02 Amendments to the Project Description

Table of Contents

SECTION 02 AMENDMENTS TO THE PROJECT DESCRIPTION

TABLES

FIGURES

Section 02 Amendments to the Project Description

This Section of the Alpha Coal Project Supplementary Environmental Impact Statement (SEIS) provides a description of the key changes made to both the proposed coal mine and railway corridor Project Descriptions since the Environmental Impact Statement (EIS) was issued in November 2010. Environmental impacts resulting from these changes are addressed within the SEIS. Coal mine and railway corridor Project changes are discussed in further detail in the sub-sections that follow.

The revised Project Wide Project Description that incorporates these changes is presented in Volume 2, Appendix C of the SEIS.

2.1 Coal Mine

Since the release of the EIS, updates have been made to the geological model whereby a more detailed understanding of the geological stratigraphy, coal reserves, and coal quality of the proposed mine area is now known. The improved geological model and further development of the coal processing design has resulted in improvement in coal yield by approximately 4%. The updated information has enabled continued development of the proposed mining methods, which in turn have driven changes to the mine design, resulting in improved mining effectiveness, decreased operational costs and a marked reduction in the overall environmental footprint of mining activities.

Changes to mining methods and the mine design are described below in more detail.

2.1.1 Mining Methods

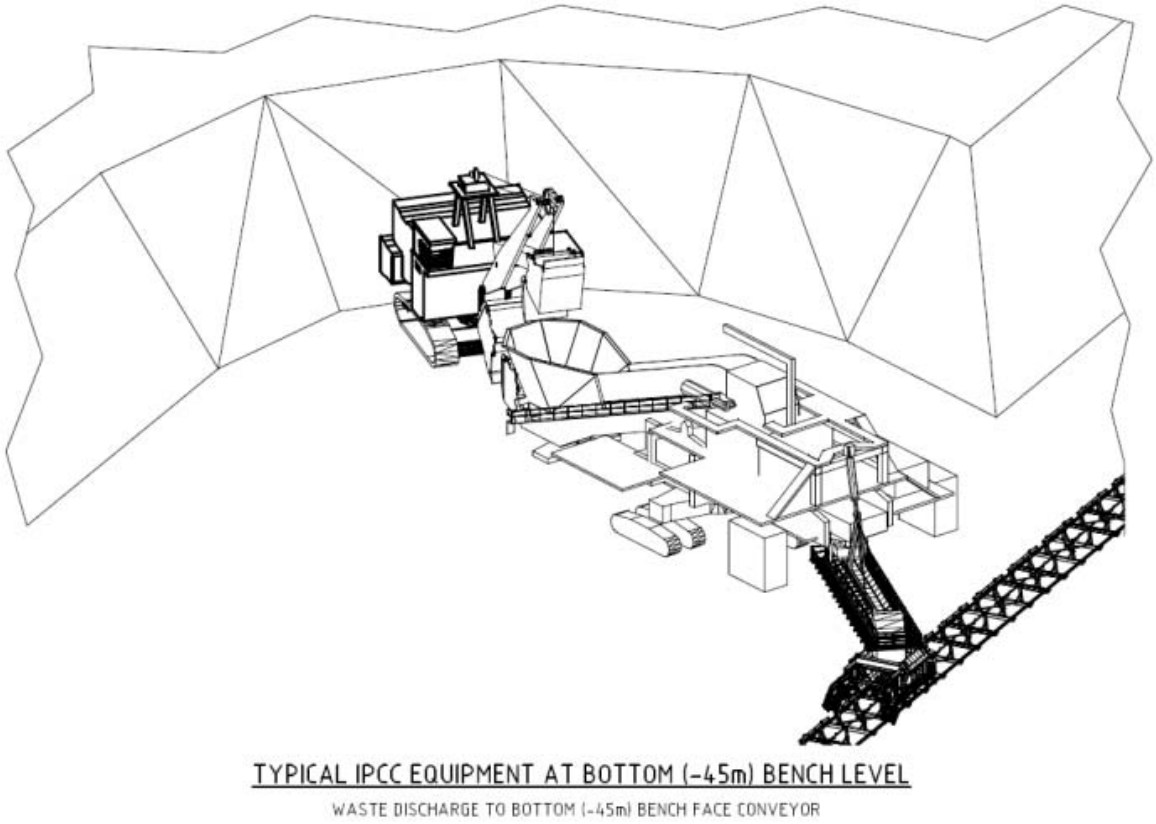
2.1.1.1 In-Pit Crushing and Conveying

Description

The mining method presented in the EIS was a conventional dragline and truck-shovel pre-strip operation with coal haulage by bottom-dump coal haulers. Following further review of the proposed mining methods, two In-Pit Crushing and Conveying (IPCC) systems have been included in the revised mine plan. A functional description of the IPCC system proposed can be found in Volume 2, Appendix H and a figure showing typical IPCC equipment can be seen on Figure 2-1 below.

Through the introduction of IPCC, combined with a reduction in mine waste as discussed in Section 2.1.1.3 below, the mining operation at its peak will require 65 less 360 tonne (t) rear-dump trucks to haul overburden material.

Figure 2-1 Sketch of typical In-Pit Crushing and Conveying system



Advantages

Reduction in the number and type of mining vehicles

- Reduced greenhouse gas emissions

  The use of IPCC results in reduced requirements for mobile mining equipment, such as excavators and trucks, which in turn will mean less diesel / consumable consumption during the mining process. The overall greenhouse gas emissions from diesel will be reduced by approximately 56% from 14,805,490 t carbon dioxide equivalent emissions ($CO_{2\text{-}e}$) in the original Project Description to 6,449,066 in the new Project Description (life of mine). Regarding overburden haul trucks, with the assumption that Cat 797 RDT and Cat 793D RDT have been replaced with Cat 789C and Lieb T282C, emissions from diesel use have been reduced from 7,830,612 t $CO_{2\text{-}e}$ to 2,248,340 t $CO_{2\text{-}e}$ (life of mine) representing a 70% reduction.

- Reduction in dust generation

  One of the largest contributors to potential dust impacts at the mine site is wheel-generated dust. By utilising the IPCC the numbers of trucks and vehicle kilometres travelled (VKT) are reduced. Total Suspended Particulate (TSP) emissions are expected to reduce from to ~ 390,599 t to ~ 262,348 t and emissions of PM_{10}, from ~ 96,040 t to ~ 64,506 t. This corresponds to a reduction of approximately 33% for both particle fractions over the life of the mine. Furthermore, IPCC system has dust control mitigation measures, particularly at the crushing points, to mitigate dust generation.

Reduction in noise and vibration Impacts

Predicted operational noise levels at all identified sensitive receptor locations were marginally to significantly reduced through the adoption of the IPCC mining methods and resulting reduced numbers of mobile plant, particularly dump and haul trucks.

The SEIS noise and vibration study conducted for the SEIS can be found in Volume 2, Appendix R.

Reduction in mine operating costs

IPCC will reduce mine operating costs over the life of mine and thus will make the Project more economically viable.

Increased mine productivity

Due to the efficiency of the IPPC system, mine productivity(measured as mining output per person employed per annum) is increased.

Disadvantages

Increased electricity consumption

With the incorporation of the IPCC units, the Project's electricity consumption will increase for the pre-strip operation. However, this increase in electricity consumption is offset by the reduction in diesel consumption that would have been used by the haul trucks undertaking the same role.

Higher spoil dumps

A disadvantage of using IPCC is that there will be a higher out of pit landform. The highest spoil dump designed as part of the EIS was 340 m AHD; the highest point using the IPCC method is 370 m AHD. This change in landform height is attributed to the placement method employed as part of IPCC mining method. Based on a review of the visual impact assessment this increase in height is not expected to adversely impact on the surrounding sensitive receptors from a visual perspective.

2.1.1.2 Mining Equipment

Description

The mining method presented in the EIS comprised a conventional dragline and truck-shovel pre-strip operation with coal haulage by bottom-dump coal hauler. With the introduction of two IPCC systems, a more detailed understanding of the geological stratigraphy and coal quality, and improvement to Coal Handling and Preparation Plant (CHPP) yields, less overburden and interburden are required to be removed. As such, the nine draglines that were originally proposed in the EIS for overburden removal have now been reduced to six and the numbers of rear-dump trucks, rope shovels, and excavators have also been reduced by approximately 42%, 66%, and 33%, respectively.

A summary of major mine equipment is provided in Table 2-1 below, which shows the difference between numbers proposed in the EIS and what is proposed in the updated mine plan.

Table 2-1 Summary of changes to the number of major mine equipment

Unit Type	Application	No. Proposed in EIS	Revised No.
Main waste (Overburden)			
Overburden drill	Overburden drilling	11	4
Dragline	Overburden removal	9	6
Rope shovel	Overburden loading	9	3
Excavator	Overburden loading	12	8
Rear-dump truck	Overburden haulage	112	47
IPCC System	Overburden haulage	0	2
Secondary waste (Interburden)			
Overburden drill	Secondary interburden drilling	3	2
Excavator	Interburden loading	3	3
Front-end loader	Backup and interburden loading	2	1
Rear-dump truck	Interburden haulage	10	17
Coal mining			
Coal drill	Coal drilling (if required)	3	0
Front-end loader	Coal loading – thin seams	1	1
Excavator	Coal loading – thick seams	3	2
Bottom-dump truck/coal haulers	Coal haulage	42	31
Reject haulage			
Rear-dump truck	Reject haulage and pre-strip backup	8	6
Major ancillaries			
Bulldozer	Waste face clean-up, dragline dozer, spoil dump maintenance, miscellaneous construction, interburden waste ripping, CHPP	34	22
Bulldozer	Coal face clean-up, road maintenance, miscellaneous construction, thin coal and waste ripping	12	22
Rubber-tyred dozer	Coal and waste face clean-up, road maintenance, miscellaneous construction	14	6
Grader	Coal and waste face clean-up, road maintenance, miscellaneous construction	11	15
Water truck	Road maintenance, miscellaneous construction	8	8

Advantages

Reduced dust emissions

Wheel-generated dust (as mentioned previously) and dragline operations can result in large dust generation. As presented in Table 2-1 above, the revised mining method will result in a reduction in both trucks and draglines. This reduction in mobile mining equipment (VKT and draglines) has resulted in a reduction in dust emissions of approximately 37% over the life of the mine. Details of these changes are presented in SEIS Volume 2, Appendix P, Section 1.

Reduction of Project footprint

The changes in mining methods and equipment, in conjunction with the increased yield at the CHPP, have resulted in a reduction to the 30-year mining footprint (see Figure 2-2). When compared to the Project footprint presented in the EIS, the current footprint's disturbance area is 20,680 hectares (ha) or 8% less (see Figure 2-3). This reduction in disturbance area translates into less vegetation clearance overall and reduced surface water diversions. Table 2-2 provides a comparative summary of vegetation disturbance for the EIS and SEIS disturbance areas.

Table 2-2 Summary of vegetation disturbance Environmental Impact Statement (EIS) compared to Supplementary EIS (SEIS) disturbance areas

Vegetation Community	Regional Ecosystem or Ecological Community	VM Act	EIS Disturbance within Vegetation Community (ha)	SEIS Disturbance within Vegetation Community (ha)	Difference (ha)
Brigalow Open Woodland	10.3.3	Least Concern	1,576.8	1,595.0	+18.20
Silver-leaved Ironbark Open Woodland	10.3.28	Least Concern	7,534.5	6,369.0	-1,165.50
	10.5.5a	Least Concern	0.0	0.0	N/A
Poplar Box Open Woodland	10.3.27a	Least Concern	575.7	593.4	+17.70
	10.5.12	Least Concern	570.9	547.0	-23.90
Non-remnant Grassland	Not Classed	Not Listed	9,017.2	8,894.0	-123.20
Silver-leaved Ironbark / Poplar Box Mixed Woodland	10.5.5a	Least Concern	969.3	578.9	-390.40
	10.5.12	Least Concern	0.0	0.0	N/A
White Cypress Pine Woodland	11.5.5b	Least Concern	112.0	68.67	-43.33
Gidgee Open Woodland	10.3.4	Least Concern	160.4	119.8	-40.60
Fringing Riparian Woodland	10.3.14	Least Concern	417.8	378.5	-39.30
	11.3.2 (south-eastern watercourse only)	Of Concern	0.0	0.0	N/A
	11.5.3 (south-eastern watercourse only)	Least Concern	0.0	0.0	N/A
Weeping Bottlebrush Heath	10.7.7	Least Concern	1,011.0	1,021.0	+10.00
Thozet's Box Open Woodland	10.7.5	Least Concern	0.0	0.0	N/A
Lancewood Woodland	10.7.3	Least Concern	380.4	415.3	+34.90
Queensland Yellowjacket Low Woodland	10.5.1	Least Concern	174.0	226.0	+52.00

Less operational cost

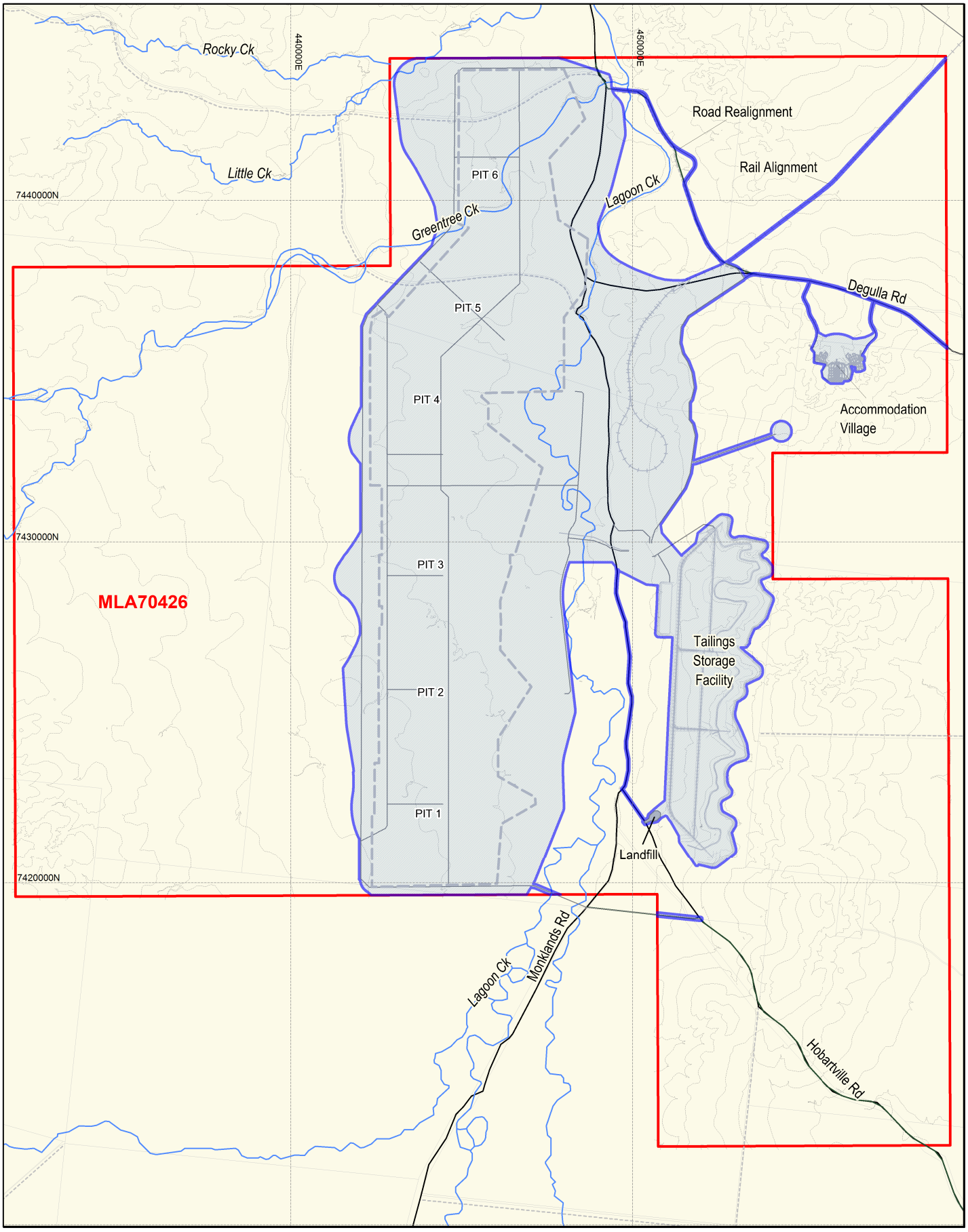
A reduction in mine equipment has the added benefit of requiring reduced overall diesel consumption, consumables, and man power to operate them thus decreasing operational costs over the life of mine. Through decreasing the operational costs, the Project will be more economically viable.

Reduction in noise and vibration Impacts

Predicted operational noise levels at all identified sensitive receptor locations were marginally to significantly reduced through the adoption of the reduced numbers of mine equipment required to be utilised. The vibration remained below guideline levels at all off site sensitive receptor locations.

Disadvantages

There are no anticipated disadvantages arising from the reduction in mining vehicle numbers.



Source: See Copyright Details below and for full disclosure Please Refer to the SEIS ***Volume 2, Appendix B***

0 2 4Km

Scale 1:150,000 (A4)

Datum: GDA94, MGA Zone55

N W E S

HANCOCK PROSPECTING PTY LTD

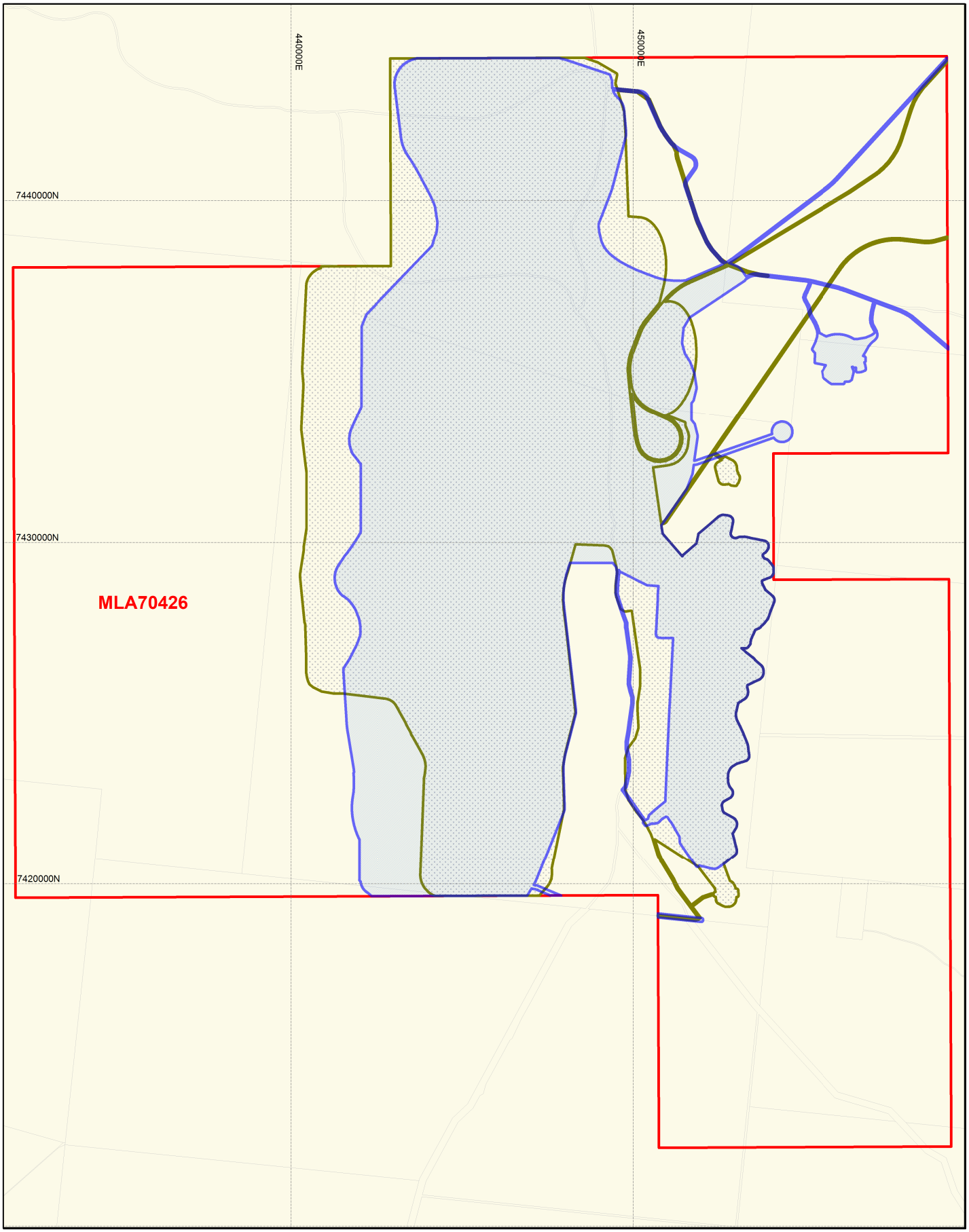
Alpha Coal Project
Supplementary Environmental Impact Statement

ALPHA COAL PROJECT (MINE) DISTURBANCE AREA

Job Number	4262 6680
Revision	A
Date	09-03-2011

Figure: 2-2

File No: 42626680-g-1002.wor



Mining Lease Application (MLA70426) Boundary

Project Disturbance Area - SEIS April 2011 (20 680 ha)

Project Disturbance Area - EIS November 2010 (22 520 ha)

Source: See Copyright Details below and for full disclosure Please Refer to the SEIS ***Volume 2, Appendix B***

0 2 4Km

Scale 1:150,000 (A4)

Datum: GDA94, MGA Zone55

N W E S

HANCOCK PROSPECTING PTY LTD

Alpha Coal Project
Supplementary Environmental Impact Statement

ALPHA COAL PROJECT (MINE) COMPARISON OF COAL MINE PROJECT DISTURBANCE AREA

Job Number	4262 6680
Revision	B
Date	09-03-2011

Figure: 2-3

File No: 42626680-g-1008.wor

2.1.1.3 Mining Waste

Description

The changes in the mining methods will reduce the mine waste volumes, comprising overburden, coarse reject, and tailings. These reductions are presented in Table 2-3. The main reason for the reduction in mine waste is the improved efficiency of the mining methods proposed and the increased yield of the CHPP.

Table 2-3 Revised Project annual and Life of Mine waste quantities

Description	Annual Production		Life of Mine (30 years)		Percentage of ROM Coal	
	Proposed in EIS	Revised Values	Proposed in EIS	Revised Values	Proposed in EIS	Revised Values
Run of Mine (ROM) Coal	41 Mtpa	38 Mtpa	1,230 Mt	1,080 Mt	-	-
Product (washed) Coal	30 Mtpa	30 Mtpa	856 Mt	840 Mt	-	-
Overburden	530 Mtpa	466 Mtpa	16,000 Mt	14,000 Mt	-	-
Coarse Rejects	6.6 Mtpa	6.1 Mtpa	197 Mt	173 Mt	16%	16%
Tailings	2.5 Mtpa	2.3 Mtpa	74 Mt	65 Mt	6%	6%

Advantages

Reduced Tailings Storage Facility (TSF) footprint

A key advantage of a reduction in mine waste volume is a potential reduction in the out-of-pit TSF footprint. As detailed in the EIS, a 30-year out of pit storage facility is proposed to manage the tailings generated during LOM. This results in a large TSF footprint, ~ 16 km^2. Any reduction in tailings generated would reduce this envisaged final footprint.

The SEIS includes an initial assessment of in-pit tailings disposal after five years. Thus a strategy of both improved mining efficiency and in-pit disposal would result in a smaller disturbance footprint, reduced risk of groundwater and surface impact, and reduced mining infrastructure on the Colinlea Sandstone subcrop area.

Less waste handling

Due to the improved mining and processing efficiencies there will be less mine waste (tailings and coarse rejects) and subsequently a reduction in the requirement to handle this waste. The reduction in mine waste volumes will result in less transport requirements, resulting in reduced power, water, and diesel use.

Less coarse reject to be encapsulated

The EIS outlines the proposed process of managing the disposal of the potentially acid-forming coarse rejects. This process includes selective placement of the waste, addition of lime, compaction and encapsulation. Based on the anticipated reduction in the volume of coarse rejects over the life of the Project there will be a reduced area required for the coarse reject disposal, and as a result a reduced risk of long-term acid mine drainage from the placement locations.

Disadvantages

There are no anticipated disadvantages arising from the reduction in mine waste volumes.

2.1.2 Mine Design

2.1.2.1 Number of Pits and Ramps

Description

The EIS proposed the total mine strike length of approximately 24 km to be divided into four pit areas with 11 ramps utilised for mining. With the new mine design, the number of pits has increased from 4 to 6 and ramps reduced from 11 to 6 as shown on Figure 2-4. The main rationale for the change in the number of pits and ramps was to increase mining efficiency through better facilitating the mining methods described above.

Advantages

Introduction of IPCC

The main advantage of increasing the number of pits is that it allows for the introduction of the more efficient IPCC method and optimisation of truck waste haulage. Details on the advantages and disadvantages of the IPCC process are discussed in Section 2.1.1.1.

Streamlining of dragline and coal mining scheduling

Increasing the number of pits streamlines the dragline and coal mining scheduling, thereby making the mine plan operationally more robust.

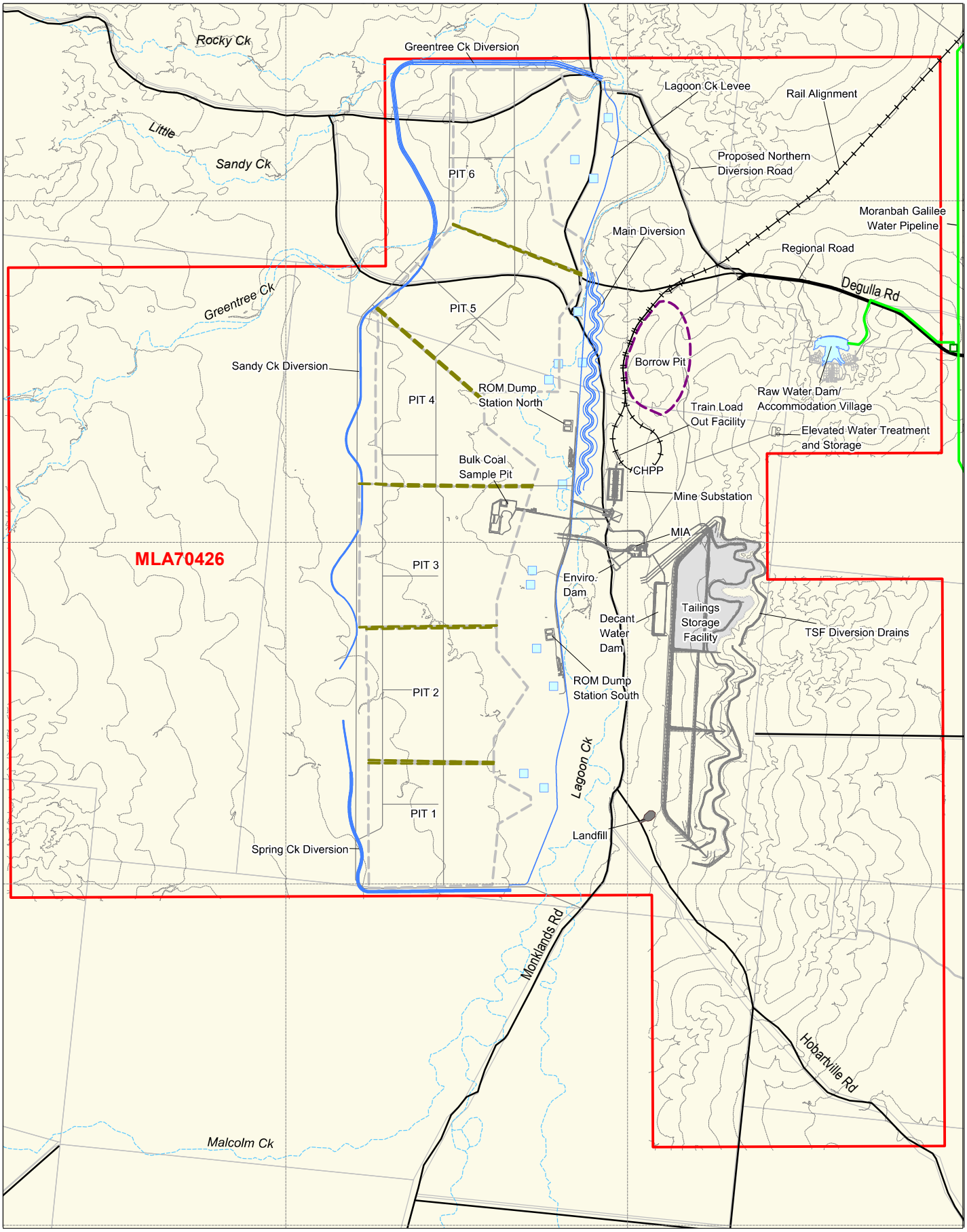
Disadvantages

Increased resource sterilisation

The disadvantage of increasing the number of pits is that it will result in more resource sterilisation. Further details of resource sterilisation can be found in Section 2.1.2.4.

Increased final void

The changes in the mine plan will result in additional ramps that will result in a larger final void at the end of the 30-year mine life (than envisaged during the EIS). Assuming the final void will remain as is at the end of mining, i.e. no slope changes or partial backfilling, then there would be an increase in final void area of approximately 17%.



Diversion
Contour (10m interval)
Water Pipeline
Land Bridge
Mining Lease Application (MLA70426) Boundary
Water Dam
Borrow Pit
Pit Outline

Source: See Copyright Details below and for full disclosure Please Refer to the SEIS ***Volume 2, Appendix B***

0 2 4Km

Scale 1:150,000 (A4)

Datum: GDA94, MGA Zone55

N W E S

HANCOCK PROSPECTING PTY LTD

Alpha Coal Project
Supplementary Environmental Impact Statement

ALPHA COAL PROJECT (MINE)
PROJECT LAYOUT

Job Number	4262 6680
Revision	D
Date	09-06-2011

Figure: 2-4

File No: 42626680-g-1001.wor

2.1.2.2 Land Bridges

Description

In the EIS only one temporary land bridge was proposed as part of the mine design. Under the current SEIS mine design there will be five permanent land bridges as shown on Figure 2-4 above. The permanent land bridges are required to allow for uninterrupted conveyor access and improved dragline and trucking utilisation.

Advantages

Increasing overall mining efficiency

The key advantage associated with introducing five permanent land bridges is that it allows for the new proposed mining methods to be implemented. These new mining methods as described above, result in less VKT, dust and greenhouse gas generation and a reduced noise footprint. The changes also increase the Project's overall mining efficiency and reduce operational costs.

Disadvantages

Increased resource sterilisation

The main disadvantage of introducing five permanent land bridges is that resource sterilisation will be increased. Resource sterilisation is discussed in further detail in Section 2.1.2.4 below.

2.1.2.3 Box Cut Location

Description

The conventional low-wall box cut proposed in the EIS has been amended as part of the updated mine plan to a down dip location. This relocation was deemed necessary due to the uncertainty of the location of the Limit of Oxidation (LOX) line, which is the location in the seam where the coal has been oxidised due to near surface exposure and is not of recoverable economic value. The relocation of the box cut removes the risk of unintentionally mining uneconomic coal and enables the coal production from year 1 from both the C and D coal seams.

The new box cut location also allows for early introduction of dragline operations, thus allowing truck numbers for waste haulage to be reduced / managed from the outset of mine operations. See Figure 2-4 for details of the new box cut location.

Advantages

Reduce the likelihood of oxidised coal being mined

The main advantage in changing the location of the box cut will be to greatly reduce the likelihood of intersecting oxidised coal due to the uncertainty of the location of the LOX line. This mining approach will result in the optimisation of the disturbance area as no areas of uneconomic coal will be disturbed unnecessarily.

Early introduction of dragline operations

The relocation of the box cut has made the early introduction of the more efficient dragline operations possible from the outset of the Project. The introduction of the draglines also assists in the reduction of the required truck fleet numbers and their associated impacts.

Production of uniform quality product coal

The new location allows for production of uniform quality product coal from year 1 of operations for export.

Disadvantages

Longer waste haulage distance

The disadvantage of the relocation of the box cut is that the waste haulage distance will be slightly longer during the first five years of operations. This increase to the haulage distance will result in an increase to the amount of VKTs by the waste trucks and an increase in dust generation from this activity.

2.1.2.4 Resource Sterilisation

Description

The EIS mine plan estimated that approximately 18 Mt of economic coal (D Seam) was to be sterilised over the 30-year life of mine, equating to approximately 2% of the estimated MLA 70426 coal resource. This was largely due to the need for creek diversions and drainage corridors at the south and north of the mine pit area, levees and a temporary (see 2.1.2.2) land bridge. The revised mine plan does not change the extent of resource sterilisation due to the creek diversions and drainage corridors; however, it results in four additional permanent land bridges. The introduction of land bridges into the mine plan is due to area limitations imposed by the mining tenement and the requirement to optimise efficient use of mining resources. The updated mining strategy utilises a series of adjacent open-cut pits in a north-south configuration, and within this context, the main functions of the land bridges are to facilitate continuous east-west access between the pre-strip areas and the spoil damp areas, while in turn enabling economic waste removal. This has resulted in limited coal resources beneath the land bridges becoming inaccessible for mining.

Advantages

Whilst there are no identified advantages to an increase in resource sterilisation, the cause of the increase in resource sterilisation, namely the introduction of the permanent land bridges, has improved mining efficiencies and overall economic viability.

Disadvantages

Reduced quantity of economic coal

The main disadvantage is an increase in the quantity of coal within the tenement that cannot be accessed through economic mining.

2.1.3 Coal Handling and Preparation Plant

2.1.3.1 Run of Mine Stockpiles

Description

Run of Mine (ROM) locations have shifted in order to accommodate changes to the Mine Plan as shown on Figure 2-4 above.

Advantages

Reduced road haul distances

The relocation of the ROM stockpiles will result in a reduction in coal hauling distances by up to 1 km. This reduction in material movement will enable a reduction in the size of the coal hauling fleet. This reduction in haul distances and fleet numbers will result in reduced VKTs and the associated dust generation, as well as reduced operating costs due to lower fuel consumption, tyre wear, maintenance, etc.

Reduced conveyor distances

The revised ROM locations result in a reduction in overland conveying distances and consequently capital cost and construction time. The reduction in conveyor length also results in a reduction in power demand for this activity.

Disadvantages

Re-design of the overland conveying system

The change in the ROM locations will result in a minor re-design of the overland conveying system.

2.1.3.2 Relocation of the Coal Handling and Preparation Plant

Description

The CHPP and transfer infrastructure to the Train Load Out (TLO) have been relocated approximately 500 m to the south-west of their original location due to changes made to the alignment of the rail loop as shown on Figure 2-4 above.

Advantages

Reduced disturbance footprint

The key advantage to relocating the TLO is that it reduces the disturbance footprint required and consequent rehabilitation requirements. In the previous location the TLO would have resulted in significant earthworks and an increased area of disturbance due to the need to batter back the surrounding slopes. The current location will reduce the need for these works, reducing the disturbance footprint and the stormwater runoff that would result from that area. Also, it reduces capital cost, minimises the amount of earthmoving equipment required and does not have a major material impact on the design and cost of the CHPP and associated infrastructure.

Reduces construction time for the rail loop

By relocating the TLO Bin it reduces construction time for the rail loop.

Disadvantages

Minor re-design of the CHPP

A minor re-design of the CHPP was required involving shifting the location of the TLO Bin and associated infrastructure. Minor equipment changes included a revision of certain conveyor lengths and elevations.

Potential exposure to inundation

The CHPP has been relocated closer to Lagoon Creek, increasing potential exposure to some low-level inundation during extreme flooding events.

2.1.4 Mine Infrastructure

2.1.4.1 Mine Infrastructure Area and Light Industrial Area

The industrial functions supporting the mine operation have been split into two sub-groups; these are:

Mine Infrastructure Area (MIA)

The MIA will accommodate the core functions supporting mine operations. The MIA is located in close proximity to the CHPP and TLO so that operational efficiency is maximised.

The MIA facilities will comprise:

- Critical mines operations, i.e. production and field maintenance staff;
- Short-term technical planning, statutory, geology, survey and environmental staff;
- Front-line safety, including emergency response / first aid;
- Vehicle washdown; and
- Heavy / medium vehicle servicing.

Light Industrial Area (LIA)

The LIA will accommodate the supporting functions and will be located closer to the mine lease boundary. The separation of LIA functions provides opportunity to minimise non-essential traffic and labour interacting with mining operations, thereby increasing safety and operational efficiency.

The main facilities to be moved from the MIA, as presented in the EIS, to the LIA comprise:

- Storage of fuel and lubricants - with fuel either trucked or pumped to the MIA and other user points, and lubes trucked to user points;
- Specialist Services – Hydraulics, Electrical and Instrument servicing, etc., where these specialist activities can be undertaken by a local branch facility of a nationwide provider;
- Light vehicle maintenance and repair undertaken by a service station-type facility;
- Tyre Warehouse using the support facility of the tyre supplier/retailer (the heavy vehicle tyre change facility would be retained in the MIA);
- Plate Shop – most welding would be performed in the LIA. This could include repair and refurbishment of the dragline buckets at a supplier's facility, and ground-engaging tools and equipment for other earthmoving equipment.

The revised MIA building layout and the building layout of the proposed LIA can be found in the Project Wide Project Description in Volume 2, Appendix C, Section 3. The location of both the MIA and LIA areas are shown on Figure 2-4.

Advantages

Reduced Traffic Impacts

The introduction of the LIA will enable future delivery of parts and consumables by rail. The use of rail as a mode of transport for these goods will reduce the volume of road traffic, reduce the potential for traffic incidents and reduce the degradation of the road infrastructure.

Reduction in the number of fatigue-related incidents

A reduction in the potential for fatigue-related incidents will occur as maintenance and operations support personnel in the LIA will be accommodated on-site, thus reducing non-essential road travel.

Increased site safety

The segregation on-site of the heavy vehicle movements and maintenance from the proposed activities at the LIA will reduce the potential for incidents. The effective segregation of heavy vehicles from other site activities is a positive safety measure.

Disadvantages

Capital costs of developing two separate complexes

The disadvantage is that some capital costs will be duplicated in order to develop and operate two on-site industrial complexes.

2.1.4.2 Sewage and Water Treatment Plants

Description

Both the Potable Water Treatment Plant (PWTP) and Sewage Treatment Plant (STP) have been relocated as shown on Figure 2-4. The PWTP is now to be located on the ridge between the MIA and the accommodation village, which is in close proximity to the new raw water dam. The STP position will be closer to the main sewage source (the accommodation village), while still being down gradient from it. This will enable potable water to be supplied to all the large usage sites under gravity and a relatively short pump from the raw water dam to the PWTP. The main drivers behind the relocation of the STP and PWTP were the changes in location of the main load centres (LIA and accommodation village (Section 2.1.4.4)).

The PWTP and STP will be installed on-site to provide for the construction workforce. Both of these treatment plants will continue to provide treatment for the life of the Project; hence, they will be specified and designed accordingly. As presented in Section 2.1.5.1, demand levels for the construction phase are expected to be similar or above those planned during long-term operations. This revision of workforce numbers and the associated demand on services has warranted installing the permanent infrastructure during the construction phase of the Project.

Advantages

Reduced infrastructure demand

The main advantage to the change in location of both the STP and PWTP is that less infrastructure will be required to convey the media, which in turn will mean less operational costs due to pumping requirements. In addition, both facilities are now close enough to other facilities, namely the accommodation village, LIA and MIA, to enable easy maintenance.

Furthermore, by installing the permanent PWTP and STP early on in the construction phase there will less site construction, commissioning and decommissioning works required, i.e. through not having to implement temporary infrastructure.

Disadvantages

No disadvantages have been identified due to the relocation of the STP and PWTP or with their permanent installation during the construction phase.

2.1.4.3 Mine Site Access

Description

The EIS proposed Hobartville Road as the main site access road. This is now changed to Degulla Road, with Hobartville Road functioning as a secondary access route (refer to Figure 2.4).

Advantages

Further site planning has resulted in the creation of a broad east-west infrastructure corridor along the axis of Degulla Road. This will allow coordinated management of the interfaces between mine operations and external parties (particularly power supply, water supply and road transport). Consistent with this concept are the introduction of the LIA and the co-location of the accommodation village near this infrastructure corridor.

Disadvantages

Travel distance between the accommodation village and Alpha aerodrome is increased by approximately 10 km. Whilst this change will cause an increase in travel distances, the safety risks are being mitigated by the predominant use of Bus-in Bus-out (BIBO) services between the mine site and the Alpha aerodrome.

2.1.4.4 Accommodation Village Location

Description

An accommodation village will be required for the duration of the construction of the mine infrastructure as well as for the mine operational phase. The same location, and for the most part the same buildings and infrastructure, are proposed to be used for the construction and operational phases of the Project, i.e. the construction accommodation village will become the operations accommodation village. A planned and staged approach will be used to gradually build, commission, and refurbish the accommodation village to suit the changing requirements throughout the Project. This philosophy is aimed at helping to minimise unnecessary rework and disturbance footprints.

Both the size and location of the accommodation village have been changed based on current workforce projections and accommodation strategy. The new site was selected so that the common services of power, water, communications, and rail and road logistics were all entering the mine-site from the east-west infrastructure corridor as noted above.

Advantages

Proximity to site access point

The advantage of changing the accommodation village location was to align with the new main access to the mine site off Degulla Road. In addition, the common services of power, water, communications, rail and road logistics are all entering the mine site from the north-eastern section of Mining Lease Application (MLA) 70426.

Improved amenity

To improve the site amenities for the workforce, the accommodation village design will incorporate the mine site raw water dam, effectively configuring and overlooking the accommodation village neighbourhoods around the base of the raw water dam, thereby providing an accommodation village with visual appeal to attract the workforce.

Disadvantages

Increased travel distance

The only disadvantage is the slightly longer travel distance from Alpha Township and the Alpha Aerodrome.

2.1.4.5 Raw Water Dam

Description

The EIS proposed the raw water dam to be adjacent to the rail loop. The raw water dam will now be co-located with the accommodation village as shown on Figure 2-4. This location change was made so that the raw water dam would be in close proximity to the incoming bulk water supply pipeline, whilst at the same time providing an aesthetic point of note (water feature) to the accommodation village residents.

Advantages

Proximity to incoming water supply

The main advantages of relocating the raw water dam are that it is now closer to the incoming water supply, therefore allowing for easier delineation of service corridors under the control of different owners, as well as providing the Project with a cost advantage.

Amenity value

A further advantage is that the water facility provides some amenity.

Disadvantages

No disadvantages have been identified due to the relocation of the Raw Water Dam.

2.1.4.6 On-site Roads

Description

A number of changes have been made to on-site roads shown on Figure 2-4, of which the main changes are detailed below.

Mine site access road and intersection

To provide access from the upgraded Degulla Road to the MIA, LIA and CHPP area requires the construction of the mine site access road. This section of road is to be constructed to a sealed standard. It also provides access to the LIA and will have a connection to the accommodation village access road.

Accommodation village access road and intersection

Access to the proposed accommodation village will be via a new roadway connecting to both the upgraded Degulla Road and the main site access road via the Alpha-Clermont Road.

2.1.4.7 Site access and Road Upgrades

Description

To provide access to the accommodation village, the LIA and the MIA, 11.5 km of the existing Degulla Road will be upgraded to a sealed standard from the Clermont-Alpha Road to the intersection with the mine access road. During the construction phase of the Project, the site will be controlled by a temporary security building. During operations, as access to the mine will be via Degulla Road, there will be no security point until the MIA.

The quarry access road is to provide access to the proposed basalt quarry site located in the north-eastern portion of the mine site. It is to be constructed to an unsealed standard suitable for regular use by up to B-Double sized vehicles.

Road diversions delineated in the EIS have not changed.

Advantages

Increased public road upgrades

The total length of the council and government road upgrades due to the Alpha Coal Project is greater than that originally proposed in the EIS, thus benefiting the local road users.

Disadvantages

Increased travel distance to site

Access to the mine site via Degulla Road will mean a slightly farther travel distance by road from the Capricorn Highway and the Alpha Aerodrome.

2.1.4.8 Lagoon Creek Crossing

Description

The EIS proposed a high-level bridge over Lagoon Creek to provide all-weather access to the mining pit. This bridge has now been replaced by a causeway-style crossing to reduce Project capital cost.

Advantages

Reduced capital costs

The main advantage to no longer having a high-level bridge is a reduction in Project capital cost.

Disadvantages

Flood-prone access reduced

In extreme flood events, emergency egress from the mining area will be via the conveyor walkways for able-bodied people. During the infrequent periods when the crossing is inaccessible, injured personnel requiring evacuation will need to be airlifted out.

2.1.4.9 Power Supply

The Powerlink supply configuration has changed slightly from the EIS, with the 275 kV feeders now extending into the mine site, and will generally follow Degulla Road to service the changed infrastructure facility positions. The configuration change now allows incoming feeders to align with the main mine site access road of Degulla Road and to a certain extent, the SunWater bulk water pipeline in a common services corridor, and will terminate on the line side of the main mine substation.

Advantages

Common utilities corridor

Extending the Powerlink feeders into the mine footprint along a common services corridor (and aligned some of the way with the SunWater bulk water supply line) next to the Degulla mine access road will provide an improved ease of access during construction and maintenance as well as minimising disturbance.

2.1.4.10 Water Supply

Description

The Sunwater bulk water supply pipeline, because of further route optimisation studies, now no longer follows the railway line into the mine area as originally proposed in the EIS. It will now tee off in a north/south direction just outside the eastern boundary of MLA 70426 and will enter the mine site by turning west, following Degulla Road, and will terminate at the raw water dam facility (Figure 2-4). This change in pipeline route has been introduced to align the water supply pipeline more closely with other

changed mine site infrastructure relocations (including the Powerlink transmission line), to form a common services corridor parallel to Degulla Road.

Advantages

Shared utilities corridor

The advantage of moving the water supply pipeline alignment to this new configuration is based on route optimisation by SunWater, which has taken into account the advantages of residing next to the new access road for Kevin's Corner as well as Degulla Road for increased ease of access during construction and maintenance.

Reduced disturbance footprint

This new configuration will also minimise the on-site disturbance footprint by the incorporation of multiple services in a common services corridor. The reduction in disturbance area is anticipated to be approximately 1,840 Ha.

Disadvantages

No disadvantages have been identified.

2.1.4.11 Lagoon Creek Diversion

Description

The Lagoon Creek diversion floodplain presented in the EIS has been widened following discussions with the regulators and after a compromise with the Project mining team. The revised Lagoon Creek diversion is presented on Figure 2-4. As part of the diversion changes, some floodplain was gained from the mining operation after trade-off exercises were conducted, taking into account both the economics of spoil dump arrangements versus excavation of the diversion's high flow channel, and approvability concerns/environmental benefits.

Advantages

Improved flood hydraulics

The revised Lagoon Creek levee design and diversion aimed at maintaining the pre-mining hydraulics of the creek by combining the ability to convey the flows (unaltered) as well as on-site storage of the flood event, reducing the peak outflows. Consequently, the design allows for improved flow under bankfull conditions and less constriction of the overall floodplain.

Improved low flow characteristics

By widening the overall Lagoon Creek channel and associated floodplain, the flow characteristics of the natural Lagoon Creek are more closely replicated, resulting in more natural flow characteristics and better representation of the natural stream morphology.

Reduced Earthworks

Advantages of widening the Lagoon Creek diversion floodplain are that less bulk earthworks will be required and that the form of the diversion low flow channel is now able to more closely reflect that of the natural system.

Disadvantages

Reduced mine footprint

The main identified disadvantage of widening the Lagoon Creek diversion floodplain is that there will be less area for the mining operation's out-of-pit spoil dumps and other infrastructure to the west of the Lagoon Creek levee. In addition any creek crossing will be longer.

2.1.4.12 Western Creek Diversion

Description

Spring Creek and Sandy Creek diversions are now aligned to match the final end of mine life highwall alignment as shown on Figure 2-4. The final highwall position generally moved eastwards from that presented in the EIS following mine plan revisions. The revised diversion alignments optimise the use of natural gradients, which results in a reduction in diversion length and earthworks and provide improved surface water capture for the protection of the mining area.

Advantages

Reduced diversion length

The key advantages of moving the Spring Creek and Sandy Creek diversion alignments are that it will result in shorter diversion lengths and creates less disturbed catchment area for the mining operation to deal with via the use of secondary and temporary drains.

Disadvantages

There are no clear disadvantages of the revised alignment.

2.1.5 Workforce

The revised mine planning work has resulted in the refinement of the on-site workforce size estimates. These are summarised in Table 2-4.

Table 2-4 Estimated workforce size

Peak On-site Workforce	Construction	Operations
EIS	1,200*	1,200*
SEIS	1,050	770

* The workforce estimates in the EIS were total workforce. This value is the equivalent on-site workforce

2.1.5.1 Construction Workforce Numbers

Description

The construction workforce peaks at approximately 1,535 in Q4 2013 with up to 1,050 actually rostered on at any given time.

Approximately 75% of the total construction personnel will be on-site at any one time.

These numbers will decrease to their lowest levels post 2022 when approximately 38 employees will be required for dragline construction and ongoing capital works.

The construction workforce will be divided into the following areas:

- Coal processing;
- Site infrastructure;

- Project Management and Construction (PMC) and owners team;
- LIA buildings;
- Ongoing capital draglines, shovels and civil works
- Heavy mobile equipment build; and
- Clermont-Alpha Road.

Construction personnel will generally work 21 days on, 7 days off. Programmed shifts will be 10 to 11 hours duration, daytime only. Night-time shifts may be required on occasions.

Due to the large numbers of personnel needed to be transported in and out of the Project area at each rotation, consideration is being given to split shifts for each of the major construction workforces. In this instance, it may be possible to decrease the numbers of construction phase personnel that are on-site at any one time.

The current construction workforce number represents a 5% reduction from that presented in the EIS. Changes to the construction workforce have been made due to better definition at this stage of the Project's progression and rescheduling including resource levelling.

A histogram showing the personnel numbers for the construction stage of the Project can be found in the revised description of the Project in SEIS Volume 2, Appendix C, Section 7.1.

Advantages

Reduced personnel

With the predicted skills shortage due to the recent natural disasters and major infrastructure projects, recruitment of the construction workforce will be marginally easier due to the anticipated lesser numbers required.

Disadvantages

Less economic benefit

The main disadvantage of the reduced construction numbers is that there will be less employment generated from the mine with the economic benefit multiple reducing in direct proportion.

2.1.5.2 Operational Workforce Numbers

Description

Personnel associated with coal mining operations are expected to peak at 770 on-site at around year 4.

From year 7 onwards, approximately 600 operational people will be on the mine site at any time.

Total employment will follow a normal ramp-up curve from an initial team of 300 people in year 1 of the operations, through to 800 personnel at commencement of coal operations.

For the first 5 years of coal mining operations, the total employees will climb evenly to a peak of 1,540 (for all aspects associated with the mine component of the Alpha Coal Project).

The numbers on-site at any time are directly related to engaging the vast majority of personnel on an even time seven day on seven day off (7/7) roster.

During the period from year 5 to year 8, personnel numbers reduce evenly to a long-term employment scenario of approximately 1,200 personnel, of which approximately 770 are working on-site and the remainder are on their leave rosters.

Personnel numbers from thereon remain relatively static as the mine life progresses.

A number of different rosters may be worked during the operational phase. These include:

- Five days on, two days off, work roster (5/2);
- Seven days on, seven days off, seven nights on, seven days off, being a four panel roster. These will be 12 or 12.5 hour shifts. Shift change will occur at 6:00 or 7:00 am/pm; however, shift change times may vary seasonally to suit daylight hours (7/7 continuous shift); and
- Seven days on seven days off (7/7/day shift).

Operational staff shift changes will take place over multiple days, typically from Tuesdays to Thursdays.

Based on the logistics of moving the proposed number of personnel on the even time, four panel roster, not all of the total operations phase personnel contingent will be on-site at a given time. On a four panel roster system, approximately 75% of the total workforce will be at work at any particular time

The current total operational workforce number represents a 32% reduction from that presented in the EIS. Changes to the operational workforce have been made largely due to Project refinement and better definition predominately due to clearer mining equipment definition and optimisation of rosters.

A histogram showing the personnel numbers for the operational stage of the Project can be found in the revised description of the Project in SEIS Volume 2, Appendix C, Section 7.3.

Advantages

Less impacts to the Region

The advantages of the reduced numbers are reduced site services, transport logistics and reduced safety risks.

Less transport impacts

This reduction has a direct impact on the numbers of commuting flights and bus trips required mid week to transport employees to their designated point of departure.

Disadvantages

Less on-site employment generated

Reduced on-site operations numbers will result in less site-based employment. This will be offset by additional off-site industry support services in, for example, manufacture, maintenance and upgrades to the IPCC system.

2.2 Railway Corridor

2.2.1 Alignment

Modifications to the alignment of the Alpha Coal Project (Rail) have occurred since the release of the EIS. These changes, which are contained generally within the original study boundary, have occurred in response to:

- Consultation with corridor landowners;
- Comments made in formal submissions to the Project;
- Additional non-intrusive site reconnaissance; and
- Continuing design evaluation for constructability.

The refinement of the preferred rail corridor, now detailed in the SEIS, broadly achieves the following key objectives.

- Reduction in the loss or alienation of established rural infrastructure;
- Straightening of the alignment so as to reduce the land requirements and overall rail chainage length;
- Avoidance or minimisation of the length of the rail corridor running within close proximity to localised natural drainage lines to improve the efficiency of the railway formation;
- Refinement of the alignment orientation near bridge locations to reduce overall span length and minimise or avoid creek diversions;
- Avoidance of environmentally sensitive areas identified as endangered and of concern remnant ecosystems where possible, or seeking to minimise the impact on these areas; and
- Adjustment of the horizontal alignment, where possible, to avoid highly erosive and dispersive soils and reduction of the earthworks mass haul quantities.

Changes to the alignment are described below and depicted on Figure 2-6 of SEIS Volume 2, Appendix C, Section 7.2.

2.2.1.1 Chainage 0 to 12000

Description

The railway loop at the Alpha Coal Mine section, chainage 0 to 12000 has been repositioned to accommodate refinements to the Alpha Coal Mine operations and providing efficiencies in the estimated material earthworks haulage. This railway loop still remains within the Alpha Coal MLA 70426.

Advantages

The new location suits the Alpha Coal Mine operations better and improves the balance of earthworks estimates.

Disadvantages

No disadvantages have been identified due to the railway loop shift at the Alpha Coal Mine.

Impact Assessment

Noise and Vibration

No additional impacts have been identified as a result of this change.

Landscape Character

No additional impacts have been identified as a result of this change.

Air Quality

No additional impacts have been identified as a result of this change.

Ecology

No additional impacts have been identified as a result of this change.

Soils

No additional impacts have been identified as a result of this change.

Geology and Groundwater

No additional impacts have been identified as a result of this change.

Social

No additional impacts have been identified as a result of this change.

Land Use

No additional impacts have been identified as a result of this change.

Transport

No additional impacts have been identified as a result of this change.

2.2.1.2 Chainage 12000 to 36000

Description

Section 12000 to 36000 of the alignment has shifted for the purposes of avoiding property infrastructure.

Advantages

Advantages of this alignment change are as follows:

- Avoidance of a farm dam located on a private property;
- Avoidance of one (1) km of dispersive black soils;
- Straightening the alignment to reduce length;
- Refinement of the alignment to avoid the need for the rail to run parallel to a small creek tributary;
- Reduction of potential impact on environmentally sensitive areas identified as of concern – subdominant remnant regional ecosystems at chainage 17000; and
- With regard to the EIS alignment, the amended alignment will now avoid of concern sub-dominant vegetation at chainage 17000, through which the EIS alignment intersected for approximately 1.5 km.

Disadvantages

No key disadvantages have been observed.

Impact Assessment

Noise and Vibration

No additional impacts have been identified as a result of this change.

Landscape Character

No additional impacts have been identified as a result of this change.

Air Quality

No additional impacts have been identified as a result of this change.

Ecology

Although the potential impacts, including fragmentation and loss of vegetation, habitat, and resources, are not considered to be substantially increased as a result of this adjustment, this section of the alignment will intersect a small patch of high value regrowth for a distance of approximately 500 m at chainage 35000 of the Project. At this point the alignment will also run parallel to a patch of endangered dominant Brigalow. The width of the corridor will determine whether this Brigalow community is impacted or not. Vegetation clearing associated with a typical 60 m wide rail corridor should avoid the endangered vegetation community. If avoidance of vegetation clearing is not practical, the width of clearing should be reduced below a standard width. Additional vegetation offsets may be required.

Soils

No additional impacts have been identified as a result of this change.

Geology and Groundwater

No additional impacts have been identified as a result of this change.

Social

No additional impacts have been identified as a result of this change.

Land Use

No additional impacts have been identified as a result of this change.

Transport

No additional impacts have been identified as a result of this change.

2.2.1.3 Chainage 110000 to 125000

Description

Section 110000 to 125000 of the alignment has shifted further away from a homestead in accordance with landowner request.

Advantages

Advantages of this alignment change are as follows:

- Alignment moved further away from homestead;
- Straightening the alignment to reduce length;
- Remaining within the declared Infrastructure Facility of Significance (IFS) boundary;
- Improvement of culvert locations; and
- Reduction of earthwork quantities and further balancing of earthworks.

Disadvantages

This section of the alignment will intersect a small patch of endangered dominant Brigalow for a distance of approximately 250 m at chainage 120000.

Impact Assessment

Noise and Vibration

No additional impacts have been identified as a result of this change.

Landscape Character

No additional impacts have been identified as a result of this change.

Air Quality

No additional impacts have been identified as a result of this change.

Ecology

Although there is small impact to an endangered dominant regional ecosystem, there is no substantial overall increase in impacts already identified in the EIS. Avoidance of this threatened ecological community is recommended, however, due to landowner requests the practicality of this mitigation measure is limited. If avoidance of vegetation clearing is not practical, the width of clearing should be reduced below a standard width. Additional vegetation offsets may be required.

Soils

No additional impacts have been identified as a result of this change.

Geology and Groundwater

No additional impacts have been identified as a result of this change.

Social

No additional impacts have been identified as a result of this change.

Land Use

No additional impacts have been identified as a result of this change.

Transport

No additional impacts have been identified as a result of this change.

2.2.1.4 Chainage 140000 to 170000

Description

Section 140000 to 170000 of the alignment has been shifted for the purposes of accommodating a landholder request that will assist with farm operations and property access.

Advantages

This change in alignment will assist with existing farm operations and property access.

Disadvantages

This section of the alignment will pass through endangered sub-dominant vegetation for approximately one (1) km at chainage 159000.

Impact Assessment

Noise and Vibration

No additional impacts have been identified as a result of this change.

Landscape Character

No additional impacts have been identified as a result of this change.

Air Quality

No additional impacts have been identified as a result of this change.

Ecology

Although there is small impact to an endangered sub-dominant regional ecosystem, there is no substantial overall increase in impacts already identified in the EIS. Vegetation clearing should attempt to avoid this endangered vegetation community. Landowner requests may limit the practicality of avoidance measures. If avoidance of vegetation clearing is not practical, the width of clearing should be reduced below a standard width. Additional vegetation offsets may be required.

Soils

No additional impacts have been identified as a result of this change.

Geology and Groundwater

No additional impacts have been identified as a result of this change.

Social

No additional impacts have been identified as a result of this change.

Land Use

No additional impacts have been identified as a result of this change.

Transport

No additional impacts have been identified as a result of this change.

2.2.1.5 Chainage 345000 to 365000

Description

Section 345000 to 365000 km of the alignment has shifted for the purposes of avoiding essential property infrastructure such as cattle yards. Vertical alignment was developed through several changes during the Bankability Feasibility Study (BFS) Iteration 1 and Iteration 2 as a result of improved flood modelling data and to further balance the earthworks estimates.

Advantages

Advantages of this alignment change are as follows:

- The new alignment will avoid cattle yards and other infrastructure on the property and thus eliminate direct impacts upon farm operations.

Disadvantages

- At approximately chainage 352000, a patch of endangered dominant natural grasslands listed as a threatened ecological community will be intersected.

Impact Assessment

Noise and Vibration

No additional impacts have been identified as a result of this change.

Landscape Character

No additional impacts have been identified as a result of this change.

Air Quality

No additional impacts have been identified as a result of this change.

Ecology

Although there is small impact to an endangered dominant regional ecosystem, there is no substantial overall increase in impacts already identified in the EIS. Avoidance of this threatened ecological community is recommended; however, due to property infrastructure the practicality of this mitigation measure could be compromised. If avoidance of vegetation clearing is not practical, the width of clearing should be reduced below a standard width. Additional vegetation offsets may be required.

Soils

No additional impacts have been identified as a result of this change.

Geology and Groundwater

No additional impacts have been identified as a result of this change.

Social

No additional impacts have been identified as a result of this change.

Land Use

No additional impacts have been identified as a result of this change.

Transport

No additional impacts have been identified as a result of this change.

2.2.1.6 Chainage 425000 to 445000

Description

Section 425000 to 445000 of the alignment has been shifted at request of the landowner. Vertical alignment was developed through several changes during the BFS Iteration 1 and Iteration 2 as a result of improved flood modelling data and to better balance the earthworks estimates.

Advantages

- Avoids cattle yards, several dams containing paragrass used for cattle fattening, and also avoids important ponds; and as such it eliminates impacts upon farming operations;
- The new alignment avoids a small patch of high value regrowth and a patch of concern dominant vegetation; and
- Access road to gold mine in the area is planned to be built in an existing road reserve between De Salis and Strathbogie. A change in section 420000 to 430000 of the alignment was undertaken so as to avoid impacts upon this road reserve.

Disadvantages

- The need to relocate approximately 4 km of the Strathalbyn Road (gravel surface local property access road);
- The alignment is now closer (approximately 300 m) to the uninhabited Strathbogie Homestead;
- The alignment is now within approximately one (1) km of the temporarily occupied Tondara Homestead; and
- The alignment is now approximately 300 m away from the temporary and relocatable workers accommodation associated with the Tondara Homestead.

Discussions with the landowner of the temporary workers accommodation and the Strahbogie Homestead have been undertaken. In the opinion of the landowner, it has been identified that this shift is more beneficial to the overall farm operations as it avoids cattle yards and ponds.

Impact Assessment

Noise and Vibration

The impact of this change is expected to be similar to the identified impact of the Project upon Sensitive Receptor 2 in the EIS. It is expected that the impact will be in the order of 60 dB(A) Leq, 24 hr and 75 dB(A) Lmax. Sleep disturbance may be an issue and is being further investigated. These investigations will determine if any additional mitigation measures should be prescribed.

Landscape Character

Based on the occupancy status of the Strathbogie Homestead (unoccupied) and temporary workers accommodation (temporary occasional occupancy) the visual sensitivity is not as significant as if the buildings were permanently occupied. The Tondara Homestead is unlikely to be negatively impacted upon due to the distance from the Project.

Air Quality

An assessment of the potential impact upon air quality upon the Strathbogie Homestead and the temporary workers accommodation has been undertaken. It has been identified that the impact is considered to be negligible since the distance from the Project is beyond the 100 m used in the EIS air quality assessment, which was able to demonstrate compliant dust levels (refer to EIS, Volume 3, Section 6.3.4).

Ecology

Although the alignment will avoid a small patch of high value regrowth and a patch of concern dominant vegetation, there is no substantial overall increase in impacts already identified in the EIS.

Soils

No additional impacts have been identified as a result of this change.

Geology and Groundwater

No additional impacts have been identified as a result of this change.

Social

No additional impacts have been identified as a result of this change.

Land Use

No additional impacts have been identified as a result of this change.

Transport

The relocation of approximately 4 km of the Strathalbyn Road (gravel surface local property access road) is not likely to generate any additional impact upon the existing environment. Disturbance to the property access is likely but will only occur throughout the construction stage of the Project. Alternative access to the property will be provided and thus reduce this impact.

2.2.2 Associated Infrastructure - Camps

The EIS has provided a brief overview of the proposed workers camps for the Alpha Coal Project (Rail). Since the publication of the EIS further Project refinement and landowner consultation have been undertaken. Accordingly, further information regarding camp locations and associated facilities is available and presented below. Drawings indicating the anticipated camp layout are included in SEIS Volume 2, Appendix AF, Appendix H.

2.2.2.1 Camp 1 - Salisbury Plains

This camp will replace the use of the existing Merinda Camp (formally identified as Camp 1), which was initially described in the EIS. The land upon which this camp will be located is owned by the Proponent. In comparison to the initial use of the Merinda Camp, the use of Salisbury Camp has been identified as more appropriate for the Project due to the following reasons:

- It is located closer to the railway works than the Merinda Camp and as such it will reduce the travelling distance for workers;
- The Merinda Camp does not have the same standard and level of facilities as the Salisbury Camp, which has been specifically designed for this Project (refer to Volume 2, Appendix AF, Appendix H); and
- The Merinda camp will be utilised by other proponents, potentially restricting availability.

Key additional information regarding the proposed new camp is as follows:

- The location of this camp is indicative only (adjacent to Glenore Road on approximate chainage 471000) as a full environmental assessment (including services, vehicle access, residential amenity, vegetation clearing and watercourse impacts) is yet to be completed. The Proponent is purchasing the property immediately adjacent to chainage 470000. Accordingly, the camp may be positioned elsewhere on this property to minimise environmental impacts and improve the residential amenity;
- This camp will be constructed with the intension of having a small component of it remaining for the life of the Project. This will be used to accommodate maintenance crews during the operational phase of the Project;
- In general, the total footprint of this camp precinct (including supporting facilities and construction infrastructure) is 100 ha;
- The indicative layout and site plan of the camp is demonstrated in SEIS Volume 2, Appendix AF, Appendix H. Key facilities that will be co-located with this camp are contractor facilities, which will consist of office buildings, crew sheds with crib rooms and ablutions, storage areas, concrete batching plant, and possibly minor maintenance facilities to carry out plant servicing and minor repairs, as well as a fuel storage facility. Co-location of these facilities will enable sharing of potable water plant, generators and waste water disposal systems;
- The estimated capacity of this camp is approximately 500 personnel, with peak manning expected to occur in July 2012 to April 2013. This camp will be occupied from Q1 2012 through to Q2 2015 for post-operational construction;
- Access to this camp will be provided via Glenore Road and likely traffic demands are discussed in the Traffic Impact Assessment (refer to SEIS Volume 2, Appendix AB, Section 4.5); and

- Likely Environmentally Relevant Activities (ERAs) required for construction and operation of this camp and other associated Project related activities might include ERA 8 Chemical Storage, ERA 21 Motor Vehicle Operation, ERA 43 Concrete Batching, ERA 63 Sewerage Treatment, ERA 64 Water Treatment and potentially others.

2.2.2.2 Camp 2 – Collinsville

This camp is proposed to be located on Strathmore Road approximately 14 km east of the Project alignment. While the location of this camp has not changed since the EIS publication, its position is indicative only, as a full environmental assessment (including services, vehicle access, residential amenity, vegetation clearing and watercourse impacts) is yet to be completed. Accordingly, the camp may be positioned elsewhere along Strathmore Road closer to the alignment to minimise environmental impacts and improve the residential amenity.

Based on further Project refinement, further detail is available as follows:

- In general, the total footprint of this camp precinct (including supporting facilities and construction infrastructure) is 100 ha;
- The indicative layout and site plan of the camp is demonstrated in SEIS Volume 2, Appendix AF, Appendix H. Key facilities that will be co-located with this camp are contractor facilities, which will consist of office buildings, crew sheds with crib rooms and ablutions, storage areas, concrete batching plant, and possibly minor maintenance facilities to carry out plant servicing and minor repairs, as well as a fuel storage facility. Co-location of these facilities will enable sharing of potable water plant, generators and wastewater disposal systems;
- This camp is a temporary camp and will be removed and rehabilitated once the construction stage of the Project is completed;
- It has been designed to accommodate approximately 500 personnel, with peak manning expected to occur in January 2013 to July 2013. This camp will be occupied from Q1 2012 through to Q2 2014 for camp rehabilitation;
- Access to this camp will be provided via Strathmore Road and likely traffic demands are discussed in the Traffic Impact Assessment (refer to Volume 2, Appendix AC); and
- Likely Environmentally Relevant Activities (ERAs) required for construction and operation of this camp and other associated Project related activities might include ERA 8 Chemical Storage, ERA 21 Motor Vehicle Operation, ERA 43 Concrete Batching, ERA 63 Sewerage Treatment, ERA 64 Water Treatment and potentially others.

2.2.2.3 Camp 3 - Wollombi Camp

The location of this camp has changed since the publication of the EIS. It is now proposed to be located at the northern end of property 1 on CP905226 approximately on chainage 275000. As a result of this shift, the camp will now be located closer to the Queensland Rail (QR) Northern Missing Link (NML) alignment and be further away from the Wollombi Homestead. This location is indicative only, as a full environmental assessment (including services, vehicle access, residential amenity, vegetation clearing and watercourse impacts) is yet to be completed. The Proponent is purchasing the surrounding property in the vicinity of chainage 275000. Accordingly, the camp may be positioned elsewhere on this property to minimise environmental impacts and improve the residential amenity.

The alignment is now closer to the QR National network, which may be utilised to transport construction materials to this central point of the Project.

Further to the Project refinement the additional detail regarding this camp is as follows:

- In general, the total footprint of this camp precinct (including supporting facilities and construction infrastructure) is 100 ha;
- The indicative layout and site plan of the camp is demonstrated in Volume 2, Appendix AF, Appendix H. Key facilities that will be co-located with this camp are contractor facilities, which will consist of office buildings, crew sheds with crib rooms and ablutions, storage areas, concrete batching plant, and possibly minor maintenance facilities to carry out plant servicing and minor repairs, as well as a fuel storage facility. Co-location of these facilities will enable sharing of potable water plant, generators and wastewater disposal systems;
- This camp will also be located adjacent to a construction depot. Details of this depot are described in Section 2.1.2.4;
- This camp can accommodate approximately 500 personnel, with occupation of the camp commencing from Q1 2012 through to Q2 2014 for camp rehabilitation. Peak manning is likely to occur from August 2012 to June 2013;
- This camp will be constructed with the intension of having a small component of it remaining for the life of the Project. This will be used to accommodate maintenance crews during the operational phase of the Project. All other areas, including the construction depot, sleeper production plant, rail receival, welding facility and three ballast sidings adjacent to the camp will be temporary and will be rehabilitated once the construction stage of the Project is completed;
- Access to this camp will be provided via Strathmore Road and likely traffic demands are discussed in the Traffic Impact Assessment (refer to SEIS Volume 2, Appendix AB, Section 4.5); and
- Likely Environmentally Relevant Activities (ERAs) required for construction and operation of this camp and other associated Project related activities might include ERA 8 Chemical Storage, ERA 21 Motor Vehicle Operation, ERA 43 Concrete Batching, ERA 63 Sewerage Treatment, ERA 64 Water Treatment and potentially others.

2.2.2.4 Infrastructure Co-located with Camp 3 – Wollombi

The main Project construction area will be established adjacent to Camp 3 Wollombi. This construction depot will consists of a sleeper manufacturing facility, rail receiving and welding facility, and a flashbutt welding facility. Sleepers and rail will be loaded onto work trains and moved north and south from here to the tracklaying front. A flashbutt welding facility will be established to manufacture 400 m long rail sections from the short rail strings shipped to site.

In the EIS, these activities were identified to be located within the marshalling yard. This construction depot will now be located adjacent to Camp 3 Wollombi.

Likely Environmentally Relevant Activities (ERAs) required for the construction depot and other associated Project related activities might include ERA 8 Chemical Storage, ERA 18 Boiler Making, ERA 19 Metal Forming, ERA 21 Motor Vehicle Operation, ERA 43 Concrete Batching, ERA 63 Sewerage Treatment and potentially others.

2.2.2.5 Camp 4 - Gregory

The location of this temporary camp has changed since the publication of the EIS. It was initially proposed to be located on the eastern side of the Project alignment at chainage 155000 and it has now shifted to the western side of the alignment, remaining on chainage 155000. This shift has occurred so as to move the camp facilities farther away from the landowner and to minimise impacts upon property operations.

- This camp can accommodate approximately 450 personnel, with occupation of the camp commencing from Q1 2012 through to Q2 2014 for camp rehabilitation. Peak manning is likely to occur from August 2012 to June 2013;
- This camp is a temporary camp and will be removed and rehabilitated once the construction stage of the Project is completed;
- In general, the total footprint of this camp precinct (including supporting facilities and construction infrastructure) is 100 ha;
- The indicative layout and site plan of the camp is demonstrated in Volume 2, Appendix AF, Appendix H. Key facilities that will be co-located with this camp are contractor facilities, which will consist of office buildings, crew sheds with crib rooms and ablutions, storage areas, concrete batching plant, and possibly minor maintenance facilities to carry out plant servicing and minor repairs, as well as a fuel storage facility. Co-location of these facilities will enable sharing of potable water plant, generators and wastewater disposal systems; and
- Likely Environmentally Relevant Activities (ERAs) required for construction and operation of this camp and other associated Project related activities might include ERA 8 Chemical Storage, ERA 21 Motor Vehicle Operation, ERA 43 Concrete Batching, ERA 63 Sewerage Treatment, ERA 64 Water Treatment and potentially others.

2.2.2.6 Camp 5 – Alpha Coal Mine

This camp is co-located with the Alpha Coal Mine, which has been relocated within the Alpha Coal Mine precinct. The camp was required to be moved in association with the further refinement of the Alpha Coal Mine Plan.