Winchester South Project

Initial Development Plan

June 2019

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1 INTRODUCTION

Whitehaven Coal ("WHC") purchased the Winchester South Project ("the Project") in June 2018 and has now begun planning for an open cut coal mine. The relevant asset for this project is Winchester South which is contained within MDL183. A general location plan is shown in **Figure 1.1**.

1.1 Principal Objectives

As stated in the Queensland Government's guidelines for an Initial Development Plan, the principal objectives of a development plan, are to:

- provide a better understanding of the nature and extent of the proposed or continuing development and production of coal or oil shale resources from the coal or oil shale ML;
- allow an assessment of the proposed development or continuing development and whether it is appropriate with respect to the area, resource and the public interest;
- assess the prospective resource utilisation and identify any resource sterilisation issues; and
- allow appropriate resource management decisions to be made.

1.2 Location and Titles

The Winchester South Project is located about 30 km southwest of the township of Moranbah within the Northern Bowen Basin in Central Queensland. Moranbah is located approximately 200 km southwest of the city of Mackay. The Project is surrounded by active mining and exploration areas including the Peak Downs Mine to the southwest, Eagle Downs Mine to the west, Poitrel and Daunia Mines to the north and the Olive Downs Project to the southeast.

The Winchester South Project area is covered by MDL 183 which occupies an area of about 110 sq. km. An exploration title for the Winchester South area was initially granted as an Authority to Prospect for Coal (ATP) No. 352C in 1981 to a joint venture of B.P (50%), Drayton Mining Developments P/L (25%) and Westfield Limited (25%). ATP 352C initially comprising 50 sub-blocks was granted for a three year term. Following two renewals and the relinquishment of 20 sub-blocks, the title became ATP 16CR in 1989. The proclamation of the *Mineral Resources Act 1989* resulted in the area becoming an Exploration Permit Coal (EPC486). MDL183 is currently 100% owned by Whitehaven Coal Limited. The tenure status of the project is summarised in **Table 1.1**.

Table 1.1 – Winchester South Tenure

Mine / Project	Tenure Number	Date			Status
		Lodge	Grant	Expiry	
Winchester South	MDL183	20/03/1995	29/04/1996	30/04/2021	Granted

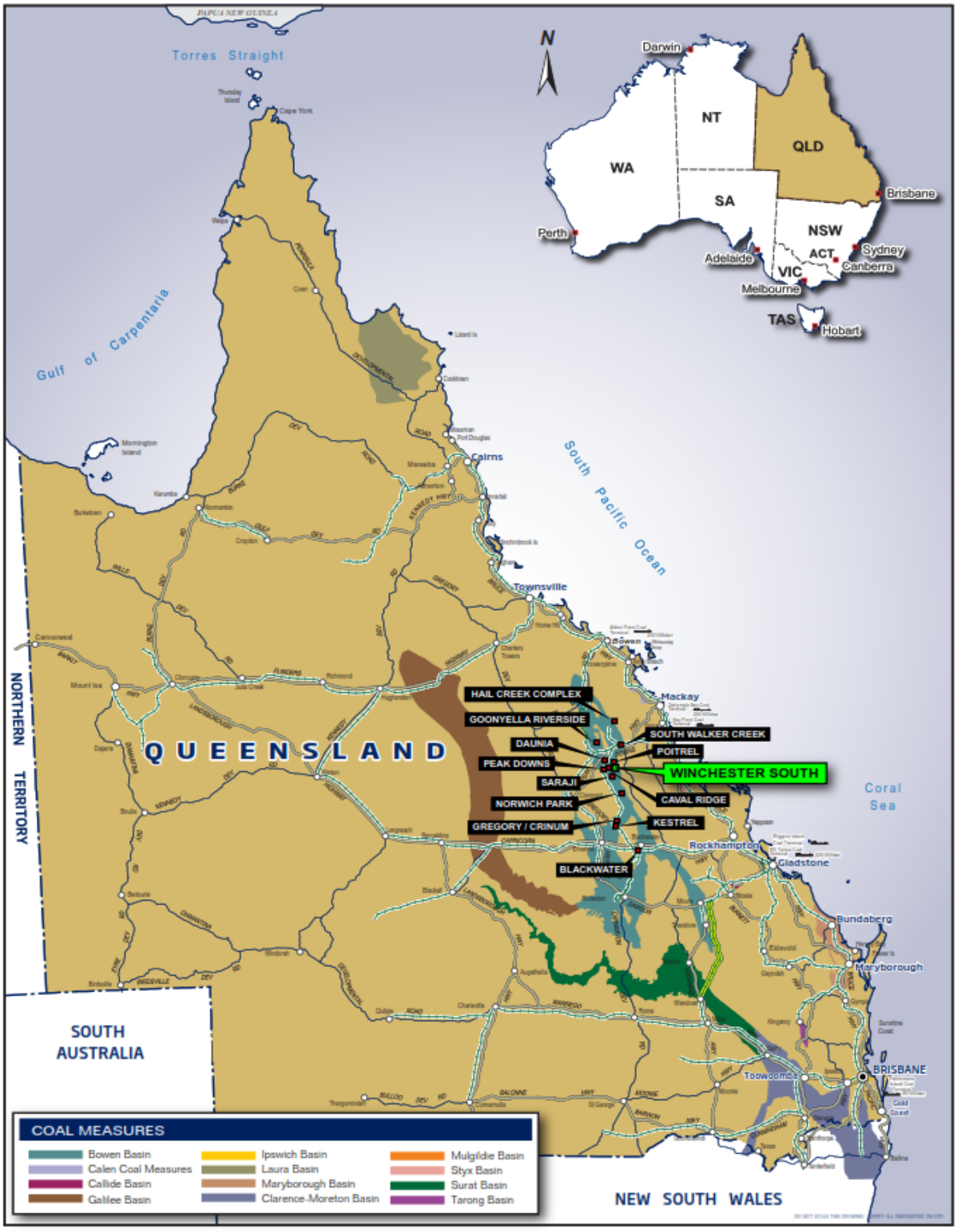
Three MLA's are being applied for by WHC and are is shown in **Figure 1.2**. The MDL has been broken up into three separate MLA's, with these being based on the underlying property ownership.

1.3 Information Sources

RPM Advisory Services Pty Ltd (RPM) has been engaged to complete conceptual mine planning and design. In addition to input from RPM, the following sources of information have been used to generate this Initial Development Plan ("IDP").

- *"Project Maroon – Approvals and Environmental Due Diligence Report",* RPM Global, 2017
- *"Initial and Later Development Plan Guideline",* Department of Natural Resources, Mine and Energy, Queensland Government, Nov 2018.
- *"Winchester South Project Coal Resource Estimate",* Xenith Consulting Pty Ltd, Oct 2018.

Figure 1.1 – General Location Plan



LEGEND

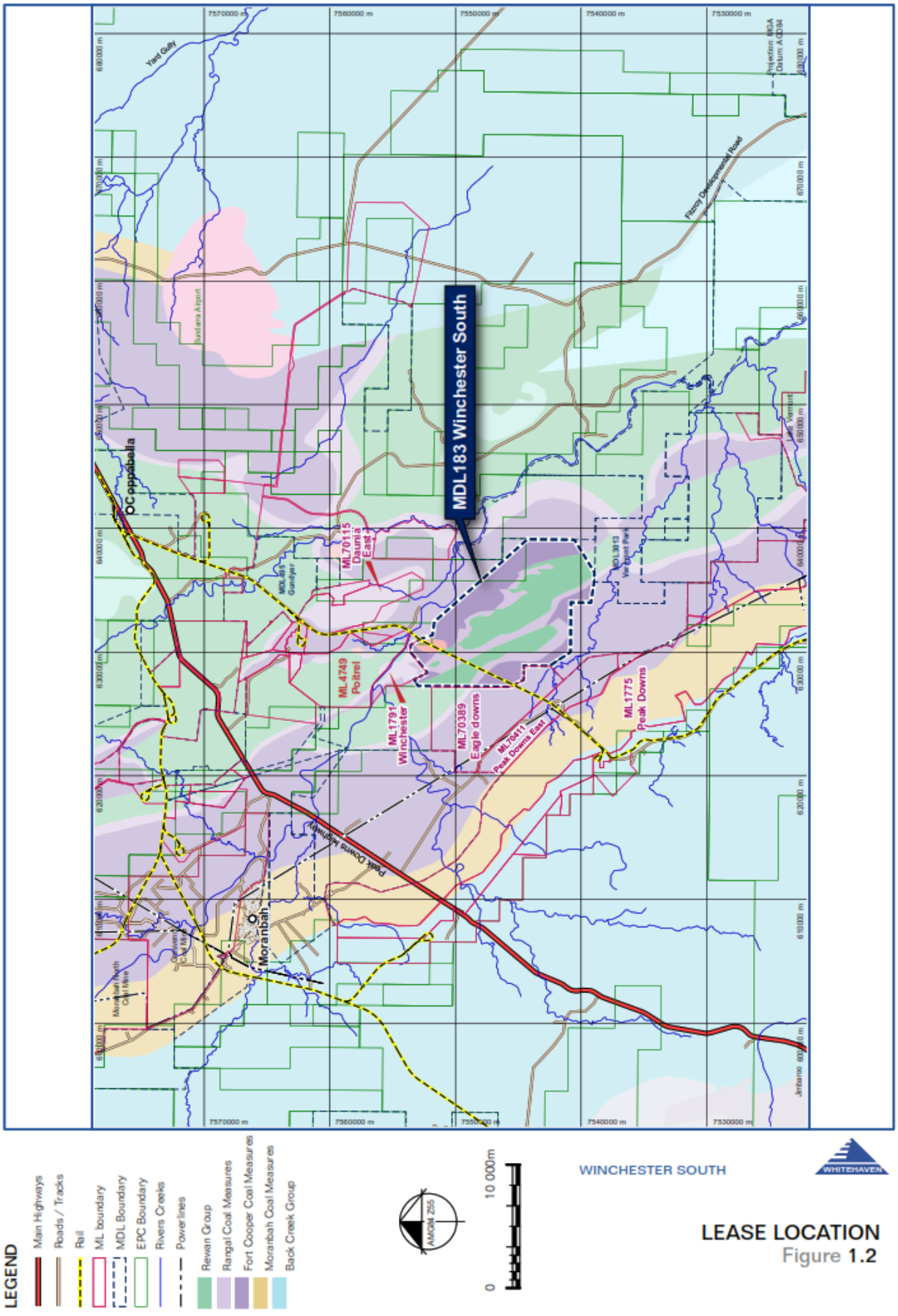
- State capital
- Town
- State boundary
- Highway
- Main Road
- Rail
- Proposed Rail
- River
- Coal Export Terminals
- Winchester South Location
- Regional Bowen Basin Mines

0 300km

WINCHESTER SOUTH

GENERAL LOCATION PLAN
Figure 1.1

Figure 1.2 – Lease Location



2 PROJECT ACTIVITIES (SECTION 318DT(1)(A))

2.1 Life of Mine Reporting

RPM has been engaged to complete conceptual mine planning and design.. This work includes a life of mine plan ("LOM") which covers the proposed term of the Winchester mining lease. Given the relatively shallow depth of cover of the Rangal and Fort Cooper coal measures at Winchester South and the low ROM stripping ratios, RPM assumed open cut mining methods for the project. The deeper Moranbah Coal Measures exist within the leasehold, however there is currently limited data on these seams and hence not the subject of this study.

The mine planning study included the following tasks:

- practical pit shell design based upon defined geotechnical parameters;
- establishing a project description (i.e. locations of MIA, CHPP, dumps, roads etc.);
- running strategic scheduling options analysing a number of mining developments, assessing resulting production quantities;
- estimating capital and operating costs for open cut mining; and
- analysing the underlying economics of the Winchester South Project.

RPM recommended the following mining methods and equipment types for Winchester South:

- Topsoil: free dig with scrapers or push up with dozers; rehandle with FEL and trucks;
- Weathered material: free dig with hydraulic excavators in shovel or backhoe model;
- Bulk waste: blast, then excavate with hydraulic excavators in face shovel mode; haul with rear dump trucks to dump;
- Selective waste: rip or blast then excavate with hydraulic excavators in backhoe mode or FEL; haul with rear dump trucks to dump;
- Bulk coal: rip and then excavate with hydraulic excavators in backhoe mode; haul with rear dump trucks to ROM stockpile;
- Selective coal: rip then excavate with hydraulic excavators in backhoe mode or FEL; haul with rear dump trucks to ROM stockpile;
- CHPP coarse rejects haulage: rear dump mine trucks loaded from overhead bin and hauled to dump; and
- Product coal: reclaim from product stockpile via underground bunker and convey to rail loadout bin.

The selected approach is a conventional method centring around hydraulic excavators loading waste and coal into rear dump trucks. Waste trucks will haul direct to dump while coal trucks will haul to the ROM hopper or ROM pad adjacent to the CHPP. Some partings may be dozed direct to spoil whenever possible.

2.2 Project Activities

The activities proposed to be carried out during the proposed term are listed in **Table 2.1**.

Table 2.1 – Project Activities

Area	Activity	Timeframe
Site Set Up	Establish mine access	Year 1
	Rail Loop	Year 1 – Year 2
	CHPP	Year 1 – Year 2
	ROM/Product Stockpiles	Year 1
Mining	Boxcut Establishment	Year 3 – Year 4
	Main Coal Production	Year 4 – Year 30
Closure	Site Rehabilitation	Progressive

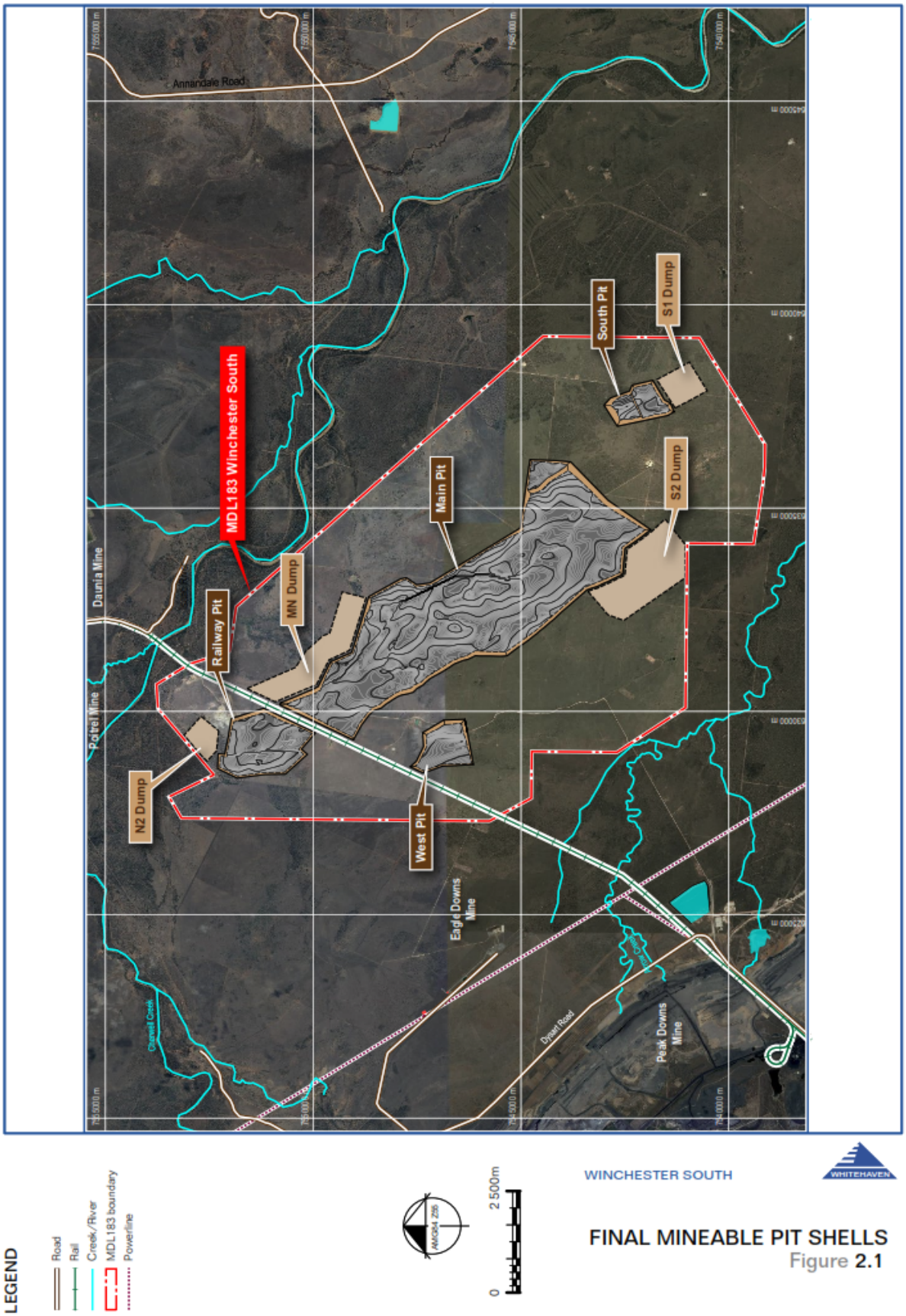
2.3 LOM Schedule

Pit limits were determined using the Minex Pit Optimiser ("Optimiser") software which was operated with the latest WHC geological model dated September 2018. Review of the optimiser pit shells helped identify four distinct open cut pits, subsequently named:

- Railway;
- Main (can be further divided into Main North, Main South and Main Extended);
- South; and
- West.

With rational design criteria applied, practical pit shell designs were generated for each of these areas. The final mineable pit outlines are shown in **Figure 2.1**.

Figure 2.1 – Final Mineable Pit Shells



Results for the schedule are summarised in **Table 3.1** and in further detail in **Graph 3.1**, **Graph 3.2**, and **Graph 3.3**.

The schedule mines at total of 351 Mt of ROM coal over a 28 year timeframe at an average ROM stripping ratio of 4.9:1. The average yield is 53% producing a total of 185 Mt of product made up of 20% hard coking coal, 37% semi-soft coking coal and 44% thermal coal. The Main South Pit is developed in Year 9 of production to replace production from the Railway Pit which is completed after eight years. The West Pit is also mined to replace Main South Pit coal which is completed in the same year.

Waste stripping requirements increase over the mine life and peak at 82 Mbcm per annum and then is maintained at 80 Mbcm per annum. Following completion of the Main South Pit, both waste and ROM coal production rates decrease before completion of mining in Year 28.

Graph 3.1 shows the increasing waste stripping profile to the peak annual rate of 82 Mbcm. Following the closure of the Railway Pit, the proportion of coal seams in the ROM is more variable in the 15 Mtpa case which is impacting on the yield and product results. Further smoothing of the product quantities will be possible with detailed short term scheduling.

Graph 3.1 – LOM Coal Schedule

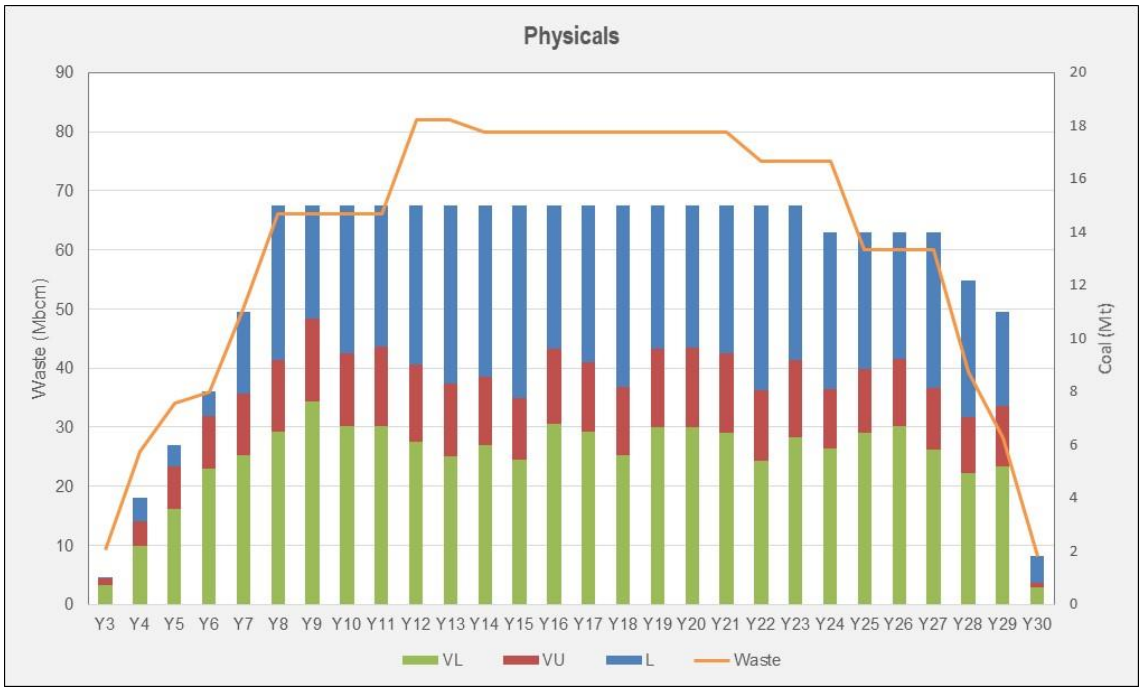
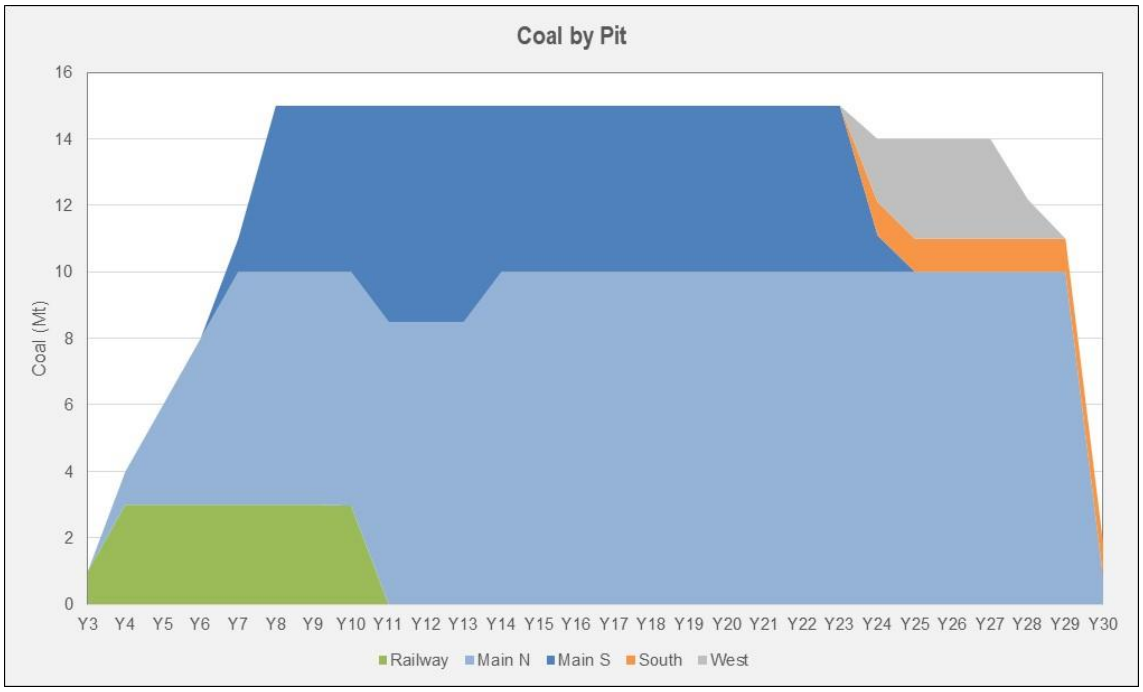


Table 2.2 – Schedule Summary

	Total ROM (Mt)	Leichhardt Seam (Mt)	Vermont Upper Seam (Mt)	Vermont Lower Seam (Mt)	Total Waste (Mbcm)	ROM Strip Ratio (bcm/t)	Total Product (Mt)	HCC Product (Mt)	SSCC Product (Mt)	Thermal Product (Mt)	Yield (%)
Y3	1.0	0.0	0.3	0.7	9.2	9.2	0.4	0.2	0.1	0.1	44%
Y4	4.0	0.9	0.9	2.2	26.0	6.5	2.2	0.7	0.9	0.6	55%
Y5	6.0	0.8	1.6	3.6	34.0	5.7	3.0	1.0	1.2	0.8	51%
Y6	8.0	0.9	2.0	5.1	36.0	4.5	3.7	1.2	1.3	1.2	46%
Y7	11.0	3.1	2.3	5.6	50.0	4.5	5.8	1.7	1.8	2.3	52%
Y8	15.0	5.8	2.7	6.5	66.0	4.4	8.2	1.8	2.7	3.7	55%
Y9	15.0	4.3	3.1	7.6	66.0	4.4	7.2	2.1	2.1	3.0	48%
Y10	15.0	5.6	2.8	6.7	66.0	4.4	7.9	2.0	2.5	3.4	53%
Y11	15.0	5.3	3.0	6.7	66.0	4.4	7.5	1.8	2.2	3.5	50%
Y12	15.0	6.0	2.9	6.1	82.0	5.5	8.0	1.5	2.6	3.9	53%
Y13	15.0	6.7	2.7	5.6	82.0	5.5	8.5	1.4	3.0	4.1	57%
Y14	15.0	6.5	2.6	6.0	80.0	5.3	8.4	1.5	2.8	4.1	56%
Y15	15.0	7.3	2.3	5.5	80.0	5.3	8.8	1.3	3.4	4.1	59%
Y16	15.0	5.4	2.8	6.8	80.0	5.3	7.8	1.6	2.7	3.5	52%
Y17	15.0	5.9	2.6	6.5	80.0	5.3	8.0	1.7	3.0	3.3	53%
Y18	15.0	6.8	2.6	5.6	80.0	5.3	8.4	1.4	3.4	3.6	56%
Y19	15.0	5.4	3.0	6.7	80.0	5.3	7.7	1.6	2.8	3.3	51%
Y20	15.0	5.4	3.0	6.7	80.0	5.3	7.5	1.3	2.9	3.3	50%
Y21	15.0	5.6	3.0	6.4	80.0	5.3	7.8	1.3	3.1	3.4	52%
Y22	15.0	6.9	2.7	5.4	75.0	5.0	8.6	1.0	3.9	3.7	57%
Y23	15.0	5.8	2.9	6.3	75.0	5.0	8.0	1.1	3.4	3.4	53%
Y24	14.0	5.9	2.2	5.9	75.0	5.4	7.4	1.2	2.9	3.3	53%
Y25	14.0	5.2	2.4	6.4	60.0	4.3	7.1	1.4	2.6	3.1	51%
Y26	14.0	4.8	2.5	6.7	60.0	4.3	7.0	1.4	2.7	2.9	50%
Y27	14.0	5.9	2.3	5.8	60.0	4.3	7.5	1.3	3.0	3.2	53%
Y28	12.2	5.1	2.1	5.0	39.4	3.2	6.5	1.0	2.6	2.9	53%
Y29	11.0	3.5	2.3	5.2	28.3	2.6	5.2	1.1	1.8	2.4	48%
Y30	1.8	1.0	0.2	0.6	8.1	4.4	1.0	0.3	0.2	0.5	56%
Total	**351**	**132**	**66**	**154**	**1704**	**4.9**	**185**	**37**	**68**	**81**	**53%**

Graph 3.2 summarises the ROM coal by pit for Option 300. The Main pit (North and South combined) comprises 88% of the total ROM coal mined over the 30 year life with the Railway, South and West Pits making up 6%, 2% and 3% respectively. South and West Pit replace Main South Pit at the end of the mine life.

Graph 3.2 – ROM Coal by Pit



3 PROJECT PHASES (SECTION 318DT(1)(B))

3.1 Proposed Term

The first year of the proposed term is 2022 when site construction and mine establishment works are planned to commence. The mining will then commence two years after this in 2024. This IDP covers the initial five years of the LOM plan.

3.2 Project Phases

3.2.1 Year 1 and Year 2 – Construction

Construction of the mine infrastructure will commence in Year 1 of the Project and will progress over the first two years.

MIA

Two areas were considered for the Mine Industrial Area ("MIA") complex and rail loop as illustrated in **Figure 3.1**. The area that was selected is south of the railway line in the northeast of the site indicated in blue. The primary reason that this area was preferable is that the alternative location is on top of coal seams that could be extracted later, requiring relocation of infrastructure. The selected area is also closer to the likely power and water supply points and will allow MIA, CPP and the rail loop to be in relative close proximity.

This area will contain the following:

- public access road used for both personnel and logistics;
- car park;
- security / first aid building;
- main substation;
- mine administration offices;
- mine control room;
- bath house and toilets;
- potable water treatment plant and storage tanks;
- sewerage treatment plant;
- warehouse & storage yard;
- fuel and oil storage facilities;
- light and heavy vehicle wash down facilities;
- mobile equipment workshop;
- field equipment workshop;
- service bay;
- tyre bay; and
- hardstand area for vehicle parking and dispatch.

The ROM area will contain:

- hardstand space for a number of coal stockpiles;
- the ROM dump station;
- crushing and screening equipment; and
- conveyors.

The CPP area will contain:

- the coal processing plant;
- incoming feed conveyors;
- conveyors to the product stockpile;
- rejects bin and overflow stockpiles; and
- CHPP workshop.

The product stockpile area will contain:

- the stockpile feed conveyors;
- skyline stacker;
- reclaim tunnel and coal valves;
- product stockpile base;

- train loadout conveyor; and
- train loadout bin (over rail loop).

Earthworks

Earthworks will be required to prepare for roads, mine industrial area, carparks, hardstands, service facilities and other infrastructure.

At this stage of the project, detailed construction materials have not been assessed and no geotechnical study has been completed. For the purposes of this study, it has been assumed that the conditions are suitable for construction and sufficient cut and fill materials are available onsite where required. In the event of suitable material not being available onsite, additional cost will be incurred sourcing this material from the local area. However, in RPM's experience suitable materials are generally available on Central Queensland sites.

Drainage will be provided in MIA areas and water from the MIA will be collected and discharged into dams to supplement overall site demands.

Rail Infrastructure

For a large project like Winchester South there is no real alternative to transport coal other than a railway line. The design of the rail loop and system will be completed by others but for the purposes of this study and to determine a conceptual site layout, a rail loop of approximately 5,800 m was selected as indicative, with the alignment as illustrated in **Figure 3.2**.

Considering the proposed location of the loading point, the length of the loop will allow for a loaded train of 126 wagons and total length of 2,082 m after the loading point and another train of the same length before the loading point ready for loading. The loop will not be able to accommodate two unloaded trains.

Optimisation of the rail loop design is required in a future study phase considering infrastructure in the MIA complex and the proposed location the Olive Downs Spur connection which include exploring possible synergies with Olive Downs' connection and rail spur.

Figure 3.1 – Alternative MIA Areas

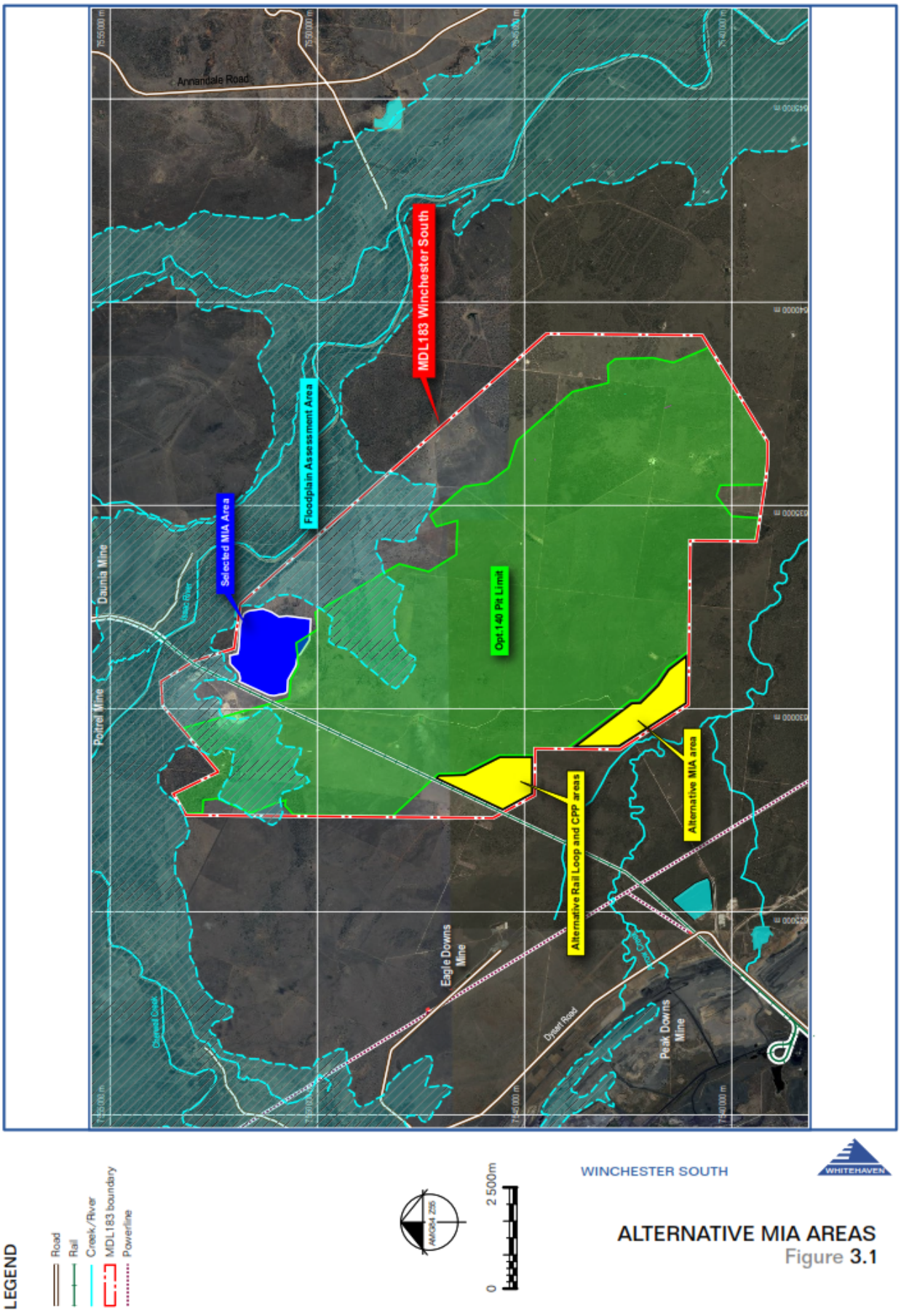
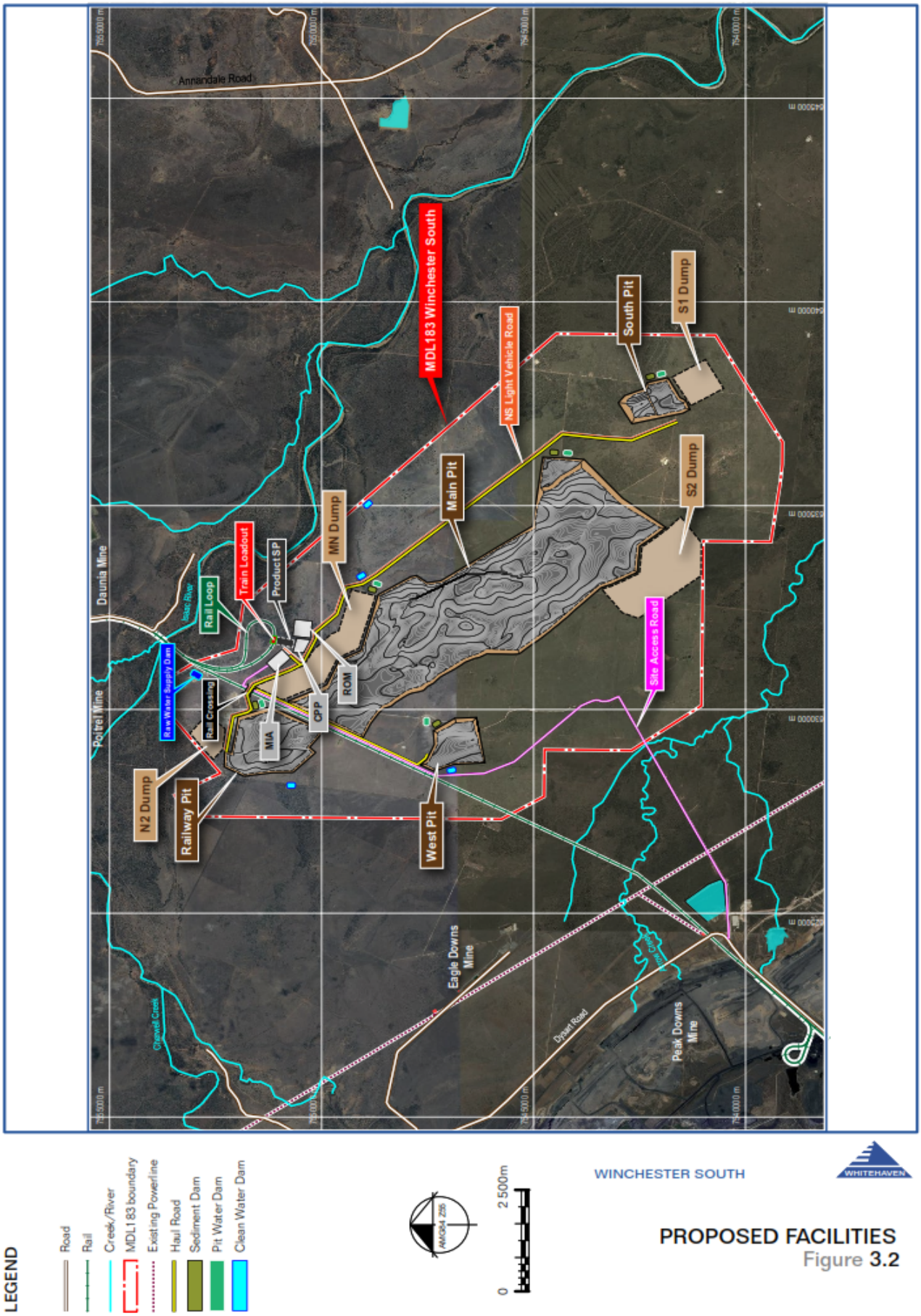


Figure 3.2 – Proposed Facilities



Access Roads

The declared MDL access road to MDL 183 was selected as the site access road. A new intersection will be constructed from the Dysart Road/Peak Downs Mine Road intersection. After this the proposed site access road will cross ML 1775 and pass in close proximity of a tailings dam and then across ML 70411 and underneath High Voltage Overhead Powerline before crossing ML 70389 and MDL 519 and then entering Winchester South's MDL 183.

The onsite access road will be a dedicated road to the MIA allowing public vehicle access to a MIA public parking area. The road design allows for minor water course crossings and follows the railway to a haul road overpass and then on to the MIA. Oversize and heavy traffic can access site haul roads and be escorted to the MIA to avoid the haul road overpass size restrictions.

Haul Roads

Permanent haul roads will be constructed to link the MIA and ROM with active pits and construction will be progressive as required by the mining schedule. There will be two main haul roads, one with a north/south alignment of approximately 15 km which links the ROM with Railway, Main and South Pit, and another with an east/west alignment of approximately 5 km to link with West Pit. The haul road width will be a minimum 3.5 times the widest vehicle and for the purposes of this study 40 m was used which includes windrows and berms.

Light Vehicle Roads

To ensure the safety of light vehicles moving about the site, separate light vehicle roads will be constructed. These will provide access to the various facilities about the site, and access to the active mining areas by paralleling the permanent haul roads.

It is estimated that at least 14 km of permanent light vehicle roads will be required for the site. These will be constructed to the same standard as local unsealed roads.

Maintenance tracks will be constructed as required to access areas not accessible from the light vehicle roads and an allowance has been included for about 14 km.

Construction Pad

Given that the majority of the construction activities will take place in the MIA and CPP areas, a separate construction pad will not be required. During the construction phase of the project, areas within the MIA, ROM, CPP and product stockpile footprints will be separated and designated for construction activities.

Mobile mining equipment will be assembled and disassembled in the MIA area using either the workshop facilities, or designated parts of the prepared hardstand. No separate erection area will be constructed.

Figure 3.3 shows the MIA and Plant Layout and **Figure 3.4** shows a schematic of the MIA.

Figure 3.3 – MIA and Plant layout Schematic

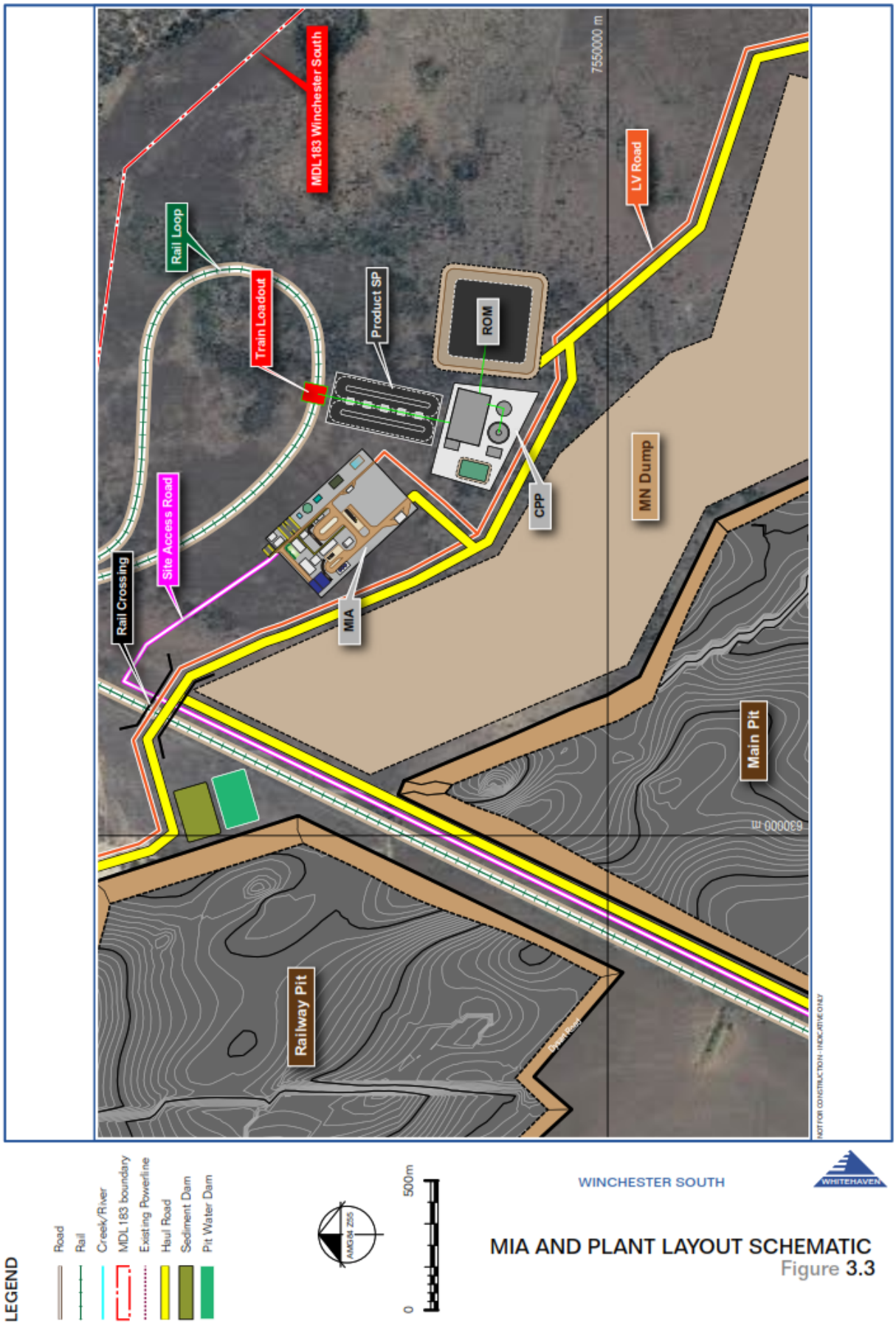


Figure 3.4 – Proposed MIA Layout Schematic

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PROPOSED MIA LAYOUT SCHEMATIC
Figure 3.4

Administration Buildings

The administration buildings will include the following:

- General Administration;
- Mining Offices;
- Maintenance Offices;
- Technical Services;
- Training;
- Change House; and
- Landscaping.

Workshops

Several workshops will be constructed for the following areas:

- Mobile Equipment;
- Field Equipment / Fabrication;
- Service Bay;
- Tyre Change Area;
- CPP; and
- Compressed Air.

Warehouses and Storage Yards

Storage is required on site for operation and maintenance consumables and will be kept in several areas such as:

- Parts Storage;
- Bulk Storage;
- Reagents storage;
- Tyre Storage;
- Fuel & Oil Storage;
- Bulk Explosives Storage; and
- Magazine for blasting accessories.

Waste Management

The site will generate a volume of domestic, industrial and regulated waste from the mining and support activities. Onsite waste management practices will require material separation prior to disposal.

Site Power

Offsite power supply will be completed by others, but for the LOM plan it was assumed power will be delivered to site via overhead lines running at 66 kV from the connection point off site. The designated supply connection point from the offsite supply is expect to be in the northeast of the site.

Power will be fed from the connection point to the main substation located in the MIA. High voltage power at 11 kV will be reticulated from the main substation to the CPP substation via underground cables.

Power supply to workshops and the warehouse in the MIA will be via 3.3 kV underground cables to local transformers. This eliminates any potential conflict between mobile equipment and overhead power transmission lines. There is no high voltage power reticulation outside of the MIA and CPP areas.

Power from the main substation will be reticulated to the administration buildings and offices at 415 V, three phase. There are no plans for any electrically powered equipment on site to operate at higher voltages. Remote facilities will be provided with electric power via diesel fuelled generator sets.

Water Reticulation

Offsite raw water supply will be completed by others from an external supply. The connection point from the offsite supply is expected to be on the north eastern side of the lease boundary. An allowance has been included for a raw water dam near the expected entry point.

Dedicated fire water tanks will be located in the MIA. These are fed directly from the raw water supply. Piping shall be installed to allow top up of the fire water tanks from the CPP process water dam.

The CPP will operate on a net water loss basis requiring a constant top up of raw water into the process water dam. Water consumption is estimated to be about 220 l/t.

Raw water delivered to site will be stored in a raw water tank for treatment to potable water. A water treatment plant will be located in the MIA. Five days storage of potable water is recommended to cover for variability in site water usage and water treatment plant downtime.

A sewerage treatment plant will be located close to, but separate from the MIA. Waste water from the various MIA and CPP buildings will be piped to the sewerage treatment plant for processing.

3.2.2 Year 3 – Production

The initial mining commences as a boxcut in the Railway Pit, north of the railway line. This is some of the lowest ratio coal and most economic coal. A total of one million tonnes of ROM coal is mined at a stripping ratio of 9:1 (see **Table 3.1**).

Table 3.1 – Year 3 Production

Material	Units	Railway Pit
Waste	kbcm	9,149
ROM Coal	kt	1,000
Product Coal	kt	437
Thermal Coal	kt	80
Coking Coal	kt	357
Rejects	kbcm	313
Yield	%	44%
ROM ash (ad)	%	49%
L Seam ROM Coal	kt	9
VU Seam ROM Coal	kt	254
VL Seam ROM Coal	kt	738

Dumping will take place north of the pit, establishing a flood barrier from the Isaac River. The mine plan is shown in **Figure 3.5**.

3.2.3 Year 4 – Production

In the fourth year of the proposed term, mining progresses through the Railway Pit to the north. Some inpit dumping is achievable in the second year of production. A second boxcut is established south of the railway line in Main North Pit. Mining in this pit progresses to the south with dumping along the northeast pit crest. The seams mined are detailed in Table 3.2 and the location can be seen in **Figure 3.6.**

Table 3.2 – Year 4 Production

Material	Units	Railway Pit	Main North Pit	Total
Waste	kbcm	12,069	13,904	**25,973**
ROM Coal	kt	3,000	3,000	**4,000**
Product Coal	kt	1,438	761	**2,199**
Thermal Coal	kt	290	307	**597**
Coking Coal	kt	1,148	454	**1,602**
Rejects	kbcm	868	133	**1,001**
Yield	%	48%	76%	**55%**
ROM ash (ad)	%	48%	37%	**45%**
L Seam ROM Coal	kt	158	736	**894**
VU Seam ROM Coal	kt	809	81	**891**
VL Seam ROM Coal	kt	2,033	183	**2,215**

3.2.4 Year 5 – Production

The mine advance in Year 5 is similar to that of Year 4 with both the Railway Pit and Main North Pit progressing north and south respectively. The production increases to six million tonnes and is outlined in Table 3.3 and shown in **Figure 3.7**. Inpit dumping starts in the Main North Pit with excess waste dumped in the expit dump paralleling the pit progression.

Table 3.3 – Year 5 Production

Material	Units	Railway Pit	Main North Pit	Total
Waste	kbcm	12,700	13,904	**33,110**
ROM Coal	kt	3,000	3,000	**6,000**
Product Coal	kt	1,587	1,457	**3,044**
Thermal Coal	kt	348	480	**828**
Coking Coal	kt	1,239	977	**2,216**
Rejects	kbcm	785	857	**1,642**
Yield	%	53%	49%	**51%**
ROM ash (ad)	%	45%	44%	**3,044**
L Seam ROM Coal	kt	412	394	**806**
VU Seam ROM Coal	kt	784	837	**1,621**
VL Seam ROM Coal	kt	1,804	1,769	**3,573**

Figure 3.5 – Stage Plan – Year 3

Figure 3.6 – Stage Plan – Year 4

Figure 3.7 – Stage Plan – Year 5

4 RESOURCES (SECTION 318DT(1)(C))

4.1 Winchester South Geology

The JORC Resources were estimated by Xenith Consulting in 2018. This work was just completed when an updated geological model was created for the LOM mine planning work. The following is an excerpt from the Xenith JORC Resource statement on the geology used for estimation.

"The project is located within the NNE-SSW trending Winchester syncline. Two fault systems, also trending NNW-SSE, are significant features of the project. They are part of the regional Jellinbah thrust system.

The coal resources of the project are found within the Rangal Coal Measures (Leichhardt and Upper Vermont seams) and the Fort Cooper Coal Measures (Middle and Lower Vermont seams). It should be noted that this report refers to the Leichhardt, Upper, Middle and Lower Vermont seams collectively as 'Rangal seams' for simplicity, however, stratigraphically it is recognised the Vermont Middle and Lower seams are part of the Fort Cooper Coal Measures.

The Rangal seams are shallow and are considered a potential open cut mining target. The Rangals seams are geologically well understood.

More than 1,200 boreholes (including ~235 coal quality holes) have been drilled through the Rangal seams. The Rangal seams have been grouped into the Leichhardt (L) 1 and 2, the Upper Vermont seam (VU) and the Middle and Lower Vermont (VML) seams. The lowest Vermont ply that is considered a target in the VML seam is the VH ply. The Vermont basal plies that are below the VH ply, are only randomly intersected due to their poorer quality.

The VML seam is found to be directly below the VU seam and is only separated by the Yarrabee Tuff (~1m). Some of the VML seam plies have average raw ash results more than 50% (adb). This resource estimate does not include those plies. The plies excluded are the VB, VC, VD and VE plies, as their average ash content over the resource is ~ 55%. The VF, VG and VH plies show an average ash content of ~48%, and these have been included in the resource estimate. It is recommended that the plies that are marginally higher than the 50% cut-off, should be the subject of further studies to better define their potential to be included as resources in the future.

The resource estimate was based on Points of Observation ('PoO') being cored boreholes, that are geophysically logged and with raw quality analysis. A nominal spacing between boreholes of 500m for Measured, 1000m for Indicated and 2000m for Inferred resources was adopted to define domains of similar confidence levels. Resources were extrapolated for half these distances beyond the last Point of Observation."

The stratigraphic column used for the LOM work is detailed in **Figure 4.1**. This will generally replicate the stratigraphic column used in the Resource estimate, however some names may be slightly different. Some deposit cross sections are also shown in **Figure 4.2**.

Figure 4.1 – Stratigraphic Sequence

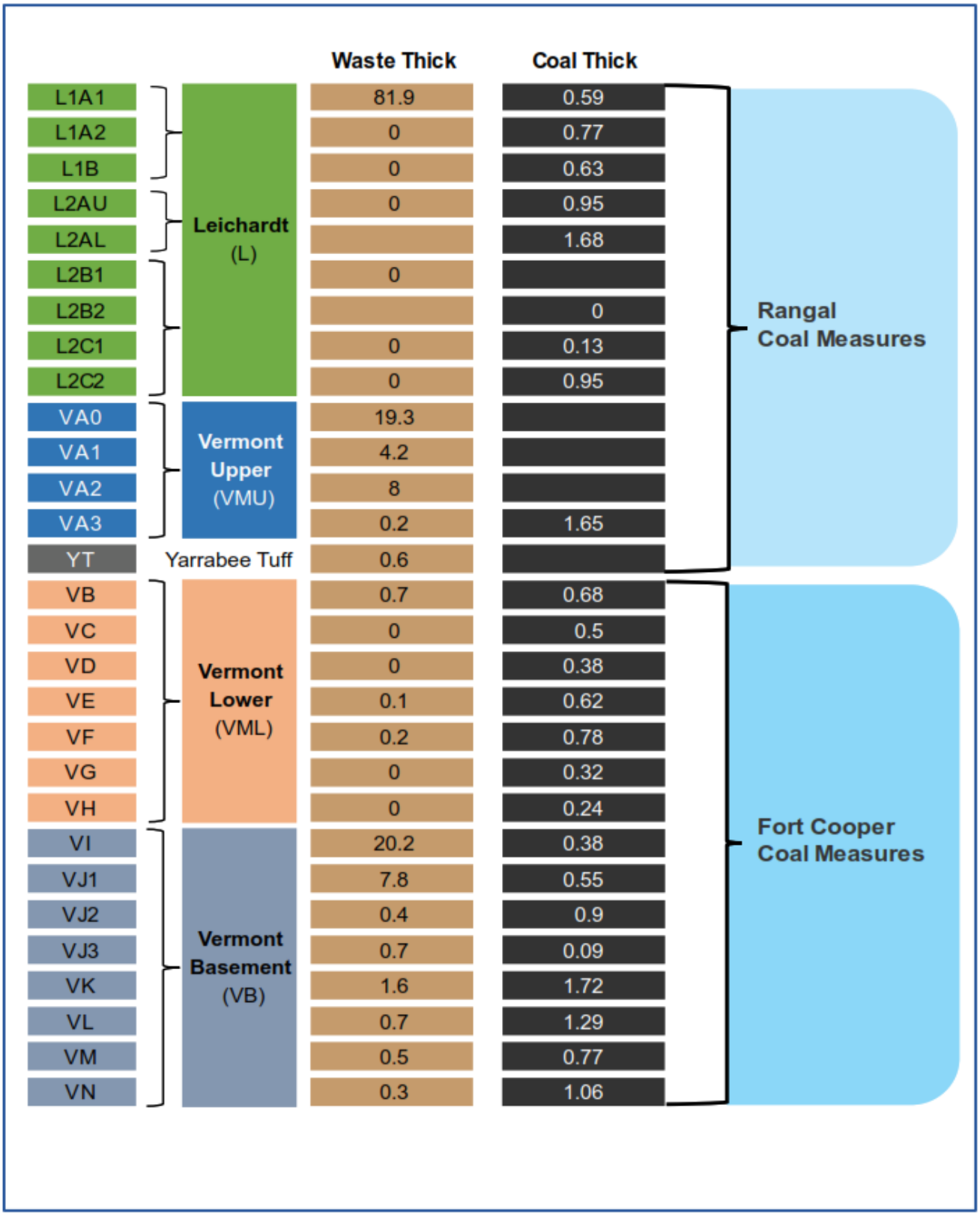
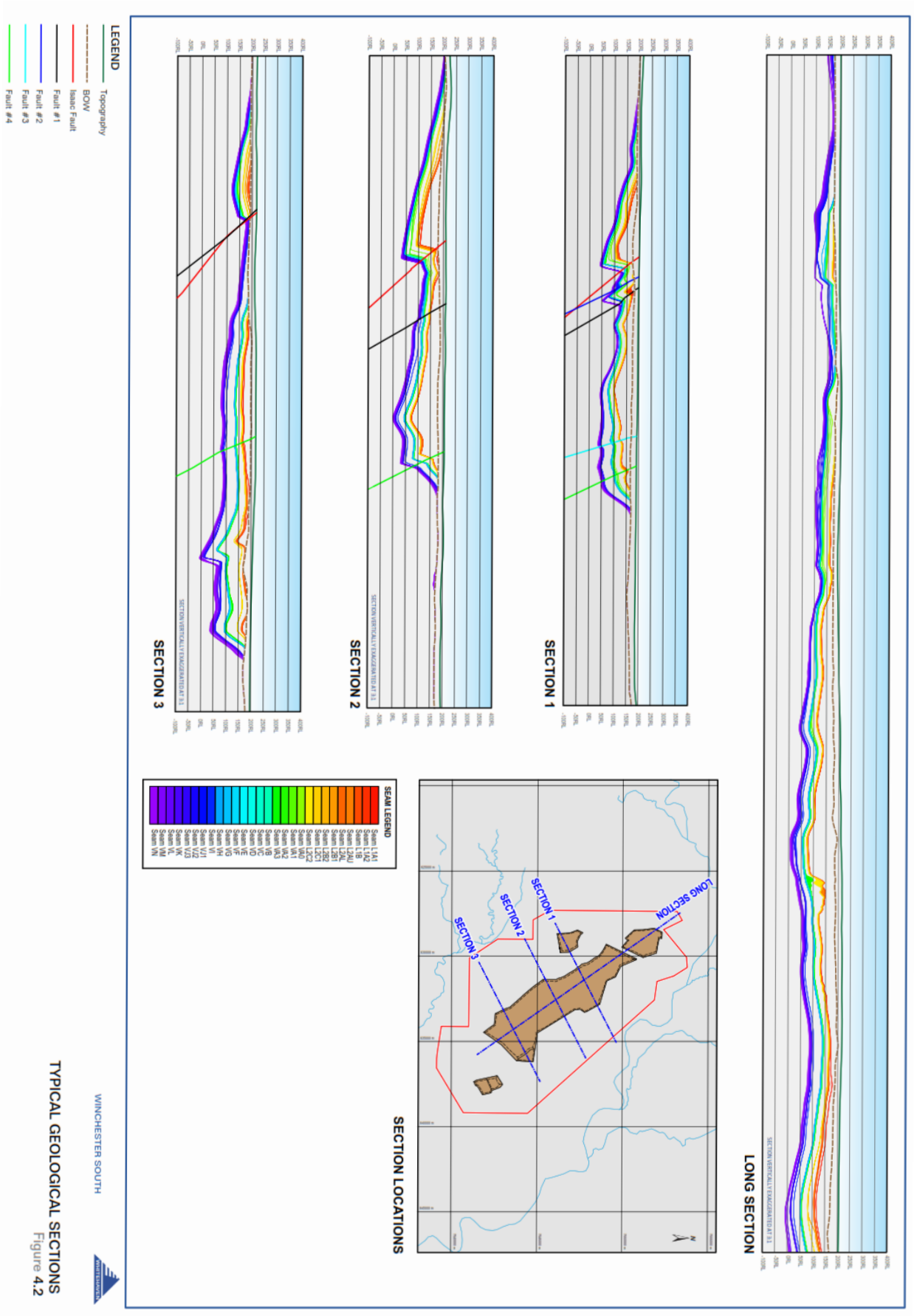


Figure 4.2 – Typical Geological Sections



4.2 Resource Estimate

Resources for Winchester South were updated in 2018 by Xenith Consulting and resulted in an increase in total Resource to 530 Mt. The Resources are summarised by seam group in **Table 4.1**.

Table 4.1 – JORC Resource Summary

Seam Group	Measured (Mt)	Indicated (Mt)	Measured + Indicated (Mt)	Inferred (Mt)
Leichhardt 1	18	29	**47**	5
Leichhardt 2	51	111	**162**	25
Vermont Upper	40	99	**139**	40
Vermont Middle/Lower	23	62	**85**	29
Total	**130**	**300**	**430**	**100**

Note: Resources as at October 2018, Rounding may result in minor tabulation errors.

The geological model used to prepare the statement of Resources is not the same model provided by WHC on which the LOM plan is based.

The Resources by depth are demonstrated in **Table 4.2**.

Table 4.2 – Resource Tonnage by Depth

Depth	Category	Tonnage (Mt)
0 – 150m	Measured	126
	Indicated	295
	Inferred	93
	Total	**513**
150 – 200m	Measured	6
	Indicated	5
	Inferred	7
	Total	**18**
Total		**530**

Note: Resources as at October 2018, Rounding may result in minor tabulation errors.

As both the Resource estimate and LOM plan were being completed simultaneously, the Resource polygons have not yet been applied to the proposed term. **Figure 4.3** shows the approximate polygon overlay of the Vermont Middle and Lower Resource categories on the Year 3, Year 4 and Year 5 stage plans.

The average Resource raw coal qualities are demonstrated in **Table 4.3**.

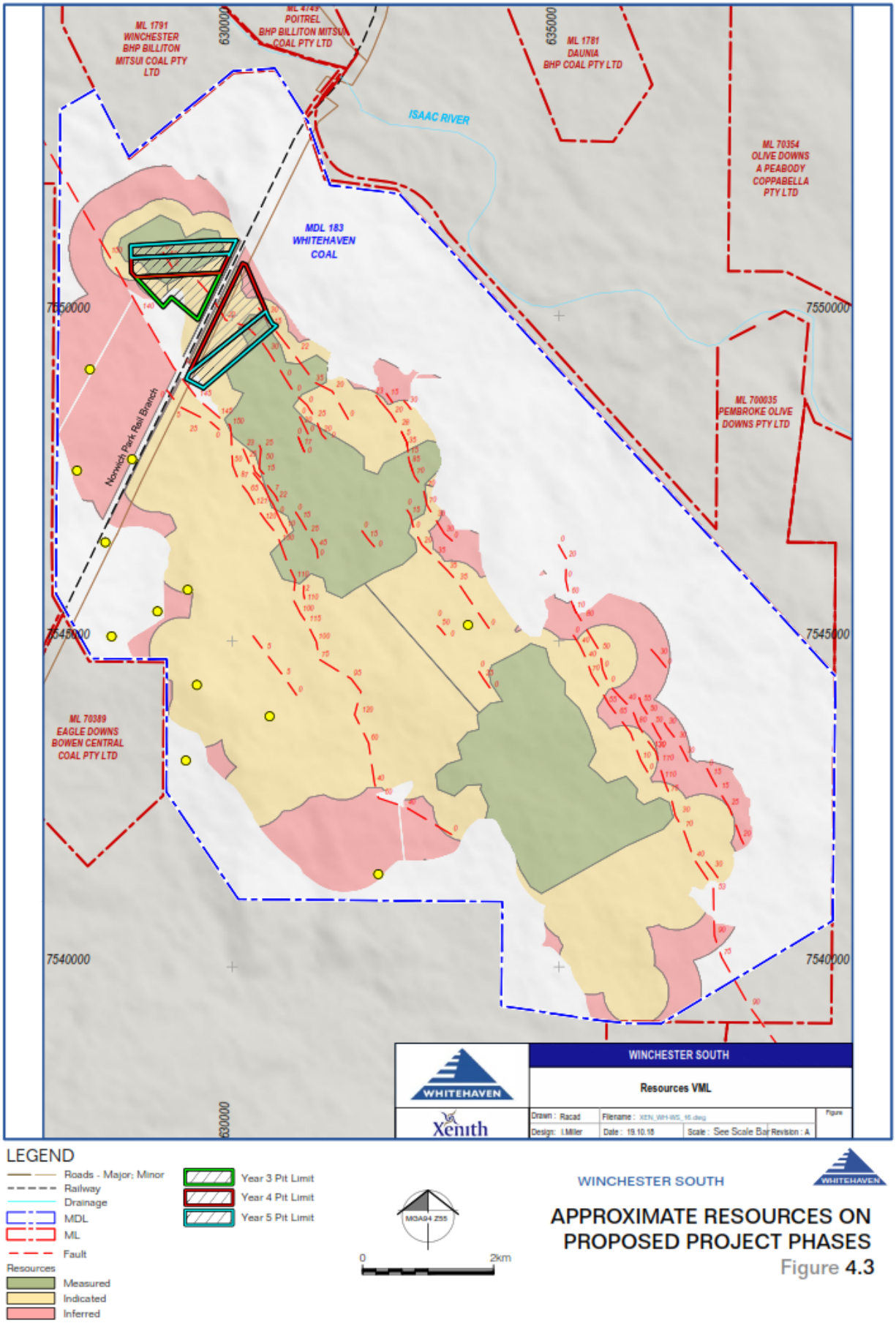
Table 4.3 – Raw Coal Quality Summary

Category	RD t/m^3	Inherent Moisture %	Ash (ad) %	Volatile Matter (ad) %	Fixed Carbon (ad) %	Total Sulphur (ad) %
Measured	1.64	2.4	32.8	19.2	46.7	0.37
Indicated	1.65	2.4	34.3	18.9	45.1	0.36
Inferred	1.66	2.4	34.7	18.6	44.9	0.36

4.3 Reserve Estimate

A JORC Reserve estimate has not been completed as this stage.

Figure 4.3 – Approximate Resources on Proposed Project Phases



4.4 Proposed Mining Schedule (Section 318DT(1)(c)(iii))

The tonnage and locations of mining have been detailed in Chapter 3.2. Please refer to this chapter for section requirements with regards to ROM coal tonnage, product coal tonnage, and ROM ash forecasts.

The pit floors targeted in each pit are listed in Table 4.4. Some of the pits did not mine to the bottom of the Resources (VH ply in the VML seam group) as economics did not prove positive and hence pits were stepped up to the Leichhardt Seam. All coal that is under 300 mm in thickness that cannot be mined in a working section is deemed “not mineable” and excluded from the mine plan.

Table 4.4 – Pit Floors

Pit	Floor	Seam Exclusions
Railway	VML seam group	None
Main	Mostly to VML except for small section in southeast that steps up to L2 seam group	Some VU & VML
South	L2 seam group	VU & VML
West	VML seam group	None

The cost of producing the product coal schedule is covered in **Table 4.5**.

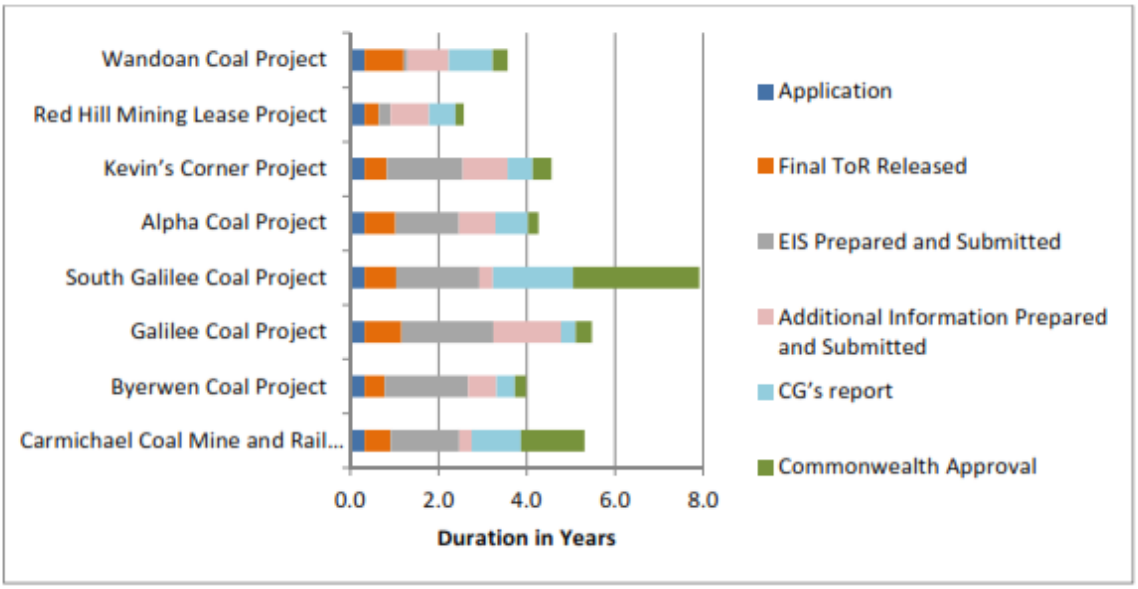
Table 4.5 – Operating Cost Components ($/t ROM)

Cost Centre	Year 3	Year 4	Year 5
Mining	49.67	30.07	26.12
CPP	4.63	4.63	4.63
Onsite	12.23	5.57	4.68
Subtotal FOR	66.53	40.26	35.43
Offsite	21.00	21.30	19.53
Total FOB	**87.53**	**61.56**	**54.96**

4.5 Start Date (Section 318DT(1)(c)(iv))

The assessment timeframe for some recent projects assessed under the Queensland State Development and Public Works Organisation Act 1971 (“SDPWO Act”) are shown in **Figure 4.4**. Timeframes to approval typically range from 3 to 5 years.

Figure 4.4 – SDPWO Act Assessment Timeframe



Source: "Project Maroon – Approvals and Environmental Due Diligence Report", Resource Strategies

Based on the above and an assumed construction period of 18 months, RPM have prepared a high level development program for the Winchester South in **Figure 4.5**. The timing to complete the EIS is consistent to **Figure 4.4** however there is more variability in timing in the process of achieving approval.

Figure 4.5 – High Level Development Program

Task	H1 2019	H2 2019	H1 2020	H2 2020	H1 2021	H2 2021	H1 2022	H2 2022	H1 2023	H2 2023
EIS ToR										
Draft EIS										
Prepare EIS										
Approval										
Mining Lease Application										
Feasibility Study										
Detailed Design and tender										
Construction										

The current development program would have construction being completed in 2023 and operations commencing in 2024.

4.6 Mining Schedule (Section 318DT(1)(c)(v))

Please refer to Chapter 2.3 and Chapter 3.2 for details on the mine plan schedule.

5 OTHER REQUIREMENTS

5.1 Other Information (Section 318DT(1)(e))

The proponent is not aware of any substantial identified coal seam gas ("CSG") or petroleum resources in the Project area. If this changes in the future, WHC will ensure due diligence if taken to optimise the extraction of both resources in their mine planning.

5.2 Appropriateness of the Plan (Section 318DT(1)(f))

This plan has been prepared by RPM Global, which has been briefed with all relevant background material and has separately been engaged to prepare the LOM plan for the site and other key planning documents. RPM Global has taken appropriate steps to ensure that the plan accords with the proponent's intended development of the Winchester South Project and to ensure that the development is designed to be carried out in the most efficient and economically viable way. Various development scenarios have been tested and optimised through this process. The proposed production commencement date is near term with only 2 years ramp up needed post approval.

Pleasingly, the Winchester South Project is not expected to give rise to any impact on coal seam gas resource within their area, or on the future development of that resource by a petroleum production company.

The Winchester South Project is targeting the Vermont Upper, Vermont Lower and Leichardt coal measures. These coal measures are relatively near-surface.

The Moranbah coal measures are approximately 400m deeper than the deepest of the open cut target measures (the Vermont Lower measures). The Winchester South Project will have no impact on any coal seam gas resource that may be found in the Moranbah measures, which would be open for further exploration and development by the overlying coal seam gas authority to prospect holder (CH4 Pty Ltd). Should any coal seam gas resource exist in the shallower measures, the Winchester South Project would have only localise impact as a result of the proposed coal extraction.

The proponent of the Winchester South Project has made contact on a number of occasions with CH4 Pty Ltd, which has expressed limited interest in the open cut target coal measures. As far as the proponent is aware, CH4 Pty Ltd has no objection to the MLAs proceeding.

The mine plan is considered appropriate because:

- A reasonably size coal Resource is available for economic extraction
- Suitable pit optimisation has been carried out on the deposit to determine the most efficient and economic extraction plan.
- Sufficient planning and lead time has been allowed for project commencement.
- The mine plan includes measures to avoid and reduce the potential impacts of the Project on the environment; and
- The mine plan complies with the relevant requirements for the IDP.

5.3 Regulation Matters (Section 318DT(1)(g))

At the time of this report, there were no other matters prescribed under regulation.

6 PETROLEUM TENURE (SECTION 318DV)

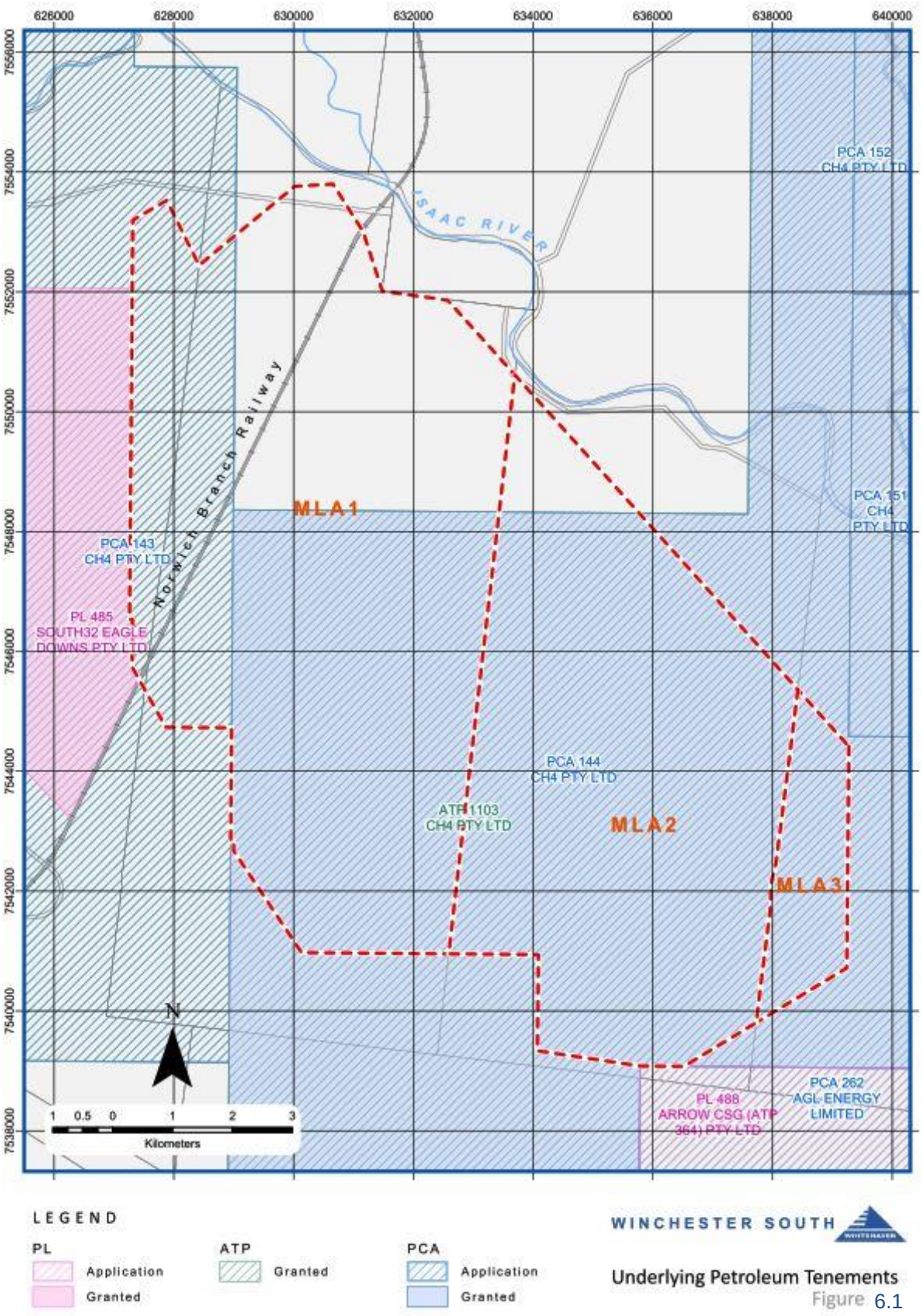
Currently the Project is covered by an Authority To Prospect (ATP) 1103 with no current Petroleum Leases (PLs). The current holder of ATP1103 is CH4 Pty Ltd, a subsidiary of Arrow Energy Pty Ltd (CH4). This overlap is shown in **Figure 6.1**.

The proponent has made contact on a number of occasions with CH4, which has expressed limited interest in the open cut target coal measures. As far as the proponent is aware, CH4 has no objection to the MLAs proceeding.

The parties have previously entered into a Joint Interaction Management Plan (JIMP) for the Project area, which covers exploration works. The proponent is open to negotiating the terms of a JIMP for production purposes, and can see no reason why production of the coal seam gas resource in the Moranbah Measures should be overly impeded by the presence of the Project.

The proponent is not aware that CH4 has recently or intends to carry out any exploration activities within the area of MDL183. The proponent is not aware of any impact of activities under the Project on petroleum exploration, testing or production activities proposed to be carried out by CH4.

Figure 6.1 – Underlying Petroleum Tenements



7 CSG TENURE (SECTION 318DW)

The proponent has considered incidental coal seam gas production/utilisation for the Project. At this stage, no known coal seam gas resource can be found in the target coal seams within the Project area. Coal seam gas will be managed safely and to in compliance with all safety legislation. However, there is no commercial benefit in developing infrastructure for the use of coal seam gas at the volumes that will be generated incidental to the mining operations.

At this stage of planning, there are no known petroleum leases over the Winchester South Project area.