



Approval

Carmichael Coal Mine and Rail Infrastructure Project, Queensland (EPBC 2010/5736)

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

person to whom the approval is granted	Adani Mining Pty Ltd
proponent's ACN	145 455 205
proposed action	To develop an open cut and underground coal mine, 189 km rail link and associated infrastructure approximately 160 km north west of Clermont in central Queensland [See EPBC Act referral 2010/5736 and approved variations dated 19 April 2012, 9 October 2012 and 24 July 2013].

Approval decision

Controlling Provision	Decision
World Heritage properties (sections 12 & 15A)	Approved
National Heritage places (sections 15B & 15C)	Approved
Wetlands of international importance (sections 16 & 17B)	Approved
Listed threatened species and communities (sections 18 & 18A)	Approved
Listed migratory species (sections 20 & 20A)	Approved
Great Barrier Reef Marine Park (sections 24B & 24C)	Approved
A water resource, in relation to coal seam gas development and large coal mining development (sections 24D & 24E)	Approved

conditions of approval

This approval is subject to the conditions specified below.

expiry date of approval

This approval has effect until 30 June 2090.

Decision-maker

name and position The Hon Greg Hunt MP
Minister for the Environment

signature



date of decision

14 = 10:15

Conditions attached to the approval

1. **The Minister** may determine that a plan, strategy or program approved by the Queensland Government satisfies a plan, strategy or program required under these conditions.

Project area

2. For the purpose of the action, the **approval holder** must not clear vegetation outside the **Project Area** shown at Appendix A unless targeted surveys have demonstrated that **Matters of National Environmental Significance** are unlikely to be impacted.

Groundwater management and monitoring plan

3. At least three months prior to **commencing excavation of the first box cut**, the **approval holder** must submit to the **Minister** for approval a Groundwater Management and Monitoring Plan (GMMP). The GMMP must be informed by the results of the groundwater flow model re-run (condition 23) and contain the following:
 - a) details of a groundwater monitoring network that includes:
 - (i) control monitoring sites
 - (ii) sufficient bores to monitor potential **impacts** on the Great Artesian Basin (GAB) aquifers (whether inside or outside the **Project Area**)
 - (iii) a rationale for the design of the monitoring network with respect to the nature of potential **impacts** and the location and occurrence of **Matters of National Environmental Significance** (whether inside or outside the **Project Area**).
 - b) baseline monitoring data
 - c) details of proposed trigger values for detecting **impacts** on groundwater levels and a description of how and when they will be finalised and subsequently reviewed in accordance with **state approvals**
 - d) details of groundwater level early warning triggers and impact thresholds for the Doongmabulla Springs Complex, informed by groundwater modelling and corrective actions and/or mitigation measures to be taken if the triggers are exceeded where

caused by mining operations, to ensure that groundwater drawdown as a result of the project does not exceed an interim threshold of 0.2 metres at the Doongmabulla Springs Complex

- (i) the early warning triggers and impact thresholds must be informed by groundwater modelling in accordance with Conditions 3e)i, 22, 23 and 24 and the relevant requirements of the environmental authority held under the Environmental Protection Act (1994) Qld (in particular requirements arising in response to the conditions at Appendix 1, Section 1, Schedule E of the Coordinator-General's Assessment Report)
 - (ii) the interim drawdown threshold required under condition 3d) may be replaced with a new drawdown threshold, if the approval holder applies to the Minister for approval to change it, and submits further evidence supported by further groundwater modelling and other scientific investigations (such as those required in conditions 25 and 27), that a new drawdown threshold will ensure the protection and long-term viability of the Doongmabulla Springs Complex
- e) details of the timeframe for a regular review of the GMMP in accordance with the requirements of the environmental authority issued under the *Environmental Protection Act 1994 (Qld)*, and subsequent updates of the GMMP, including how each of the outcomes of the following will be incorporated:
- (i) independent review and update of the **groundwater conceptual model**, as well as the **numerical groundwater model** and water balance calculations as necessary, to incorporate monitoring data
 - (ii) future baseline research required by the Queensland Coordinator-General into the **Mellaluka Springs Complex** (Appendix 1, Section 3, Condition 1 of the **Coordinator-General's Assessment Report**)
 - (iii) the GAB Springs Research Plan (Conditions 25 and 26)
 - (iv) the Rewan Formation Connectivity Research Plan (Conditions 27 and 28).
- f) provisions to make monitoring data available to **the Department** and Queensland Government authorities (if requested) on a six monthly basis for inclusion in any cumulative impact assessment, regional water balance model, bioregional assessment or relevant research required by the **Bioregional Assessment of the Galilee Basin sub-region and the Lake Eyre Basin and any subsequent iterations**
- g) provisions to make monitoring results publicly available on the **approval holder's** website for the life of the project
- h) a peer review by a **suitably qualified independent expert** and a table of changes made in response to the peer review.
4. The **approval holder** must not commence excavation of the first box cut until the GMMP has been approved by **the Minister** in writing. The approved GMMP must be implemented.

Note: Many elements of the GMMP are also required under the state approval for the project. Where possible, a combined document should be prepared that addresses both state government and EPBC Act approval conditions.

Matters of National Environmental Significance management plan/s

5. At least three months prior to **commencement of mining operations**, the **approval holder** must submit to **the Minister** for approval **Matters of National Environmental Significance** plan/s for the management of direct and indirect **impacts of mining operations** on MNES.

Note: If the MNESMP does not address any specific future activities (eg possible additional seismic surveys or specific mining stages) it should be updated in accordance with Condition 33.

6. The MNESMP must incorporate the results of the groundwater flow model re-run (condition 23) where relevant, and be consistent with relevant recovery plans, threat abatement plans and approved conservation advices and must include:
- a) a description of **environmental values** for each of the **Matters of National Environmental Significance** addressed in the plan
 - b) details of baseline and **impact** monitoring measures to be implemented for each of the **Matters of National Environmental Significance** including control and **impact** sites to be monitored throughout the life of the project. The monitoring must provide sufficient data to quantify likely **impacts** resulting from **mining operations**, including **subsidence** and changes in groundwater levels, to set habitat management goals (Conditions 6e) and 6f))
 - c) details of potential **impacts**, including area of **impact**, on each of the **Matters of National Environmental Significance** from **mining operations**, including **impacts** from:
 - (i) vegetation clearing
 - (ii) **subsidence** from underground mining, including **subsidence** induced fracturing and any changes to groundwater or surface water flow
 - (iii) mine dewatering
 - (iv) earthworks
 - (v) noise and vibration
 - (vi) emissions (including dust)
 - (vii) light spill and other visual **impacts**
 - (viii) stream diversion and flood levees
 - (ix) weeds and pests.
 - d) measures that will be undertaken to mitigate and manage **impacts** on **Matters of National Environmental Significance** resulting from **mining operations**. These measures must include but not be limited to:
 - (i) the use of fauna spotters prior to and during all vegetation clearing activities to ensure **impacts** on **Matters of National Environmental Significance** are minimised
 - (ii) measures to avoid **impacts** on **Matters of National Environmental Significance** and their habitat located in the **Project Area**, but outside areas

- to be cleared, constructed upon and / or undermined, including adjacent to cleared areas
- (iii) measures to rehabilitate all areas of **Matters of National Environmental Significance** habitat
 - (iv) habitat management measures including but not limited to management of **subsidence** and groundwater **impacts** of the project.
- e) goals for habitat management for each relevant **Matters of National Environmental Significance**
 - f) a table of specific criteria for assessing the success of management measures against goals, and triggers for implementing corrective measures if criteria are not met within specified timeframes. This table must include but not be limited to measures relating to **subsidence** and groundwater **impacts**, including early warning triggers for **impacts** on groundwater at the **Doongmabulla Springs Complex** and the **Carmichael River**. Goals and triggers must be based on the baseline condition of the relevant **Matters of National Environmental Significance** as determined through baseline monitoring (see Conditions 3b) and 6b)). Corrective measures must include provision of offsets where it is determined that corrective management measures have not achieved goals within specified timeframes (see Conditions 11m) and 11o))
 - g) an ongoing monitoring program to determine the success of mitigation and management measures against the stated criteria in Condition 6f), including monitoring locations, parameters and timing. Monitoring for water resource **Matters of National Environmental Significance** must include hydrogeological, hydrological and ecological parameters
 - h) details of how compliance will be reported
 - i) details of how the MNESMP will be updated to incorporate and address outcomes from research undertaken for **Matters of National Environmental Significance** under this and any **state approvals**, including updating of goals, criteria and triggers (as required under Conditions 3c), 3d), 6e) and 6f))
 - j) provisions to ensure that **suitably qualified and experienced persons** are responsible for undertaking monitoring, review, and implementation of the MNESMP
 - k) In the event that the future baseline research required by the Queensland Coordinator-General (Appendix 1, Section 3, Condition 1 of the **Coordinator-General's Assessment Report**) identifies that the **Mellaluka Springs Complex** provides high value habitat for the **black throated finch**, the **approval holder** must include management measures to address **impacts** resulting from drawdown at the **Mellaluka Springs Complex** in the MNESMP
 - l) details of how, where habitat for an EPBC Act listed threatened species or **community** not previously identified and reported to the **Department** is found in the **Project Area**, the **approval holder** will notify the **Department** in writing within five business days of finding this habitat, and within 20 business days of finding this habitat will outline in writing how the conditions of this approval will still be met (refer Condition 11h)).

7. **Mining operations must not commence** until the required MNESMP have been approved by **the Minister** in writing. The approved plan/s must be implemented.

Note: Management plans (such as the Black Throated Finch Management Plan and the Groundwater Dependent Ecosystems Management Plan) may also be required under state approvals. Whenever possible a combined document should be prepared to address both state government and EPBC Act approval conditions.

Note: Impacts of the action other than mining operations will be offset as required in accordance with Conditions 8 to 11, but will be otherwise managed in accordance with state approvals – this is of particular relevance when impacts may occur prior to approval of the MNESMP.

Offset requirements

8. The **approval holder must legally secure** the minimum offset areas detailed in Table 1 within two years of **commencement** of the **specified component** of the action.

Table 1. Minimum offset areas required for impacts on EPBC Act listed threatened species and communities and initial contribution to offsets for subsidence impacts from underground mining.

<i>Environmental value</i>	<i>Offset for mining operations north of Carmichael River (hectares)</i>	<i>Offset for mining operations south of Carmichael River (hectares)</i>	<i>Initial offset for underground mining component (hectares)</i>	<i>Offset for off-lease infrastructure (hectares)</i>	<i>Offset for rail east component (hectares)</i>	<i>Offset for rail west component (hectares)</i>
Black throated finch (southern)	18 204.06	10 739.39	2,000.00	7.62	2.44	46.48
Brigalow ecological community	15.12	721.11		0.00	6.26	72.50
Ornamental snake	96.39	38.61		0.00	0.00	0.00
Squatter pigeon (southern)	1598.00	902.00		0.00	0.00	0.00
Waxy cabbage palm	90.00	0.00		0.00	0.00	0.00
Yakka skink	3770.48	1815.42		1.87	0.60	11.63

Note: Offsets for different species may overlap where they share the same habitat requirements.

Biodiversity Offset Strategy and biodiversity funding

9. To compensate for authorised unavoidable **impacts** on **Matters of National Environmental Significance**, the **approval holder** must submit a Biodiversity Offset Strategy (BOS) and a GAB Offset Strategy to the **Minister** for approval at least three months prior to **commencement** of **mining operations**.
10. Offsets for authorised unavoidable **impacts** (defined in Table 1), and water resource **impacts** must be managed in accordance with the BOS and the GAB Offset Strategy.

General requirements

11. The BOS must be consistent with the **Galilee Basin Strategic Offset Strategy**, relevant recovery plans, threat abatement plans, conservation advices and MNESMP (see Condition 6), including the Black Throated Finch Management Plan (Appendix 1, Section 1, Schedule I, condition I6 of the **Coordinator-General's Assessment Report**). The BOS must include the following (except for the matters at 11k) and 11l), which apply to the Great Artesian Basin (GAB) Offset Strategy):
 - a) location of species and communities habitat offset areas including maps in electronic Geographic Information System (GIS) format
 - b) details of how offset sites have been or will be **legally secured** within required timeframes to ensure their long-term protection
 - c) a monitoring program for the offset site/s suitable to measure the success of the management measures against stated performance criteria including monitoring locations, parameters and timing
 - d) a description of the potential risks to the successful implementation of the BOS, and details of contingency measures that will be implemented to mitigate these risks
 - e) details of how the BOS will be updated to incorporate outcomes from research undertaken for **Matters of National Environmental Significance** under this and any **state approvals**, including updating of goals, criteria and triggers (as outlined at Conditions 3c), 3d), 6e) and 6f)). This must include outcomes of baseline research required by the Queensland Coordinator-General to identify whether the **Mellaluka Springs Complex** provides high value habitat for the **black throated finch** (Appendix 1, Section 3, Condition 1 of the **Coordinator-General's Assessment Report**)
 - f) an outline of how compliance will be reported
 - g) provisions to ensure that **suitably qualified and experienced persons** are responsible for undertaking monitoring, review, and implementation of the BOS
 - h) detailed processes for any residual **impacts** on **Matters of National Environmental Significance**, (see Condition 6f)) to be offset in accordance with the **EPBC Act Offsets Policy** including a process for offset requirement to be developed in consultation with the **Department** and relevant Queensland Government agencies
 - i) a detailed process for any significant residual **impact** on any **EPBC listed threatened species or ecological community** not identified in Table 1 to be offset in accordance with the **EPBC Act Offsets Policy** (refer Condition 6l))

- j) in the event that the future baseline research required by the Queensland Coordinator-General (Appendix 1, Section 3, Condition 1 of the **Coordinator-General's Assessment Report**) identifies that the **Mellaluka Springs Complex** provides high value habitat for the **black throated finch**, the **approval holder** must:
 - (i) revise **black throated finch** offset requirement in the BOS in accordance with the **EPBC Act Offsets Policy** and submit the revised BOS to **the Minister** for approval
 - (ii) management of any additional **black throated finch** offsets in accordance with Conditions 13 and 14 must commence prior to hydrological **impacts** on the **Mellaluka Springs Complex**, with sites being **legally secured** within two years of that time.

Requirements for GAB Offsets Strategy

- k) implementation of an annual GAB offset measure, of returning at least 730 megalitres per annum to the GAB for a minimum five year period from **commencement of excavation of the first box cut**, to offset the predicted annual **water take** associated with the action. This offset measure is to achieve a measurable outcome in accordance with one or more of the following principles:
 - (i) reduce current extraction rates from the GAB to increase hydraulic pressure
 - (ii) increase pressure in the GAB
 - (iii) protect and rehabilitate the GAB springs
 - (iv) other measures consistent with government policies and strategies to protect and manage the GAB.
- l) the offset measure described in Condition 11k) is to be developed and delivered in consultation with the Queensland Government department administering the authorisation of the **water take**

*Requirements for offsets for potential **subsidence**, groundwater and water resource **impacts***

- m) details of how staged **subsidence**, groundwater and water resource **impacts** in the **Project Area** will be addressed in the BOS, including:
 - (i) description and map of the proposed stages of underground mining. The **approval holder** must advise **the Minister** of any changes to these staging details. **Underground mining Stage 1** must be consistent with the corresponding definition in these conditions
 - (ii) description of how actual **subsidence**, groundwater and water resource **impacts** for all completed stages (as defined through Condition 11m)(i)) will be assessed at each stage
 - (iii) description of the extent, magnitude and timing of actual **subsidence impacts** observed in completed stages (as defined through Condition 11m)(i))
 - (iv) description of how actual **subsidence** and groundwater **impacts** from completed stages (as defined through Condition 11m)(i)) will be used to revise and update predicted **impact** areas for future stages

- (v) table of predicted **impact** areas for each **EPBC Act listed threatened species and community** in Table 1 within the underground mining area (consistent with Condition 6c)) that allows comparison of actual **impact** areas with initial **impact** area predictions and updated **impact** area predictions. If additional **impacted** areas are identified as a result of the predictions, additional offsets must be implemented in line with Condition 11h)
 - (vi) written commitments from the **approval holder** that the balance of offset requirement at each stage (as defined through Condition 11m)(i)) will be implemented prior to **commencement** of that stage.
- n) rationale for the balance of offset required for underground mining **impacts** to be updated at each underground mining stage (as defined through Condition 11m)(i)) that includes detailed comparison of the ecological status of **EPBC Act listed threatened species and communities** within the **subsidence impact area** between baseline conditions and the end of the most recent underground mining stage
 - o) details of how groundwater and water resource **impacts** on the **Matters of National Environmental Significance** will be addressed in the BOS including identification of additional potential offsets (see Condition 6f)) for the **Carmichael River** and **Doongmabulla Springs Complex**, to be developed in consultation with **the Department** and relevant Queensland Government agencies
 - p) detail of how the BOS will be revised and provided to **the Minister** for approval prior to **commencement** of each underground mining stage (as defined through Condition 11m)(i)) including timeframes for revision that allow three months for review and approval of the plan.
12. **Mining operations** must not **commence** until the BOS and the GAB Offset Strategy is approved by **the Minister** in writing. The approved BOS and the GAB Offset Strategy must be implemented.

Note: A Biodiversity Offset Strategy is also required under the State Government approval for the project. A combined document should be prepared to address both State Government and EPBC Act approval conditions where possible.

Offset area management plans

13. Within three months of approval of the BOS, and thereafter within three months of the approval of a revised BOS in accordance with Conditions 6, 8, 11 or 20, the **approval holder** must submit to **the Minister** for approval a management plan for that offset area. Each offset area management plan must address the relevant requirements of the BOS, and contain:
- a) detailed baseline description of offset areas, including surveys undertaken, condition of existing **Matters of National Environmental Significance** and their habitats, relevant **environmental values**, area of primary habitat for each **EPBC Act listed threatened species and community**, connectivity with other habitat areas and biodiversity corridors
 - b) management measures and offset plans for each offset area to improve the habitats of **Matters of National Environmental Significance**

- c) a table of specific goals and associated timeframes for habitat management measures for each offset area with criteria for assessing the success of habitat management measures and corrective measures to be implemented if criteria are not met

14. Once approved, offset area management plans must be implemented.

Biodiversity Funding

- 15. The **approval holder** must establish and/or contribute to a pool of funds established for the better protection and long term conservation of **EPBC Act listed threatened species and communities** listed in Table 1.
- 16. The mechanism to establish and/or contribute to a pool of funds, including terms of reference to support a regional approach, funding mechanisms and an initial work plan, must be provided to **the Minister** for approval three months prior to **commencement of mining operations**. The mechanism may be in the form of a trust fund, or other mechanism/s as agreed by **the Minister** in writing.
- 17. The **approval holder** must contribute \$100 000 (GST exclusive) per annum for 10 consecutive years to the pool of funds beginning from **commencement of mining operations**. The **approval holder** must provide notice of the establishment of and/or contribution to the pool of funds to **the Department** in writing prior to **commencement of mining operations**. Documentary evidence must be provided to **the Department** showing that the annual financial contributions to the pool of funds have been provided within 30 calendar days of each payment.
- 18. These funds must facilitate the development and implementation of research programs consistent with priorities to manage development **impacts** on **EPBC Act listed threatened species and communities** listed in Table 1 which are consistent with, and take into consideration, any relevant recovery plans, threat abatement plans and/or conservation advices. Research programs should identify measures to mitigate and manage the **impacts** on **EPBC Act listed threatened species and communities** listed in Table 1 and should address where relevant:
 - a) methodologies for a baseline survey that will report on each species' life history, movement patterns, habitat requirements and population dynamics. Survey methodologies must be in accordance with **the Department's survey guidelines** or alternative best practice methodologies that are agreed to in writing by **the Minister** prior to **commencement** and endorsed by a **suitably qualified independent expert**. The baseline survey must begin with the first year of the date of this approval
 - b) an ongoing monitoring program (developed from the baseline monitoring) for each species, to continue for the duration of the research programs, with annual reporting to **the Department**
 - c) commitments, including financial commitments and associated timeframes, that will be implemented by the **approval holder** to support the undertaking of research
 - d) the time frames for undertaking each research component
 - e) timing and methods of reporting research outcomes to **the Minister**, the scientific community and the public

- f) outcomes of consultation with **the Department** on how the proposed Research Programs align with other studies for **EPBC Act listed threatened species and communities** listed in Table 1
 - g) identification of priority actions for funding must be decided in consultation with the Queensland Department of Environment and Heritage Protection and members of relevant Recovery Teams.
19. A review of funding must be undertaken five years after the establishment of the pool of funds and/or the **commencement** of the action or as otherwise agreed by **the Minister** in writing. This review must take into account progress of the research programs and any subsequent on ground actions, as well as the involvement of other holders of approvals under **the EPBC Act** in funding and administrative arrangements. The review must be provided to **the Department** within six months after the five year period.

3D Seismic Survey Management Plan

20. The **approval holder** must submit a 3D Seismic Survey Management Plan to **the Minister** for approval, allowing at least one month for approval. The Seismic Survey Management Plan must include the following information in relation to the **seismic survey activities**:
- a) a description of **seismic survey activities**
 - b) a description of **impacts of seismic survey activities on Matters of National Environmental Significance**
 - c) mitigation measures for **seismic survey activities**
 - d) identification of offsets for residual **impacts** on at least 115 ha of **black throated finch** habitat, to be **legally secured** within two years of **commencement of seismic survey activities** and managed in accordance with the Biodiversity Offset Strategy under Condition 12.

Note: Offset areas identified are not intended to duplicate offset areas identified in accordance with Condition 11 j).

21. **Seismic survey activities** must not **commence** until the 3D Seismic Survey Management Plan has been approved by **the Minister** in writing. The approved 3D Seismic Survey Management Plan must be implemented.

Groundwater Flow Model Review

22. The **approval holder** must submit to **the Minister**, within one month of this approval, a peer review of the adequacy of the current groundwater flow model to characterise groundwater **impacts**. This review must consider the parameters used into the groundwater flow model, the required additional modelling information and the model re-runs outlined in Condition 23. The peer review must be undertaken by a **suitably qualified independent expert**. The peer review report should identify any additional information requirements.

23. The **approval holder** must provide a report to the Minister for the re-run of the groundwater flow model. The model revisions and re-runs must incorporate the following parameters in the scenarios and address the following additional information requirements:
- a) re-define the current General Head Boundary (GHB) arrangement, as agreed by **the Department** in writing, including the following:
 - (i) remove the GHB from its current location in all layers to the western edge of the model domain
 - (ii) review and justify the GHB conductance values used in the model to reflect the differences between aquifers and aquitards and also between aquifers (e.g. Clematis and Colinlea Sandstones), and modify if required
 - (iii) GHB cell elevations to be re-set using data as agreed by **the Department** in writing
 - (iv) report on the **impacts** on groundwater levels and net flows between the model domain for the revised GHB boundaries and compare with previous modelling results.
 - b) review and justify the recharge parameters for the Clematis Sandstone to represent the flux into the recharge beds of the GAB, and modify if required
 - c) document outflow mechanisms used in the model for the **Doongmabulla Springs Complex** and individual model layers, using maps to show the spatial distribution of model discharges
 - d) document and incorporate known licensed groundwater extractions within the model domain
 - e) document and justify any other changes made as part of the model re-runs that are not outlined above
 - f) as per the **IESC information guidelines** provide an assessment of the quality of, and risks and uncertainty inherent in, the data used in the background data and modelling, particularly with respect to predicted potential scenarios
 - g) provide adequate data (spatially and geographically representative) to justify the conceptualisation of topographically driven flow from south to north (and west to east) in both shallow and deeper aquifers.
24. The outcomes of the model re-runs are to be reviewed in order to inform the development of the GMMP and the Rewan Formation Connectivity Research Plan, and to correct any subsequent inaccuracies in the **Matters of National Environmental Significance** management plan/s, prior to submitting to **the Minister** for approval.

Research and management requirements

GAB springs research plan

25. At least three months prior to **commencing excavation of the first box cut**, the **approval holder** must submit for the approval of the **Minister** a GAB Springs Research Plan that investigates, identifies and evaluates methods to prevent, mitigate and remediate ecological **impacts** on the **EPBC listed community of native species dependent on natural discharge of groundwater from the Great Artesian Basin** (GAB Springs community), including the **Doongmabulla Springs Complex**, in the Galilee Basin. The GAB Springs Research Plan must include but is not limited to the following:
- a) research aims and rationale with reference to existing scientific research on GAB spring hydrogeology and ecology
 - b) identify priority actions for potential offsets to protect and manage the GAB springs
 - c) personnel responsible for conducting research and their qualifications
 - d) timeframes for research and reporting
 - e) methods, including but not limited to, conceptualisation of the hydrogeology of the springs, geological and geochemical surveys to inform the source aquifer/s for the **Doongmabulla Springs Complex**, ecological surveys to determine the composition of the GAB springs community, an assessment of transferability of approaches to prevent and mitigate hydrological **impacts** on springs in the Surat Basin, determination of water requirements (including ecological response thresholds) of the GAB springs community, and development and evaluation of methods to prevent, remediate and mitigate ecological **impacts**
 - f) an analysis of potential mitigation activities, such as but not limited to, re-injection to the groundwater source aquifer to maintain pressure head, flows and ecological habitat at the **Doongmabulla Springs Complex**
 - g) an explanation of how research outcomes will directly inform the monitoring, management, prevention, mitigation and remediation of **impacts** on the **Doongmabulla Springs Complex**
 - h) a peer review of the draft GAB Springs Research Plan, by a **suitably qualified independent expert** and a table of changes made in response to the peer review
 - i) The GAB Springs Research Plan must be published on the proponent's website for the life of the project. Research outputs must be submitted to the **Minister** within ten business days of completion, and be made available for the **Bioregional Assessment of the Galilee Basin sub-region and the Lake Eyre Basin and any subsequent iterations**
26. The **approval holder** must not **commence excavation of the first box cut** until the GAB Springs Research Plan has been approved by the **Minister** in writing. The approved GAB Springs Research Plan must be implemented.

27. At least three months prior to **commencing excavation of the first box cut**, the **approval holder** must submit for the approval of **the Minister** a Rewan Formation Connectivity Research Plan ('Rewan Research Plan') that characterises the Rewan Formation within the area **impacted** by the mine. The Research Plan must be informed by the results of the groundwater flow model re-run (condition 23) and include but not be limited to the following:
- a) research aims
 - b) personnel responsible for conducting research and their qualifications
 - c) timeframes for research and reporting
 - d) methods, including, but not limited to, seismic surveys to determine the type, extent and location of fracturing, faulting and preferential pathways (including any fracturing induced by longwall mining **subsidence**, including any fracturing impacting on the **Doongmabulla Springs Complex**) and an examination of the hydraulic properties (including but not limited to petrophysical analysis and facies mapping) of the Rewan Formation, to better characterise the Rewan Formation and the contribution of fracturing, faulting and preferential pathways to connectivity, including a description of how research will be undertaken in a manner that does not cause **impacts on Matters of National Environmental Significance** (unless the activities will be undertaken in accordance with a plan approved pursuant to conditions of this approval)
 - e) an explanation of how research will inform the GMMP, any regional groundwater and surface water monitoring and assessment program, or **Bioregional Assessment for the Galilee Basin sub-region and the Lake Eyre Basin and any subsequent iterations**
 - f) a peer review of the Rewan Research Plan, by a **suitably qualified independent expert**, approved by **the Minister** in writing, and a table of changes made in response to the peer review
28. The **approval holder** must not **commence excavation of the first box cut** until the Rewan Research Plan has been approved by **the Minister** in writing. The approved Rewan Formation Connectivity Research Plan must be implemented.

Standard conditions

29. Within 30 days of the **commencement** of the action, the approval holder must advise **the Department** in writing of the actual date of **commencement**.
30. The approval holder must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plans, reports, and programs required by this approval, and make them available upon request to **the Department**. Such records may be subject to audit by **the Department** or an independent auditor in accordance with section 458 of the **EPBC Act**, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on **the Department's** website. The results of audits may also be publicised through the general media.

31. Within three months of every 12 month anniversary of the **commencement** of the action, the approval holder must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to **the Department** at the same time as the compliance report is published.
32. Upon the direction of **the Minister**, the approval holder must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to **the Minister**. The independent auditor must be approved by **the Minister** prior to the **commencement** of the audit. Audit criteria must be agreed to by **the Minister** and the audit report must address the criteria to the satisfaction of **the Minister**.
33. The approval holder may choose to revise a plan or strategy approved by the **Minister** under conditions 3, 5, 9, 20, 25 and 27 without submitting it for approval under section 143A of the EPBC Act, if the taking of the action in accordance with the revised plan or strategy would not be likely to have a **new or increased impact**. If the approval holder makes this choice they must:
- a) notify the **Department** in writing that the approved plan or strategy has been revised and provide the **Department** with an electronic copy of the revised plan or strategy;
 - b) implement the revised plan or strategy from the date that the plan or strategy is submitted to the **Department**; and
 - c) for the life of this approval, maintain a record of the reasons the approval holder considers that taking the action in accordance with the revised plan or strategy would not be likely to have a **new or increased impact**.
- 33A. The approval holder may revoke their choice under condition 33 at any time by notice to the **Department**. If the approval holder revokes the choice to implement a revised plan or strategy, without approval under section 143A of the Act, the plan or strategy approved by the **Minister** must be implemented.
- 33B. Condition 33 does not apply if the revisions to the approved plan or strategy include changes to environmental offsets provided under the plan or strategy in relation to the matter, unless otherwise agreed in writing by the **Minister**. This does not otherwise limit the circumstances in which the taking of the action in accordance with a revised plan or strategy would, or would not, be likely to have **new or increased impacts**.
- 33C. If the **Minister** gives a notice to the approval holder that the **Minister** is satisfied that the taking of the action in accordance with the revised plan or strategy would be likely to have a **new or increased impact**, then:
- a) Condition 33 does not apply, or ceases to apply, in relation to the revised plan or strategy; and
 - b) The approval holder must implement the plan or strategy approved by the **Minister**.

To avoid any doubt, this condition does not affect any operation of conditions 33, 33A and 33B in the period before the day the notice is given.

At the time of giving the notice the **Minister** may also notify that for a specified period of time that condition 33 does not apply for one or more specified plans or strategies required under the approval.

- 33D. Conditions 33, 33A, 33B and 33C are not intended to limit the operation of section 143A of the EPBC Act which allows the approval holder to submit a revised plan or strategy to the **Minister** for approval.

34. If **the Minister** believes that it is necessary or convenient for the better protection of World Heritage properties, National Heritage places, Wetlands of international importance, listed threatened species and communities, listed migratory species, the Great Barrier Reef Marine Park or a water resource, in relation to coal seam gas development and large coal mining development to do so, **the Minister** may request that the approval holder make specified revisions to the management plans, reports, and programs specified in the conditions and submit the revised management plans, reports, and programs for **the Minister's** written approval. The approval holder must comply with any such request. The revised approved management plans, reports, and programs must be implemented. Unless **the Minister** has approved the revised management plans, reports, and programs, then the approval holder must continue to implement the management plans, reports, and programs originally approved, as specified in the conditions.
35. If, at any time after 10 years from the date of this approval, the approval holder has not **substantially commenced** the action, then the approval holder must not **substantially commence** the action without the written agreement of **the Minister**.
36. Unless otherwise agreed to in writing by **the Minister**, the approval holder must publish all management plans, reports, and programs referred to in these conditions of approval on their website. Each management plan, report, and program must be published on the website within one month of being approved.

Definitions

Approval holder: The person to whom the approval is granted.

Bioregional Assessment for the Galilee Basin sub-region and the Lake Eyre Basin and any subsequent iterations: will be conducted in conjunction with relevant state and territory government agencies and natural resource management bodies and entails a scientific analysis of the ecology, hydrology and geology for the purpose of assessing the potential risks to water resources in the area as a result of the direct and indirect **impacts** of coal seam gas development and large coal mining development.

Black throated finch: means the black throated finch (southern) (*Poephila cincta* subsp. *cincta*) listed as a threatened species under **the EPBC Act**

Blue devil: means the blue devil (*Eryngium fontanum*) listed as a threatened species under **the EPBC Act**

Brigalow ecological community: means Brigalow (*Acacia harpophylla* dominant and co-dominant), listed as a threatened ecological community under **the EPBC Act**.

Carmichael River: the Carmichael River and its riparian zone between the Doongmabulla Springs and the Belyando River.

Commencement / commence / commenced / commencing: is the first instance of any specified activity. Unless the activity is specifically defined for the purposes of these conditions, commencement of an activity includes any physical disturbance including clearing of vegetation, earthworks, new road works, new rail works, construction of new camps, development of mining associated infrastructure and **mining operations**. Commencement does not include:

- a) erection of signage or fencing
- b) minor physical disturbance necessary to undertake pre-clearance surveys or establish monitoring programs or associated with the mobilisation of the plant, equipment, materials, machinery and personnel prior to the start of railway and road development or construction; or
- c) activities that are critical to commencement that are associated with mobilisation of plant and equipment, materials, machinery and personnel prior to the start of mine, railway or road development or construction only if such activities will have no adverse impact on MNES, and only if the **approval holder** has notified **the Department** in writing before an activity is undertaken.

Community of native species dependent on natural discharge of groundwater from the Great Artesian Basin: means the community of native species dependent on natural discharge of groundwater from the Great Artesian Basin, listed as a threatened ecological community under **the EPBC Act**.

Coordinator-General's Assessment Report: The Queensland Coordinator-General (2014) *Carmichael Coal Mine and Rail Project: Coordinator-General's evaluation report on the environmental impact statement May 2014*. Department of State Development, Infrastructure and Planning, Brisbane, Queensland

The Department: is the Australian Government Department administering the *Environment Protection and Biodiversity Conservation Act 1999*.

Doongmabulla Springs Complex: the groundwater-fed springs located approximately 8 kilometres from the western edge of the mining lease boundary and consisting of springs within the spring groups identified on page 108 of the Coordinator-General's Assessment Report.

Environmental values: includes but is not limited to habitat for **EPBC Act listed threatened species and communities** and hydrology of identified water resources.

EPBC/ EPBC Act: means the *Environment Protection and Biodiversity Conservation Act 1999* (Cth)

EPBC Act Offsets Policy: means the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (October 2012).

EPBC Act listed threatened species and/or community/ies: means a threatened species or community, or a migratory species listed under **the EPBC Act**.

Excavation of the first box cut: means bulk earthworks excavating the first box cut required for either underground or open cut mining, which for the avoidance of doubt does not include clearing or topsoil stripping.

Galilee Basin Strategic Offset Strategy: is the Queensland Government Department's Galilee Basin Strategic Offset Strategy (2013) or any future updated version.

Groundwater conceptual model: is the conceptual groundwater model developed for the project as described in the Adani Mining Pty Ltd (2013) *Carmichael Coal Mine and Rail Project Supplementary Environmental Impact Statement* at Appendix K6.

Impact/s/ed: as defined in section 527E of **the EPBC Act**.

IESC Information Guidelines: are *Information Guidelines for Independent Expert Scientific Committee advice on coal seam gas and large coal mining development proposals*, April 2014.

Legally secure: means to secure a covenant or similar legal agreement in relation to a site, to provide enduring protection for the site against developments incompatible with conservation.

Matters of National Environmental Significance: in the context of this approval includes the following:

<i>Listed Threatened Species and Communities</i>
Black throated finch (southern) (<i>Poephila cincta</i> subsp. <i>cincta</i>)
Brigalow ecological community
Ornamental snake (<i>Denisonia maculata</i>)
Squatter pigeon (southern) (<i>Geophaps scripta</i> subsp. <i>scripta</i>)
Waxy cabbage palm (<i>Livistona lanuginosa</i>)
Yakka skink (<i>Egernia rugosa</i>)
Community of native species dependent on discharge from the Great Artesian Basin (Doongmabulla Springs Complex) including the Salt pipewort <i>Eriocaulon carsonii</i> ; and the Blue devil <i>Eryngium fontanum</i>
<i>Water Resources</i>
Carmichael River (Carmichael River and its riparian zone between the Doongmabulla Springs and the Belyando River)
Mellaluka Springs Complex
Community of native species dependent on discharge from the Great Artesian Basin (Doongmabulla Springs Complex) including the Salt pipewort <i>Eriocaulon carsonii</i> ; and the Blue devil <i>Eryngium fontanum</i>
Waxy cabbage palm (<i>Livistona lanuginosa</i>)

Mellaluka Springs Complex: the groundwater-fed springs located to the south-eastern section of the mine area and consisting of Mellaluka Spring, Stories Spring and Lignum Spring (refer pp. 168-169 of the Coordinator-General's Assessment Report).

Mining operations: are the extraction of ore from the ground as well as any immediately associated activities, including initial clearing of vegetation, removal and storage of overburden, storage of ore and dewatering, but not including exploratory surveys or the construction or operation of transport, accommodation or power generation infrastructure.

The Minister: is the Minister responsible for administering the *Environment Protection and Biodiversity Conservation Act 1999* and includes a delegate of the Minister.

New or increased impact: A new or increased impact on any matter protected by the controlling provisions for the action, when compared to the plan, program, or strategy that has been approved by the Minister.

Numerical groundwater model: means any computational method that represents an approximation of an underground water system that simulates hydraulic heads (and watertable elevations in the case of unconfined aquifers) and groundwater flow rates within and across the boundaries of the system under consideration.

Ornamental Snake: means the ornamental snake (*Denisonia maculata*), listed as a threatened species under **the EPBC Act**.

Project Area: all disturbance areas as defined in the maps at Appendix A. It is noted that minor alterations may be made in order to avoid **Matters of National Environmental Significance** or State Significant Biodiversity Values found during pre-clearance surveys. These are permitted only where they will result in a lower level of impact to these matters.

Rail (west): is a 120 km dual gauge greenfield rail line connecting the mine as far east as Diamond Creek, to provide for the export of coal via the Port of Hay Point (Dudgeon Point expansion) and the Port of Abbot Point.

Rail (east): is a 69 km narrow gauge portion of greenfield rail line running east from Diamond Creek to the existing Goonyella and Newlands rail systems, to provide for the export of coal via the Port of Hay Point (Dudgeon Point expansion) and the Port of Abbot Point.

Salt pipewort: means the salt pipewort (*Eriocaulon carsonii*) listed as a threatened species under **the EPBC Act**

Seismic survey activities: includes any activity involving ground disturbance associated with 3D seismic survey over an area of 2304 ha within mining lease EPC 1690.

Specified component: is any part of the approved action that **the Minister** has agreed in writing to consider individually for the purposes of these conditions, and also includes the six components specified in Table 1.

Squatter Pigeon: means the squatter pigeon (Southern) (*Geophaps scripta* subsp. *scripta*), listed as a threatened species under **the EPBC Act**.

State approvals: include any permits, licences or other authorisations, including any associated conditions, issued in relation to the action by any Queensland Government agency.

Subsidence: means the totality of subsidence effects and **subsidence impacts**; where 'subsidence effects': means deformation of the ground mass due to mining, including all mining-induced ground movements, such as vertical and horizontal displacement, tilt, strain and curvature; and 'subsidence **impacts**': means physical changes to the ground and its surface caused by subsidence effects, including tensile and shear cracking of the rock mass, localised buckling of strata caused by valley closure and upsidence and surface depressions or troughs.

Suitably qualified and experienced persons: means persons who have professional qualifications, training, skills or experiences related to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relative to the subject matter using the relative protocols, standards, methods or literature

Suitably qualified independent expert: means a person who has professional qualifications, training, skills or experiences related to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relative to the subject matter using the relative protocols, standards, methods or literature

Survey Guidelines: include the following:

Matters of National Environmental Significance, Significant Impact Guidelines 1.1, *Environment Protection and Biodiversity Conservation Act 1999*:

<http://www.environment.gov.au/epbc/publications/nes-guidelines.html>

Survey Guidelines for Australia's Threatened Frogs, Threatened Mammals, Threatened Reptiles and Threatened Bats: <http://www.environment.gov.au/epbc/guidelines-policies.html>

Survey Guidelines for Australia's Threatened Birds:

<http://www.environment.gov.au/resource/survey-guidelines-australias-threatened-birds-guidelines-detecting-birds-listed-threatened>

Underground mining Stage 1: means years 1-10 of underground mining including all associated activities including box cut excavation, portal construction, long wall construction and longwall panel mining. Multi seam mining within the first underground mine will occur during this time period. This definition and timing provides certainty and confidence in regards to the

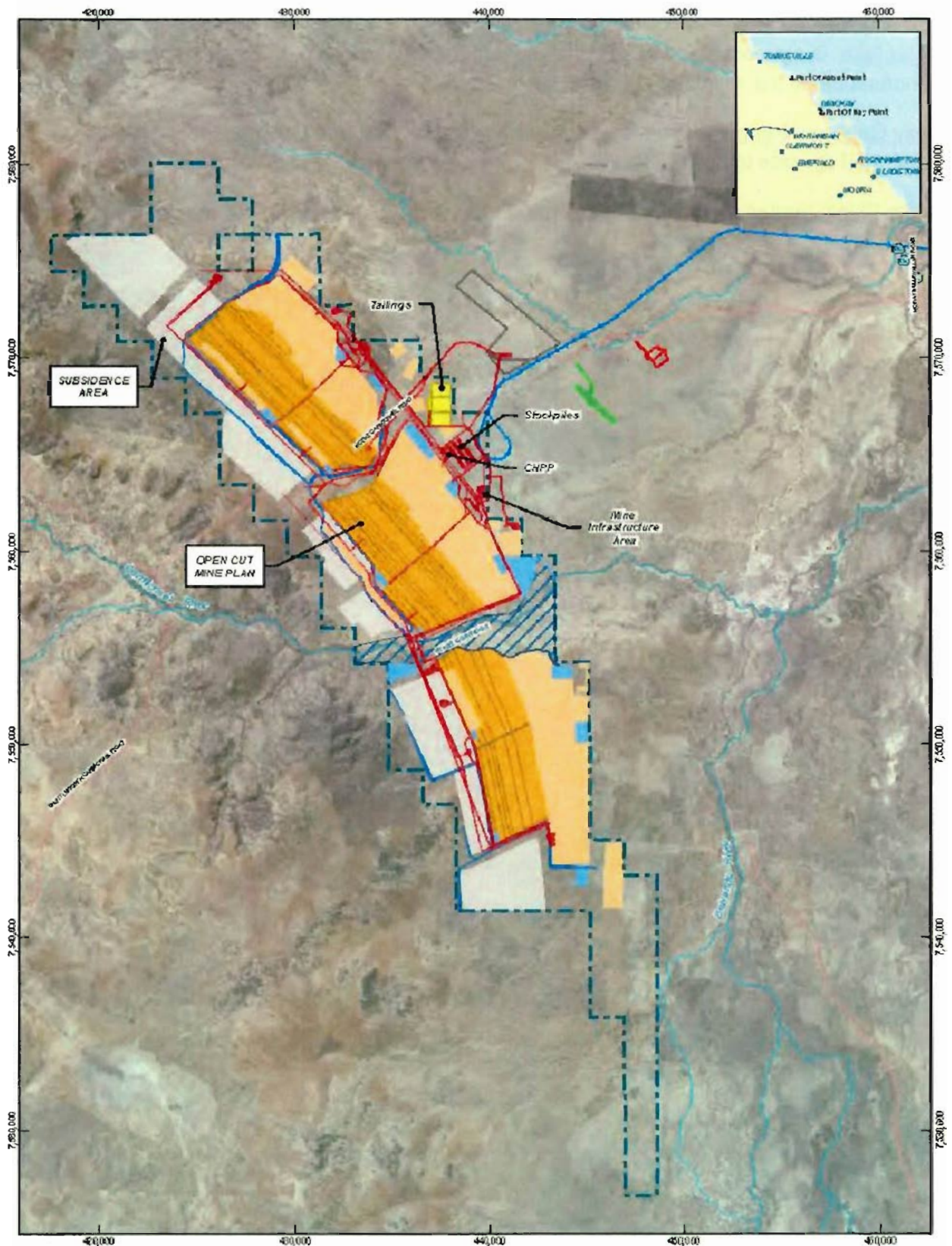
assessment of actual **subsidence** related **impacts** versus predicted **subsidence** related **impacts** that is required to be undertaken at the conclusion of underground mining Stage 1.

Water take: is extraction of water from a regulated water resource, in accordance with an authorisation by the regulating body.

Waxy Cabbage Palm: means the waxy cabbage palm (*Livistona lanuginosa*) listed as a threatened species under **the EPBC Act**.

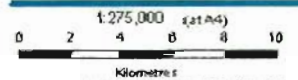
Yakka Skink: means the yakka skink (*Egernia rugosa*), listed as a threatened species under **the EPBC Act**.

Appendix A



LEGEND		
	Mine Domain	
		Mine (Offsite)

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Carmichael Coal Mine and Rail Project

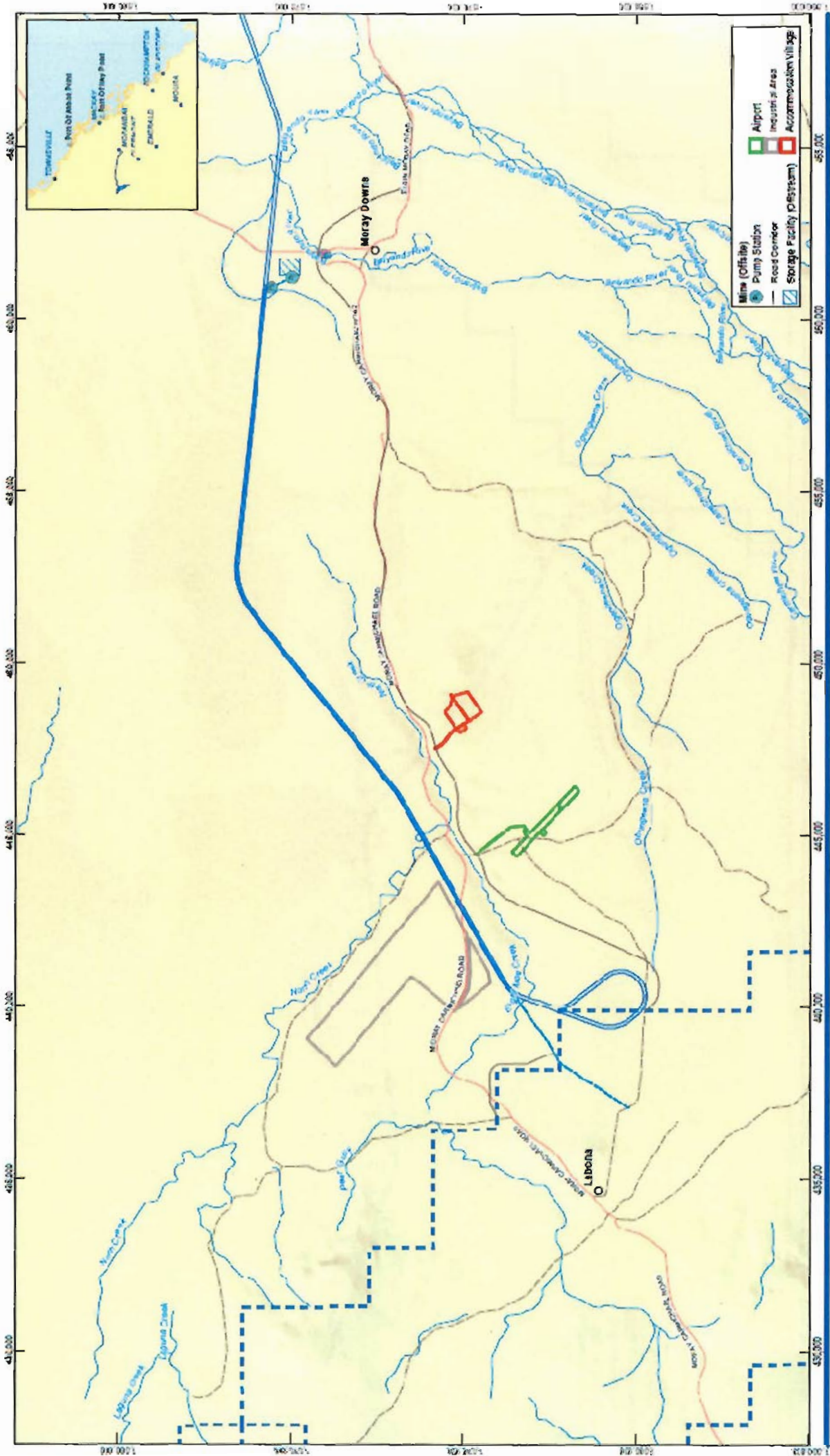
Job Number: 41-20422
Revision: A
Date: 10-02-2014

Disturbance Area - Mine Domains

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Australian Government



LEGEND

- Homestead
- Local Road
- - - Track
- Watercourse
- Rail Corridor
- Water Supply Pipeline
- Mine (Onsite)
- Mine (Offsite)
- Pump Station
- Road Corridor
- Storage Facility (System)
- Airport
- Accommodation Area
- Accommodation Village

Scale: 1:150,000 (A4)
 0 2.5 Kilometres
 0 2.5 Miles

Map Projection: Universal Transverse Mercator
 Spheroid: Everest
 Datum: Indian
 Zone: 50S

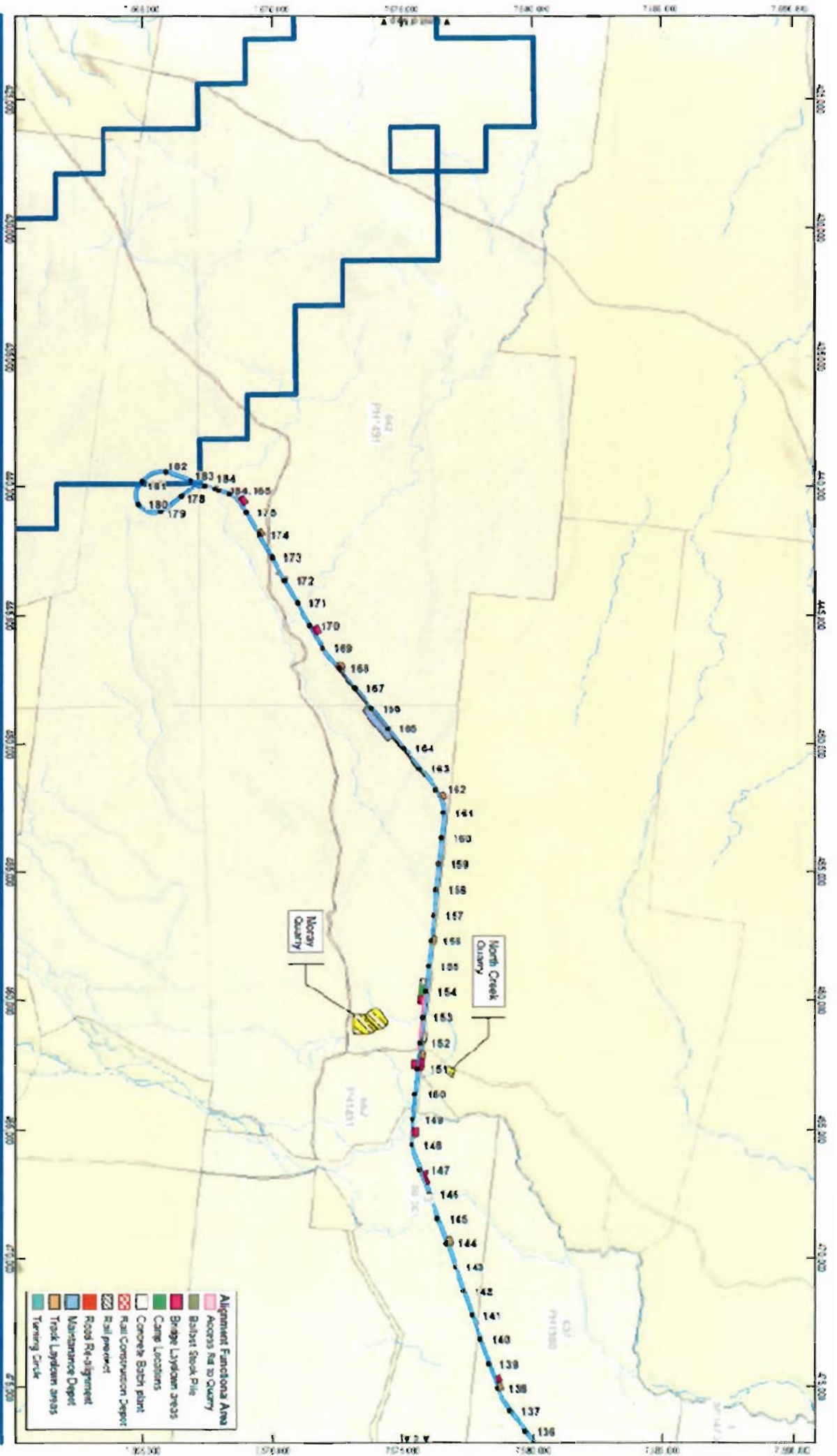
Job Number: 41-3842
Revision: B
Date: 19-03-2014

Adani Mining Pty Ltd
 Carmichael Coal Mine and Rail Project

CHD adani

Disturbance Area - Offsite Infrastructure

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Alignment Functions Area	
[Pink Box]	Access to Quarry
[Green Box]	Ballast Stock Pile
[Red Box]	Bridge Laydown areas
[Blue Box]	Camp Locations
[White Box]	Concrete Batch plant
[Red Box]	Rail Construction Depot
[Green Box]	Rail precinct
[Blue Box]	Road Re-alignment
[Orange Box]	Maintenance Depot
[Yellow Box]	Track Laydown areas
[Blue Box]	Turning Circle

Scale: 1:200,000 (at A4)

Geometrics: [Scale Bar]

Map Projection: Universal Transverse Mercator
 Authority: Datum: GDA94; Spheroid: Australian National Spheroid
 Grid: Map Grid of Australia 1984, Zone 55

North Arrow

Legend:

- Town
- Road
- Other Railway
- Watercourse
- Rail (West)
- Rail (East)
- Project (Wire)
- Quarry
- Property Boundary
- Impacted Property



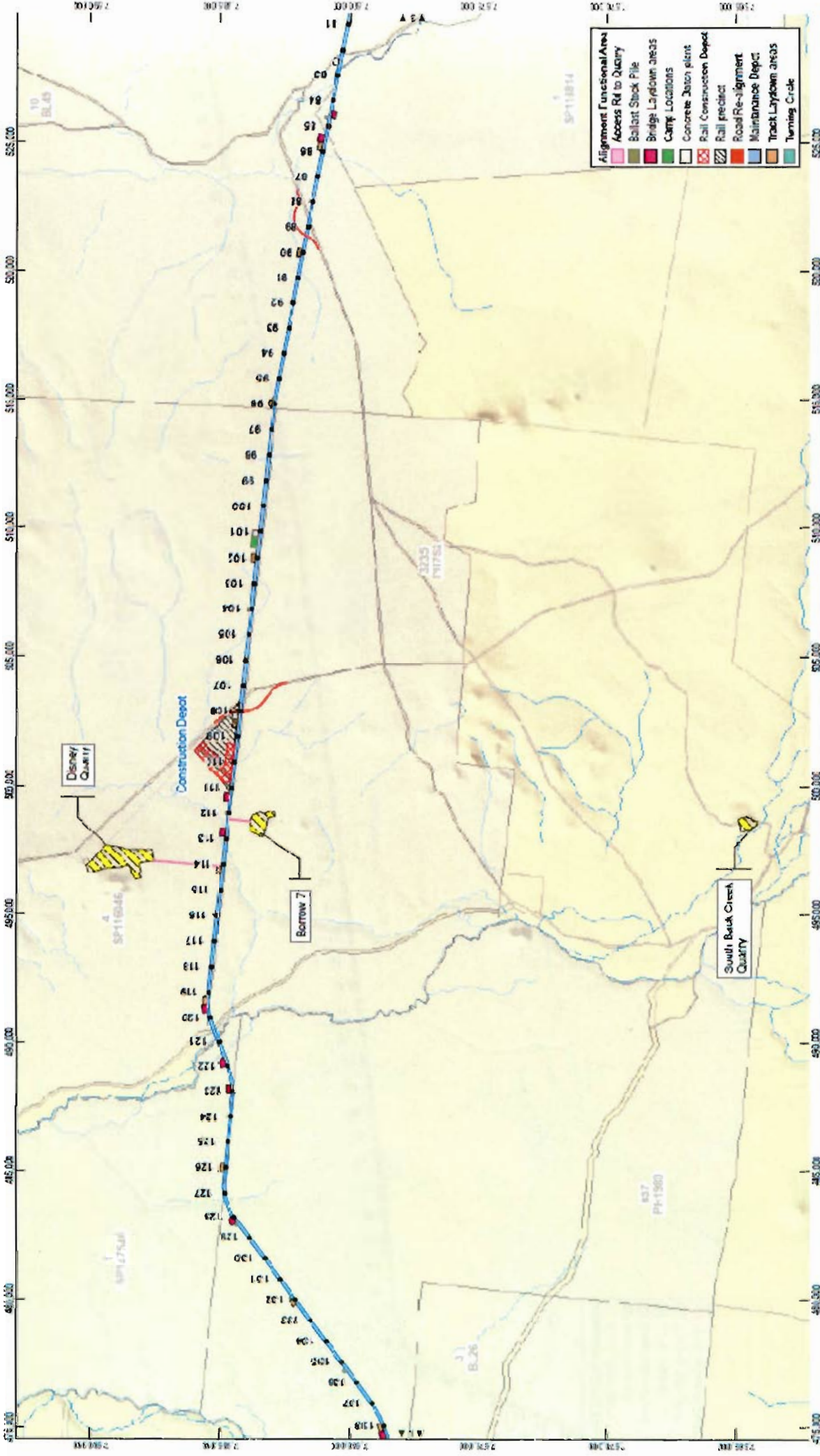
Adani Mining Pty Ltd
 Carmichael Coal Mine and Rail Project

Job Number: L-28422
 Position: C
 Date: 19-03-2014

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Disturbance Area - Project (Rail)

Page 1 of 4



Job Number: 41-26422
 Revision: C
 Date: 10-02-2014

Adani Mining Pty Ltd
 Carmichael Coal Mine and Rail Project

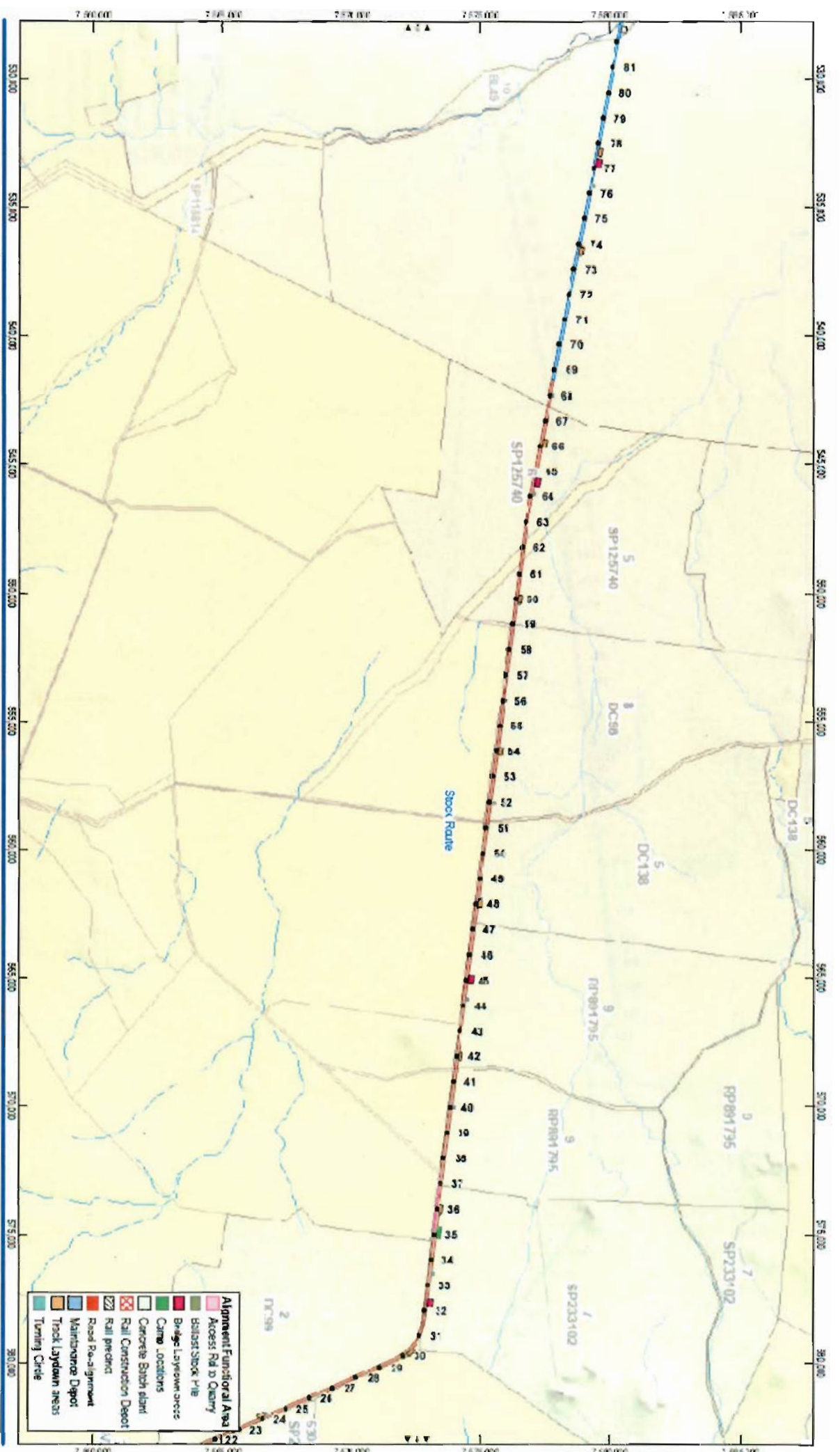
LEGEND
 Project (Rail) Change: Flood, Other Railway, Watercourse
 Town: Disney
 Quarry: Rail (West), Rail (East), Project (Mine), Impacted Property

This is a technical drawing prepared by the Office of Geographical Information in consultation with the
 planning and other relevant authorities. It is intended to provide a visual representation of the proposed
 rail alignment and associated infrastructure. It is not intended to be used as a legal document or as a
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Map Project: Ulterior Transitive Minerals
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 Date: 10-02-2014

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Page 2 of 4



1200,000 (at A4)

Map Projection: Universal Transverse Mercator
 Map Datum: GDA 1984
 Contour Interval: 10m

Legend

- Project (Rail) Change
- Road
- Other Railway
- Watercourse
- Rail (West)
- Rail (East)
- Project (Mine)
- Query
- Property Boundary
- Impacted Property

Legend

- Alignment Functional Area
- Access Road to Quarry
- Ballast Stock Pile
- Bridge Laydown areas
- Crane Locations
- Concrete Batch plant
- Rail Precast
- Rail Construction Depot
- Road Re-alignment
- Maintenance Depot
- Track Laydown areas
- Turning Circle

Job Number: 41-25422
 Revision: C
 Date: 10-05-2014

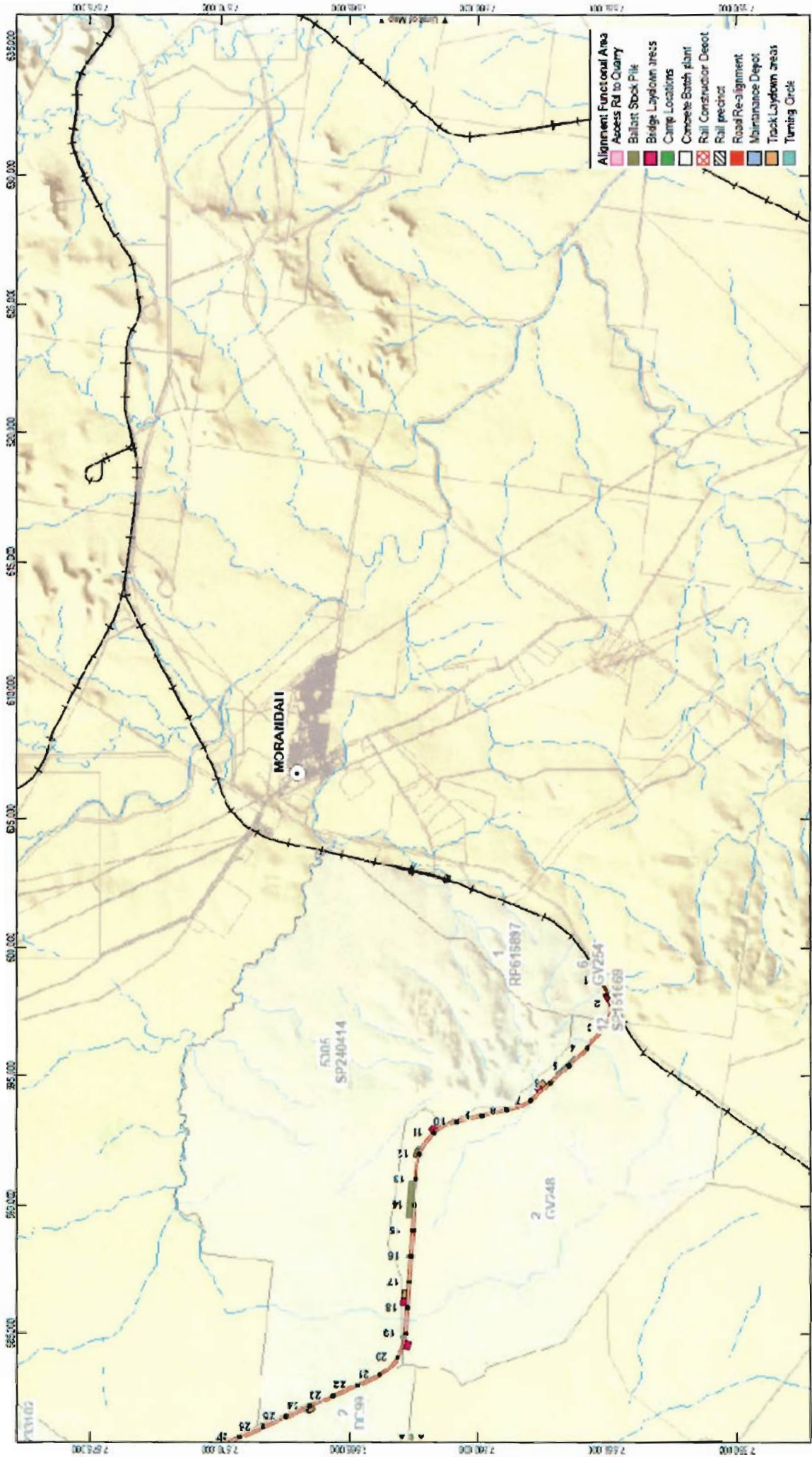
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Disturbance Area - Project (Rail)

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000 Number / 11-25-12
 Revision / 0
 Date / 10-02-2014

Adani Mining Pty Ltd
 Carmichael Coal Mine and Rail Project



LEGEND
 • Project (Rail) Change
 • Town
 □ Rail (West)
 □ Rail (East)
 □ Project (Misc)
 □ Quarry
 □ Property Easement
 □ Impacted Property

Legend symbols:
 - Road
 - Other Railway
 - Watercourse

Scale: 1:220,000 (21A4)
 Kilometers: 0 1 2 3 4



Map Projection: UTM Zone 54S
 Map Source: Geospatial Centre of Australia (GCA)
 Date Source: DIRM DEM (2008), SCSM (2013), © Commonwealth of Australia (Census Australia, Location, Railway, Bush, Watercourse (DOP), Adani Project, Design, Functional Area, Alignment SP1, DPT1 R442, SP2 Cop 0 Rev 3 (2013))

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