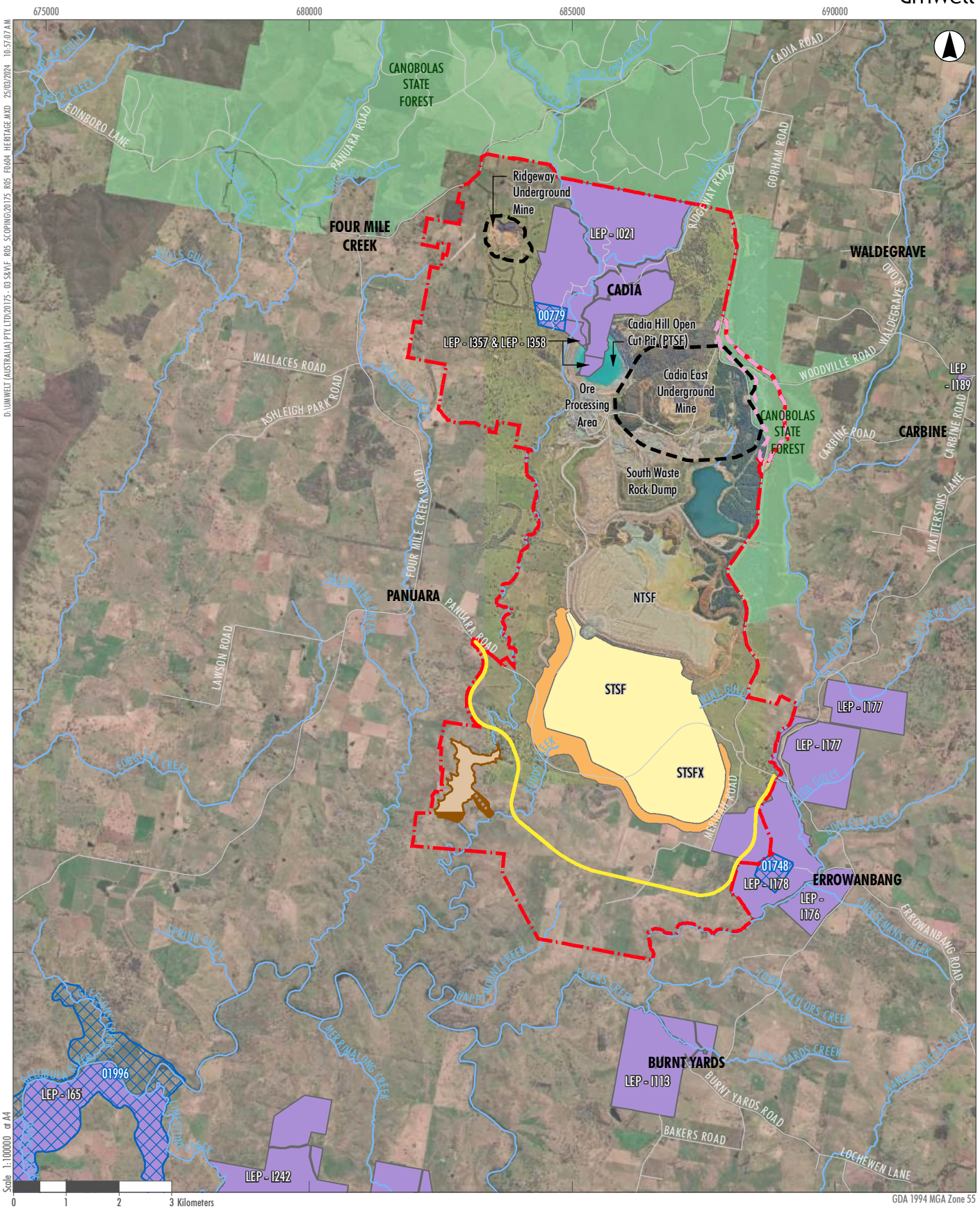
- State Forest
- Road
- Creek/River

FIGURE 6.3

Aboriginal Heritage of the Local Setting

Image Source: ESRI Basemap, Newmont (2023) Data source: DSFI (2022), Newmont (2023)

Cadia Document Number: 730-17062-EN-DDG-2020



Legend

- CCOP Project Area
- Cadia Road Realignment Study Area
- Indicative Subsidence Zone of Influence
- Indicative Panuara Road Realignment
- Indicative South Water Storage Inundation Area and Access Road

Indicative Southern Tailings Storage Facility Extension (STSFX)

- Proposed Final Tailings
- Proposed Hydrocycloned Sand Embankment

(SHR) Heritage

- (SHR) Heritage

(LEP Heritage) - Environmental Planning Instrument

- Item - General

- State Forest
- Road
- Creek/River

FIGURE 6.4

Historic Heritage of the Local Setting

Table 6.3 Listed Heritage Items

Listing Type	Listing Name	Listing ID	Presence within the Project Area
Locally Listed	Burnt Yards Mining Area	Item ID I113	No
	Errowanbang: homestead, outbuildings, garden and woolshed	Item ID I176	No
	Flyers Creek Mining Area	Item ID I177	No
	Old Errowanbang: homestead and woolshed	Item ID I178	Yes (STSFX and Road Realignment avoids the critical infrastructure)
	Cadia Engine House	Item ID I021 and Item ID I357 / I358	Yes (within existing Cadia Mining Area)
	Cliefden Caves	Item ID I65	No
State Listed	Old Errowanbang Woolshed	SHR ID 01748	No
	Cliefden Caves Area Natural and Cultural Landscape	SHR ID 01996	No
	Cadia Engine House and Surrounds	SHR ID 00779	Yes (within existing Cadia Mining Area)

As identified in **Table 6.3**,The Cadia Engine House is located within the approved Cadia mine site. This site relates to the history of mining at the site and will not be affected by the CCOP.

It is also noted that the locally listed site of the Old Errowanbang homestead and woolshed (Site I178) includes landholdings associated with original property boundaries, whereas the state listing (SHR ID 01748) restricts the area to the infrastructure of heritage significance. The portion of the locally listed Old Errowanbang site includes landholdings associated with the Meribah property purchased by Cadia in 2021.

In addition to the listed sites (refer to **Table 6.3**), a site identified as the likely burial of receptacles containing the ashes of former owners of the land has been identified within the Project Area. Ground penetrating radar investigations have been undertaken and support this conclusion. Genealogical investigations are continuing to inform the appropriate management of the receptacles.

6.2.9.1 Potential Impacts

The potential impacts of the CCOP on historical heritage items will be considered as part of the EIS. While noting the Project Area includes areas associated with locally and state listed sites, these are either already contained within the approved Cadia mine site (SHR ID 00779/Local Item IDs I021, ID I357 and I358) or are associated with the larger landholding of a site (Local Item I178). Considering this, the potential impacts identified from a historical heritage perspective are:

- Indirect impacts (e.g. change to the visual catchment) to the state listed Old Errowanbang Woolshed.
- Direct or indirect (e.g. visual) impacts to as yet unidentified (unlisted) items/elements of potential heritage significance, including the potential burial site of receptacles, as outlined in **Section 6.2.8**.

- Further heritage survey of the Project Area is being undertaken as part of the EIS and it is possible that further (unlisted) heritage sites may be identified.

6.2.9.2 Assessment Approach

A Historic Heritage Impact Assessment (HHIA) will be completed for the CCOP in consideration of relevant guidelines including:

- Assessing historical importance: A guide to State Heritage Register Criterion A (NSW Heritage Office 2006) and Assessing historical association: A guide to State Heritage Register Criterion B, Heritage Information Series (NSW Heritage Office 2000)
- Assessing heritage significance (NSW Heritage Council 2001) and assessing significance for historical archaeological sites and 'relics' (NSW Heritage Council 2009)
- Statements of heritage impact (NSW Heritage Office 2002)
- Burra Charter (Australia International Council on Monuments and Sites 2013).

The HHIA will include:

- A review of existing archaeological, historical and heritage knowledge applicable to the Project Area.
- Field survey of the Project Area to identify and further investigate sites which may be of historical archaeological significance/heritage value.
- An assessment of the significance of any identified sites in the Project Area, according to established significance assessment criteria.
- An assessment of the impact of the CCOP on historical heritage values.
- Identification of mitigation options that could be used to avoid, minimise, or mitigate direct or indirect heritage impacts associated with the CCOP.

6.2.10 Access – Traffic and Transport

The consideration of traffic and transport includes potential impacts on traffic, road safety, road condition, parking and access, and rail traffic needs and impacts. A detailed assessment will be undertaken as part of the EIS which will include cumulative impacts associated with the CCOP.

6.2.10.1 Potential Impacts

The potential impacts from the CCOP on traffic and transportation are primarily associated with the traffic generation associated with the ongoing mining operations and the realignment of sections of Panuara Road and Cadia Road (as described in **Section 3.5**). The key potential impacts include:

- Changed traffic conditions during construction of the road realignments.
- Modified road conditions and changes to travel times and access arrangements as a result of the realignments.
- Impacts of additional vehicle movements during periods of construction.
- Ongoing operational traffic for the extended approval life of the Cadia operations.

- Ongoing rail traffic for the extended approval life of the Cadia operations.

6.2.10.2 Assessment Approach

A detailed Traffic and Transport Impact Assessment (TTIA) will be completed as part of the EIS in accordance with relevant assessment guidelines, and will include the following:

- A detailed summary of the local road network, road use, traffic volumes and flows, intersection performance, accident history and any other relevant factors that influence traffic and transport conditions.
- An assessment of the traffic and transport impacts during both the construction and operational phases of the CCOP including:
    - Level of service on the road network.
    - Impacts of the CCOP on the road network and travel times of the proposed realignment option.
    - Condition of the roads related to the CCOP including capacity of the network.
    - Potential road safety issues.
    - Potential cumulative impacts associated with any other approved projects in the area.
    - Identification of any impact mitigation measures required.
    - Assess the likely impacts of the development, and provide recommendations to minimise impacts on the capacity, condition, safety and efficiency of the network.

The CCOP does not propose a change to the current method of transport of concentrate on the rail network, which will continue over the CCOP approval period.

An independent peer review of the TTIA will also be undertaken as part of the EIS.

6.2.11 Land

The key matters for consideration within the land category include:

- Topography and landforms.
- Soils and land capability.
- Biophysical Strategic Agricultural Land.
- Agriculture.

As described in **Section 2.3.3**, the Project Area is located within the Cadia Valley which is characterised by rolling hills which form ridgelines to the east and west of Cadiangullong Creek. The topography of the Project Area is variable, consisting mostly of undulating to rolling hills with areas of gently undulating to undulating rises with broad flats and steep hills in discrete areas. Elevations within the Project Area vary from 500 to 1,050 m AHD, falling away to the west and south towards the Belubula River.

A detailed assessment will be undertaken as part of the EIS which will include cumulative impacts associated with the CCOP.

Soils and Land Capability / Biophysical Strategic Agricultural Land

The Project Area mostly falls within the Panuara soil landscape. Small portions of the Project Area also fall within the Vittoria-Blayney, Spring Hill, Razorback and Quarry soil landscapes (refer to **Figure 2.4**). Land capabilities vary from areas of Class 2 and 3 on the Panuara Soil Landscape in the STSFX area to Class 5 or lower on the current Cadia mine site.

An assessment has been completed over the CCOP Project Area which has verified approximately 470 ha of BSAL in the potential additional disturbance area (refer to **Figure 2.4**). Impact to some areas of BSAL is considered unavoidable based on the location and extent of the BSAL.

Agriculture

Cadia owns the land in the Project Area to be developed for the STSFX and SWS. This land is used primarily for grazing (cattle and sheep) and some areas for rotational cropping. Land surrounding the CCOP is mostly used for agriculture (grazing and cropping), with forestry (logging) another major land use in the immediate area.

6.2.11.1 Potential Impacts

The CCOP will result in some areas of higher land capability and BSAL being removed from agricultural production.

Potential impacts associated with this change in land use include:

- A reduction in the area of land available for agriculture and a reduction of agricultural production from Cadia owned land in the local area.
- Impacts on the quality and productivity of the soil stripped in advance of CCOP construction and operational works including for STSFX and SWS and stockpiled for future use in rehabilitation of Cadia.
- Change in local landform in the STSFX area.

6.2.11.2 Assessment Approach

A detailed Soil, Land Capability and Agricultural Resources Impact Assessment (SLCARIA) including an Agricultural Impact Statement (AIS) will be prepared for the CCOP considering the *Agricultural Impact Statement technical notes – A companion to the Agricultural Impact Statement guideline* (DPI, 2013), *Guidelines for surveying Soil and Land Resources* (NCST, 2008), *Australian Soil and Land Survey Field Handbook, 3rd edition* (NCST, 2009), and *The land and soil capability assessment scheme: second approximation – A general rural land evaluation system for NSW* (OEH 2012).

On the basis of verified BSAL occurring within the proposed new mining lease areas a referral to the Gateway Panel and application for Gateway Certificate is being made concurrent to the request for SEARs.

The SLCARIA will characterise the soils and agricultural features to be affected by the CCOP as well as quantify agricultural productivity of the Project Area. The assessment will also identify management recommendations for the soils to be stripped and stored on the mine site for future use in rehabilitation. The SLCARIA will include an assessment of the impact of the CCOP on agricultural productivity and identify recommended management and mitigation measures.

6.2.12 Geochemistry and Acid Mine Drainage

Waste rock that has previously been excavated from the Cadia Hill Open Cut Pit is stored in two waste rock dumps (WRDs) on the Cadia Site referred to as the North WRD and South WRD. Some of the rock in these WRDs is classified as Potentially Acid Forming (PAF) and has been encapsulated to ensure exposure to air and water is limited to prevent acid generation from these structures. Non Acid Forming (NAF) material has been used in the construction of TSF embankments and other earth structures on the Cadia site.

The construction of the STSFX will require the use of materials excavated from the proposed disturbance footprint or recovered from the WRDs to create starter embankments and the separated coarse (sand) component of the tailings to progressively lift the STSFX structure over the term of the CCOP. The TSFs will be filled with tailings generated from the ongoing mining and processing operations. The acid generating potential of the tailings material at Cadia is well understood following many years of operation and geological study of the target mining areas. The historical results demonstrate that the material is NAF and analysis of various factions of the tailings material show that each size fraction is also NAF.

A detailed assessment will be undertaken as part of the EIS.

6.2.12.1 Potential Impacts

Geochemical impacts associated with the CCOP could include potential impacts on surrounding land and waters associated with the materials used to construct the embankments of the STSFX and SWS and the deposition of tailings, should any non-suitable materials be used. This risk will be managed through appropriate material selection and design controls which will be informed by geochemical studies.

Another risk that requires effective management is the potential for poor rehabilitation outcomes as a consequence of the geochemical properties of material emplaced in the TSFs or capping materials used for TSF closure. As discussed in **Section 6.2.4**, dust emissions associated with the construction and operation of the TSFs will be assessed as part of the EIS, as well as the potential risk of emissions associated with the geochemical properties of the tailings.

Existing WRDs containing potentially acid forming materials in the Cadia East mining area may require relocation due to the extended subsidence zone predicted as part of the CCOP. This will be considered further in the EIS.

6.2.12.2 Assessment Approach

A detailed Geochemical Impact Assessment (GIA) will be completed as part of the EIS to assess the potential impacts associated with geochemical properties of material to be handled and tailings to be deposited as part of the CCOP and the required management controls to mitigate these risks.

The GIA will include a review of available data on local geology, tailings materials and *in situ* rock materials and a sampling and analysis program to fill in any gaps in geochemical understanding of key materials. Following the completion of the sampling and laboratory analyses program, the GIA will be completed in accordance with relevant guidelines and will include:

- characterisation of the geological and geochemical properties of materials to be handled as part of the CCOP
- identification of areas of potential risk where geochemical impact mitigation/control measures may be necessary

- recommendations for management/controls for any potential geochemical risks
- recommendations for final treatment of the TSF for the purpose of rehabilitation and closure (as relevant to the potential for adverse geochemical impacts on the environment)
- identification and assessment of any potential post-mining geochemical considerations following rehabilitation and mine closure.

6.2.13 Human Health and Public Safety

As discussed in **Section 6.2.3**, the health and safety of people is not negotiable for Newmont and the CCOP will include appropriate measures as part of the design to appropriately manage any potential safety risks.

The CCOP's potential impacts on public safety include:

- Changed road conditions associated with the Panuara Road and Cadia Road realignments.
- Increased traffic movements during construction phases.
- Potential health risks associated with changes to or increases in air emissions and other environmental and social aspects.

These potential safety impacts associated with roads and traffic are well understood and can be managed to acceptable levels through standard and project specific management controls.

Potential health and safety impacts will be considered in the relevant technical studies prepared for the EIS following relevant guidelines. Cadia has also engaged a specialist to undertake a Human Health Risk Assessment (HHRA) to consider the CCOP for potential hazards and risks to human health and to advise on any necessary measures to mitigate impacts. The findings of this assessment will be included in the EIS.

The HHRA will also present the predicted health impacts and their significance including whether the individual environmental, social, cultural or economic impacts have positive or negative effects on health as well as strategies for improving/optimising potential health outcomes for the Project to inform consideration of management options to be included in the CCOP. The findings of this assessment will be included in the EIS.

An independent peer review of the HHRA will also be undertaken as part of the EIS.

6.2.14 Economic

The key industries of employment across the Central West Region broadly are health care and social services, retail trade, and agriculture, forestry and fishing. These key industries have seen a gradual shift over the duration of Cadia's operation from a primary focus on agriculture, forestry, and fishing to more service-based industries such as health care and education and training.

Cadia is a significant contributor to the local and regional economy. There has been a large year-on-year increase in contribution as measured by key economic indicators, such as employment, household income and overall benefits received by regional households from increased economic activity attributed to Cadia's operations.

Cadia supports a range of industries both directly and indirectly. More than 1800 people are directly employed at Cadia's operations, with a 2020 socio-economic study indicating the mine generates over

3,200 direct and indirect jobs. The 2020 study further estimated regional household income derived from the site at $500 million over the life of the mine. Around one third of the mine's service spending, or some $217 million in 2021-22, goes directly to paying the salaries and wages of Cadia's workforce.

In 2022-23, Cadia paid $86 million in royalties to support better services and infrastructure across the state and more than $6 million in rates to Blayney and Cabonne Shire Councils.

A detailed assessment will be undertaken as part of the EIS which will include cumulative impacts associated with the CCOP.

6.2.14.1 Potential Impacts

The potential impacts of the CCOP on the local, regional and NSW economy are as follows:

- Improved profitability of the Cadia mining operations with more efficient operations and ongoing production of ore.
- Ongoing employment and increased job security for the existing workforce and suppliers, with ongoing flow-on benefits to the local and regional economy.
- Potential increase in demand for construction and operational workers from local communities.
- Potential increased pressure on local housing, infrastructure and services associated with any temporary increase in the workforce (particularly if CCOP construction coincides with other significant construction projects within the local area or region).

The potential impacts of the CCOP on property values has also been raised as a perceived impact through local community engagement.

6.2.14.2 Assessment Approach

An Economic Impact Assessment will be undertaken for the CCOP with consideration of the *Guidelines for Economic Assessment of Mining and Coal Seam Gas Proposals* (NSW Government 2015) and *Technical Notes Supporting the Economic Guidelines* (NSW Government 2018). This will include a detailed assessment of the economic impacts of the CCOP on a regional and State scale, including consideration of the benefits and costs associated with the CCOP.

The Economic Impact Assessment will include:

- A cost benefit analysis that measures the net benefits of the CCOP to the State.
- A Local Effects Analysis that measures the net benefits of the CCOP to the local community.
- A regional economic impact assessment.
- An assessment of the significance of the resource.

An independent peer review of the economic assessment will also be undertaken as part of the EIS.

6.2.15 Hazards and Risks

The EIS will include a standard assessment of the following matters as they relate to hazards and risks.

6.2.15.1 Bushfire

The CCOP is not considered to materially increase bushfire risk with the proposed CCOP infrastructure to be designed to meet relevant bushfire protection standards.

A bushfire threat assessment will be undertaken following the requirements of the *Planning for Bushfire Protection* (PBP) 2019. The information to be included in the EIS will be as follows:

- A review of existing bushfire management measures currently implemented at Cadia.
- An assessment of bushfire threat applicable to the Project Area follow PBP 2019.
- An assessment of proposed infrastructure to demonstrate appropriate asset protection zones can be implemented.
- Identification of applicable management measures to be applied to the CCOP.
- Consultation with the Rural Fire Service (RFS) will also be undertaken during the preparation of the EIS.

6.2.15.2 Hazardous Materials

The CCOP does not propose the use of any additional hazardous or dangerous goods which would require the preparation of a Preliminary Hazard Analysis, however a hazard analysis will be undertaken in accordance with *State Environmental Planning Policy (Resilience and Hazards) 2021*. This hazard analysis will incorporate a Level 1 Qualitative Risk Analysis and Level 2 Semi-quantitative Risk Analysis.

The hazard analysis will include the following:

- Screening of preliminary risks for all hazardous materials and dangerous goods to be stored and transported to/from the CCOP.
- Classifying and prioritising risks, and estimating societal risk, in accordance with the NSW Multi-level Risk Assessment Guideline (DPI, 2011).
- Analysing consequence and frequency for hazard scenarios identified as requiring further assessment in the qualitative risk assessment undertaken in accordance with the NSW Risk Criteria for Land Use Safety P*lanning* (Department of Planning, 2011).

6.2.15.3 Dams Safety

Dams Safety NSW 'declares' dams that have a potential to endanger downstream life, cause major damage or loss to infrastructure, the environment or have major health and social impacts. Tailings storage facilities are a class of dam which may be declared.

On the basis that the dam walls of STSFX and SWS will likely exceed 15 m in height, both meet the classification for a declared dam. Should the dams be declared by Dams Safety NSW, Cadia must comply with the dam safety legislation in relation to the design and management of these dams.

In accordance with the Dam Safety Regulation, the engineering controls on the design and performance of Declared Dams will be maintained by an independent review of:

- Consequence Category assessments.
- Design for all High and Extreme Consequence Category dams.

- Safety reviews (required nominally every 15 years).

The EIS will provide a summary of the key measures to manage dam safety that will be incorporated as part of the CCOP to appropriately manage this risk.

6.2.15.4 Land Contamination

There is no known land contamination or areas of identified potential contamination within the proposed operational areas, so no further assessment of contamination is proposed.

6.2.15.5 Land Movement

STSFX and the South Water Storage will be designed, constructed and operated to comply with declared dam requirements of the Dam Safety Regulation to appropriately manage risks associated with slumping or other land movement.

6.2.15.6 Mine Subsidence

The underground mining method at Cadia induces subsidence above the mining area which is exhibited as a void on the surface that will ultimately form a pit lake. Subsidence zones have been defined above Cadia East and Ridgeway and are currently being monitored as part of current operations.

Based on the known ore reserves of the Cadia East and Ridgeway mining areas, CCOP is proposing an extension to mining operations beyond the term of the existing Project Approval (PA 06_0295). Updated preliminary subsidence modelling has been completed for the CCOP resulting in an increased subsidence zone above the Cadia East mining area (refer to **Figure 3.3**).

While further engineering work is ongoing to finalise the extent of subsidence, **Figure 3.3** identifies the approximate area of subsidence. The modelling indicates that subsidence will extend outside the currently approved extent of subsidence, however, is unlikely to significantly change impacts on future land use beyond that current approved. Impacts of the subsidence on environmental matters such as hydrogeology, hydrology, biodiversity and heritage will be assessed as part of the EIS.

The proposed management of subsidence as part of CCOP is proposed to continue to be consistent with that currently approved, including the treatment and management of the subsidence voids as part of mine closure.

6.2.15.7 Waste

The waste streams associated with CCOP are expected to be generally consistent with those currently generated by the Cadia operations. The EIS will include an assessment of issues relating to waste during the construction, operation and closure of the CCOP and will classify and quantify the likely waste streams to be generated. The EIS will also describe measures to manage, reuse, recycle and dispose of this waste in accordance with relevant guidelines.

6.3 Matters Requiring no Further Assessment in the EIS

6.3.1 Microclimate

The changes in terrain associated with the CCOP has the theoretical potential to affect the climate in the immediate vicinity of emplacement areas through changes in shading and wind flow. These impacts will be very localised and restricted to areas close to STSFX and the SWS wall. Any microclimate impacts will be limited to the Project Area and would be of a small magnitude. These impacts are not considered to warrant further assessment as part of the EIS.

6.3.2 Offsite Parking

The CCOP will provide sufficient parking spaces for the operational and construction workforce at all stages of the CCOP. Parking areas will be located off public roads and in close proximity to mine infrastructure areas and construction areas. Therefore, no further assessment of offsite parking is proposed as part of the EIS.

7 ABBREVIATIONS

Abbreviation	Description
ABS	Australian Bureau of Statistics
ACHA	Aboriginal Cultural Heritage Assessment
ACHMP	Aboriginal Cultural Heritage Management Plan
AEIA	Aquatic Ecology Impact Assessment
AHD	Australian Height Datum
AQIA	Air Quality Impact Assessment
BAM	Biodiversity Assessment Method
BC Act	*Biodiversity Conservation Act 2016*
BCS	Biodiversity, Conservation and Science
BCT	Biodiversity Conservation Trust
BDAR	Biodiversity Development Assessment Report
BOM	Bureau of Meteorology
BSAL	Biophysical Strategic Agricultural Land
Bt	Billion tonnes
CA	Conservation Agreement
Cadia	Cadia Valley Operations
CCC	Community Consultative Committee
CCOP	Cadia Continued Operations Project
CEEC	Critically Endangered Ecological Community
CHL	Commonwealth Heritage List
CHPL	Cadia Holdings Proprietary Limited
CIC	Critical Industry Cluster
CLM Act	*Contaminated Land Management Act 1997*
COS	Coarse Ore Stockpile
Crown Land Act	*Crown Land Management Act 2016*
DA	Development Application
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DECC	Department of Climate Change
dB(A)	A-weighted noise or sound power level in decibels
DPE	Department of Planning and Environment [former]
DPHI	Department of Planning, Housing and Infrastructure [current]
DPIE	Department of Planning, Industry and Environment [former]
DS Act	*Dam Safety Act*
ECCO	Environmentally Concerned Citizens of Orange
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EL	Exploration License

Abbreviation	Description
EMS	Environmental Management Strategy
EP&A Act	*NSW Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development
GDE	Groundwater Dependent Ecosystem
GHG	Greenhouse Gas
GHGEA	Greenhouse Gas and Energy Assessment
GIA	Geochemical Impact Assessment
GIS	Geographic Information System
GRP	Gross Regional Product
GWIA	Groundwater Impact Assessment
Ha	Hectares
HHA	Historical Heritage Assessment
ICNG	Interim Construction Noise Guideline
IPC	Independent Planning Commission
km	Kilometre
kV	Kilovolt
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
LOM	Life Of Mine
LVIA	Landscape and Visual Impact Assessment
mAHD	Australian Height Datum
MEG	Department of Regional NSW
m	Metres
ML	Mining Lease
MLA	Mining Lease Application
MNES	Matters of National Environmental Significance
MOP	Mining Operations Plan
Mt	Million tonnes
Mtpa	Million tonnes per annum
MW	Megawatts
NAF	Non Acid Forming
NHL	National Heritage List
NOx	Nitrous Oxides
NP&W Act	*National Parks and Wildlife Act*
NPfI	*Noise Policy for Industry 2017*

Abbreviation	Description
NRAR	Natural Resources Access Regulator
NSW	New South Wales
NSW EPA	NSW Environment Protection Authority
NT Act	*Native Title Act*
NTSF	North Tailings Storage Facility
NVIA	Noise and Vibration Impact Assessment
OLALC	Orange Local Aboriginal Land Council
PA	Project Approval
PAD	Potential Archaeological Deposit
PAF	Potentially Acid Forming
PBP	*Planning for Bushfire Protection 2019*
PC	Panel Cave
PCT	Plant Community Type
PM	Particulate Matter
POEO Act	*Protection of the Environment Operations Act 1997*
PTSF	Cadia Hill Open Cut Pit Tailings Storage Facility
RFS	NSW Rural Fire Service
RL	Relative Level
Roads Act	*Roads Act 1993*
SLCARIA	Soil, Land Capability and Agricultural Resources Impact Assessment
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SES	Stakeholder Engagement Strategy
SHR	State Heritage Register
SIA	Social Impact Assessment
SISR	Social Impact Scoping Report
STSF	South Tailings Storage Facility
STSFX	South Tailings Storage Facility Extension
SSD	State Significant Development
SWIA	Surface Water Impact Assessment
SWS	South Water Storage
TEC	Threatened Ecological Community
TfNSW	Transport for NSW
TSP	Total suspended particulates
TTIA	Traffic and Transport Impact Assessment
Umwelt	Umwelt (Australia) Pty Ltd
VLAMP	Voluntary Land Acquisition and Mitigation Policy
VPA	Voluntary Planning Agreement

Abbreviation	Description
WAL	Water Access Licence
WM Act	*Water Management Act 2000*
WSP	Water Sharing Plan

8 REFERENCES

Bureau of Meteorology (2018). *The National Groundwater Dependent Ecosystems (GDE) Atlas* (The GDE Atlas) (BOM, 2018).

Bureau of Meteorology (2021). <http://www.bom.gov.au/climate/data/>.

Conte N (2022) *Mapped: The 10 Largest Gold Mines in the World, by Production*, accessed 18 January 2024, <https://www.visualcapitalist.com>.

Department of Environment and Climate Change (DECC) (2009). *Interim Construction Noise Guideline.*

Department of Planning and Environment (2022) *Central West and Orana Regional Plan 2041* (DPE, 2022).

Department of Planning and Environment (2022) Minimum Groundwater Modelling Requirements for SSD/SSI Projects (DPE, 2022a).

Department of Planning and Environment (2022) Guidelines for Groundwater Documentation for SSD/SSI Projects (DPE, 2022b).

Department of Planning, Industry and Environment (2022) Undertaking Engagement Guidelines for State Significant Projects (DPIE, 2022a).

Department of Planning, Industry and Environment (2021). *State significant development guidelines – preparing a scoping report* (Appendix A to the state significant development guidelines), November 2021 (DPIE, 2021).

Department of Planning, Industry and Environment (2021). *Cumulative Impact Assessment Guidelines for State Significant Projects*, November 2021 (DPIE, 2021).

Department of Planning, Industry and Environment (2023). *Social Impact Assessment Guideline for State Significant Projects* (DPIE, 2023a).

Department of Planning, Industry and Environment (2023). *Technical Supplement, Social Impact Assessment Guideline for State Significant Projects* (DPIE, 2023b).

Newcrest (2020). Cadia Water Management Plan (WMP).

NSW Government (2018). Voluntary Land Acquisition and Mitigation Policy.

Office of Environment & Heritage and the Office of Agricultural Sustainability & Food Security (OEH / OASFS) (2013). Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land.

SAGE Environmental Services (2023). Cadia Valley Operations Human Health Risk Assessment.

Umwelt (2020). Cadia Valley Operations Socio Economic Study.

Appendix A – Scoping Summary

umwelt
Environmental & Social Consultants

APPENDIX A

Scoping Summary Table

1.0 Scoping Summary Table

Matter	Cumulative Impact Assessment	Engagement	Relevant government plans, policies, and guidelines	Scoping report reference
Detailed Assessment				
Social – Community and Surroundings: • Way of life • Health and wellbeing • Community • Surroundings • Accessibility • Livelihoods • Culture • Decision Making Systems.	Yes	Specific	• *Social Impact Assessment Guidelines for State Significant Projects* (DPIE, 2023) • *Technical Supplement, Social Impact Assessment Guideline for State Significant Projects*, DPIE, 2021) • *SIA Scoping Worksheet. Social Impact Assessment Guideline for State Significant Projects*. (DPE, 2021) • *Undertaking Engagement Guidelines for State Significant Projects* (DPIE, 2022) • *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2021)	**Section 6.2.1**
Water – hydrology (including flooding) / water quality / water availability	Yes	Specific	• *IESC Information guidelines* (2024) • *The Australian and New Zealand Guideline for Fresh and Marine Water Quality* (ANZG 2018) • *The NSW Water Quality and River Flow Objectives* (DECCW 2006) • *ANZECC Guidelines and Water Quality Objectives in NSW* (DEC 2006) • *The Australian Guidelines for Water Quality and Water Quality Objectives in NSW* (DEC 2000) • *Approved Methods for the Sampling and Analysis of Water Pollutants in NSW* (EPA, 2022) • *Managing Urban Stormwater: Soils and Construction Volume 1* (Blue Book: Landcom 2004) • *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2021)	**Section 6.2.2**

Matter	Cumulative Impact Assessment	Engagement	Relevant government plans, policies, and guidelines	Scoping report reference

Water – hydrogeology (groundwater) / water quality / water availability	Yes	Specific	• *Australian Groundwater Modelling Guidelines* (Commonwealth of Australia, 2012)
			• *NSW Aquifer Interference Policy* (DPI Water 2012)
			• *NSW Water Sharing Plans:*
			  ○ *Lachlan Unregulated Rivers Alluvial Water Sources 2012, and*
			  ○ *NSW Murray Darling Fractured Rock Groundwater Source 2020*
			• *Australian and New Zealand guidelines for fresh and marine water quality (Australian New Zealand Guidelines 2018)Risk assessment guidelines for groundwater dependent ecosystems* (DPI Water 2012).
			• *Risk Assessment Guidelines for Groundwater Dependent Ecosystems* (NSW Office of Water, 2012)
			• *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2021)
				Section 6.2.3

Air – particulate matter / atmospheric emissions	Yes	Specific	• *The Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA 2016) • *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2021)	**Section 6.2.4**
Air – gases (greenhouse gases)	Yes	General	• *National Greenhouse Accounts Factors* (DCCEEW, 2023), • *National Greenhouse and Energy Reporting Scheme*(administered by Australian Government Clean Energy Regulator), and • *Australia Greenhouse Emissions Information System* (administered by the Australian Government Department of Industry, Science, Energy and Resources). • *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2021)	**Section 6.2.4**

Matter	Cumulative Impact Assessment	Engagement	Relevant government plans, policies, and guidelines	Scoping report reference
Amenity – Noise and vibration	Yes	Specific	• *Construction Noise Strategy* (Transport for NSW, 2016) • *NSW Voluntary Land Acquisition and Mitigation Policy* (NSW Government, 2018) • *Interim Construction Noise Guideline* (Department of Environment, Climate Change and Water, 2009) • *Noise Policy for Industry* (Environment Protection Authority, 2017) • *NSW Road Noise Policy* (Environment Protection Authority, 2011) • *Assessing Vibration: A Technical Guideline* (Department of Environment and Conservation, 2006) • *Environmental Noise Management Assessing Vibration: A Technical Guideline* (Department of Environment and Conservation, 2006) • *Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration* (Australian and New Zealand Environment Council, 1990) • *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2021)	**Section 6.2.5**
Amenity – Visual	Yes	Specific	• *Guideline for Landscape Character and Visual Impact Assessment* (Practice Note EIA-N04) (Transport for NSW, 20223) • *The Guidance for Landscape and Visual Impact Assessment, Third Edition* (Landscape Institute and Institute of Environmental Management & Assessment, UK, 2013) • *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2021)	**Section 6.2.6**
Biodiversity – Terrestrial flora and fauna / Aquatic ecology / Threatened species and ecological communities / Wildlife corridors / Groundwater dependent ecosystems / Biosecurity	No	Specific	• *Commonwealth EPBC 1.1 Significant Impact Guidelines – Matters of National Environmental Significance (Commonwealth of Australia, 2013)* • *Commonwealth EPBC 1.2 Significant Impact Guidelines – Actions on, or impacting upon, Commonwealth Land and Actions by Commonwealth Agencies (Commonwealth of Australia, 2013)* • *Nationally Threatened Ecological Communities and Threatened Species Guidelines (various) (Commonwealth Department of Agriculture, Environment and Water – DCCEEW, 2013)* • *Survey Guidelines for Nationally Threatened Species (various) (DCCEEW, 2011)*	**Section 6.2.7**

Matter	Cumulative Impact Assessment	Engagement	Relevant government plans, policies, and guidelines	Scoping report reference
Heritage - Aboriginal Cultural Heritage	No	Specific	• *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011) • *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010) • *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010) • *Burra Charter* (Australia International Council on Monuments and Sites 2013), and • *NSW Skeletal Remains: Guidelines for Management of Human Remains* (Heritage Office, 1998)	**Section 6.2.8**
Heritage - Non-Aboriginal Historic Heritage	No	Specific	• *Commonwealth EPBC 1.1 Significant Impact Guidelines – Matters of National Environmental Significance* (Commonwealth of Australia, 2013) • *Commonwealth EPBC 1.2 Significant Impact Guidelines – Actions on, or Impacting upon, Commonwealth Land and Actions by Commonwealth Agencies* (Commonwealth of Australia, 2013) • *NSW Skeletal Remains: Guidelines for Management of Human Remains* (Heritage Office, 1998) • *Criteria for the Assessment of Excavation Directors* (NSW Heritage Council, 2014) • *Historical Archaeology Code of Practice* (NSW Heritage, 2006) • *Assessing historical importance: A guide to State Heritage Register Criterion A* (NSW Heritage Office 2006) • *Assessing historical association: A guide to State Heritage Register Criterion B, Heritage Information Series* (NSW Heritage Office 2000) • *Assessing heritage significance* (DPE 2023) • *Assessing significance for historical archaeological sites and 'relics'* (NSW Heritage Council 2009) • *Guidelines for Preparing a Statement of Heritage Impact* (NSW DPE, 2023) • *Burra Charter* (Australia International Council on Monuments and Sites 2013), • *Cabonne Shire Council Local Environmental Plan 2012* (LEP 2012), and • *Blayney Shire Council Local Environmental Plan* (LEP 2012).	**Section 6.2.9**

Matter	Cumulative Impact Assessment	Engagement	Relevant government plans, policies, and guidelines	Scoping report reference
Access – Traffic and Transport (road & rail network) • Access to property • Traffic and parking • Road infrastructure • Road maintenance • Road safety • Road users • Rail transport	Yes	Specific	• *Guide to Traffic Generating Developments* (Transport for NSW (formerly RTA) 2002) • *Guide to Traffic Management* – Part 3 Traffic Studies and Analysis (Austroads 2020) • *Guide to Road Design* (Austroads 2015) • *Temporary Traffic Management and Road Safety* (Austroads 2019) • *Cabonne Shire Council Local Environmental Plan 2012* • *Blayney Shire Council Local Environmental Plan 2012,* and • *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2021)	**Section 6.2.10**
Land – • Topography • Landforms • Soils & Land capability • Soil and Land Resources • Biophysical Strategic Agricultural Land • Agriculture • Rehabilitation	Yes	Specific	• *Interim Protocol for Site Verification & Mapping of Biophysical Strategic Land* (OEH, 2013*)* • *The land and soil capability assessment scheme, second approximation. A general rural land evaluation system for New South Wales* (NSW OEH 2012) • *Strategic Regional Land Use Policy Guideline for Agricultural Impact Statements* (DPE, 2015) • *Soil and Landscape Issues in Environmental Impact Assessment* (DLWC, 2000) • *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2021)	**Section 6.2.11**
Geochemistry	No	Specific	• *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (Australian and New Zealand Environment Conservation Council, 2000) • *Local Government Salinity Initiative – Introduction to Urban Salinity* (Department of Infrastructure, Planning and Natural Resources, 2006) • *Soil and Landscape Issues in Environmental Impact Assessment* (DPIE, 2000) • *Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Volume 2* (Installation of Services; Waste Landfills; Unsealed Roads; Main Roads; Mines and Quarries) (DECC, 2008)	**Section 6.2.12**
Human Health	Yes	Specific	• *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2021)	**Section 6.2.13**

Matter	Cumulative Impact Assessment	Engagement	Relevant government plans, policies, and guidelines	Scoping report reference
Economic – Costs and Benefits	Yes	General	• *Guidelines for Economic Assessment of Mining and Coal Seam Gas Proposals (NSW Government 2015)*	**Section 6.2.15**
Standard Assessment				
Hazards and Risks - Bushfire	No	General	• *Planning for Bush Fire Protection: A guide for councils, planners, fire authorities and developers* (NSW Rural Fire Service, 2019)	**Section 6.2.15.1**
Hazards and Risks – Dangerous Materials	No	General	• *Storage and Handling of Dangerous Goods: Code of Practice* (SafeWork NSW, 2005)	**Section 6.2.15.2**
Hazards and Risks - Dam Safety	No	Specific	• Refer to Scoping Report	**Section 6.2.15.3**
Hazards and Risks – Subsidence and land movement	No	General	• *EDG17 Guideline for Applications for Subsidence Management Approvals* (NSW Trade and Investment, 2003) • *Subdivision Assessment Policy* (Subsidence Advisory NSW,2018) • *Surface Development Guidelines* (Subsidence Advisory NSW, 2023)	**Section 6.2.15.5** **Section 6.2.15.6**
Hazards and Risks - Waste	No	General	• *Waste Classification Guidelines: Part 1 Classifying Waste* (NSW EPA, 2014)	**Section 6.2.15.8**
Matters requiring no further assessment in EIS				
Hazards and Risks – Land contamination	No	General	• Refer to scoping report	**Section 6.2.15.4**
Land - Microclimate	No	General	• Refer to scoping report	**Section 6.3.1**
Access - Offsite Parking	No	N/A	• Refer to scoping report	**Section 6.3.2**

Appendix B – Social Scoping Report