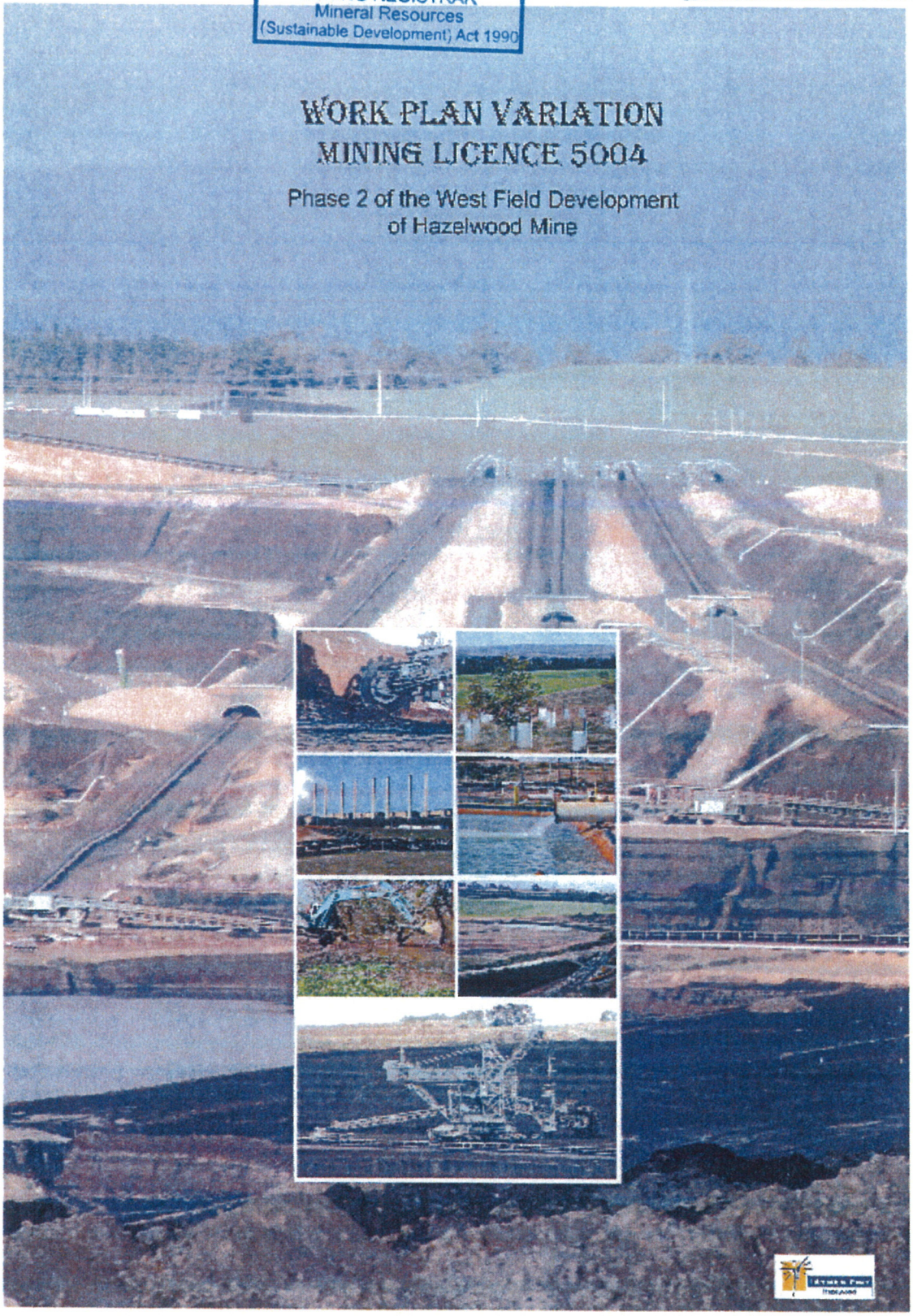
Date of Registration
11 / 05 / 2009
Time of Registration
10·28 am/pm
Elmi Ricketts
MINING REGISTRAR
Mineral Resources
(Sustainable Development) Act 1990

Work Plan Variation Approved
Delegate of the
Department Head
Date: 11/5/09

WORK PLAN VARIATION
MINING LICENCE 5004

Phase 2 of the West Field Development
of Hazelwood Mine



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R22

MINERAL RESOURCES (SUSTAINABLE DEVELOPMENT) ACT 1990

APPROVED WORK PLAN VARIATION (SECTION 41 - MR(SD)A)

LICENCE TYPE	Mining Licence
LICENCE NUMBER	5004
NAME/S OF LICENSEE/S	Hazelwood Power Corporation Pty Ltd
ADDRESS/ES OF LICENSEE/S	Brodribb Road, Hazelwood, Victoria 3840
CURRENT AREA	Area of Work Plan
NATURE OF WORK:	Mining beyond Block 1B
DATE OF WORK PLAN VARIATION APPROVAL	11th May 2009
CONDITIONS	Standard conditions below
STRATUM OF LAND	Not applicable

CONDITIONS

Prior consent from the Crown land manager must be obtained before any work on *restricted Crown land* can occur (s. 44).

You or your field representative must notify the regional mines inspector 7 days before the work herein approved is commenced.

You or your field representative must give 7 days notice to the responsible Crown land manager if the work is on Crown land (s. 43).

This approval is not an approval under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth).*

Date of Registration

11/05/2009

Time of Registration

10:28 am/pm

Kim Ricketts

TENEMENTS REGISTRATION OFFICER

MRSDA 1990 (Section 69)

F17165

WORK PLAN VARIATION

MINING LICENCE 5004

Mining of Phase 2 of the West Field Development
of Hazelwood Mine

April 2009

Director Mining	Ian Quail
Mine Engineering Manager	Richard Polmear
Senior Mine Planner	Martin Raun
Draftsperson/graphic designer	Robert Mansell
Original Draft	Prepared by Coffey Natural Systems
Version:	**Distribution:**
	IPRH File – 1 copy Coffey Natural Systems – 1 copy DPI – 1 copy

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1 INTRODUCTION AND GEOLOGY

1.1 Preamble

Hazelwood Mine and Hazelwood Power Station comprise the power generation business of International Power Hazelwood (IPRH). The Hazelwood Power Station generates approximately 22% to 23% of Victoria's baseload electricity, and IPRH provides continuous employment to approximately staff and contractors.

The Hazelwood Mine not only supplies coal to the Hazelwood Power Station but also supplies steaming coal to Energy Brix, which produces electricity and briquettes. Energy Brix is supplied directly via an overland conveyor from the Hazelwood Mine.

IPRH is currently developing the West Field Project, the objective of which is to maintain an uninterrupted supply of coal to the Hazelwood Power Station beyond 2009. The West Field Project is being developed in two phases; Phase 1 and Phase 2.

Phase 1 mining began in February 2004 under existing permits and licences. The existing permits allowed extraction of of coal in Blocks 1A and 1B (see Figure 4.1). Preparation for Phase 2 mining commenced with land acquisitions in 2000 followed by an EES and non DPI regulatory approvals for relocation of rivers and roads and private infrastructure.

The Environment Effects Statement (EES [IPRH, 2004]) also covered mining impacts for Phase 2 mining. Phase 2 mining, in Blocks 1C, 2A, 2B, 3 and 4 (see Figure 4.1), contains a mining reserve of of coal, a total reserve for West Field of in all.

The EES was prepared to inform Government decision-making on the West Field Project, including impacts from Phase 2 mining operations. Approval of the EES underpins Government's consideration of mining impacts described in this work plan variation (WPV). The role of the WPV is to provide the basis of approval of mining under the *Mineral Resources (Sustainable Development) Act 1990*.

The property acquisitions and road deviation works are now complete. River diversions are currently under way with a planned completion date of 2010.

Phase 2 mining required application for new mining licences to access coal outside the previous mining licence area (mining licence number 5004, or MIN 5004). Subsequently 4 new Mining Licences were issued and have now been amalgamated into MIN 5004.

This WPV seeks approval for mining in Phase 2 of the West Field Project. It addresses Section 41 of the *Mineral Resources (Sustainable Development) Act 1990* and the requirements of Schedule 13 (Regulation 25) of the Victorian Mineral Resources Development Regulations.

It should be noted that there are a number of departures in this WPV from the information supplied to the EES Panel and it is the view of IPRH that they have no material impact on the environment, the community or mining operations. The changes are:

- The coal block boundaries shown in Figure 4.1 of this document are different to those shown in Figure 1.2 of the EES. This has been done to lower the cost of mining through deferral of capital expenditure associated with transfer to Block 2. The external boundaries of the pit are unchanged and the volume of coal extracted is also unchanged.

- A further refinement that may also be considered is a change to the mining sequence so that mining would occur in Block 1C, then Block 3 prior to Blocks 2A, 2B and then Block 4. This is not considered a material change as the commitment to rehabilitation remains largely unchanged with Block 3 dirt being utilised for South East Field rehabilitation instead of Block 2A dirt.
- In response to discussions with DPI Mines Inspectors regarding pit batters in 2007, IPRH will, once the single, two-level operation has been completed in the South East Field, place overburden by stacker over the former batters of the South East Field and a portion of the East Field. Once that has been completed, overburden will be placed on the floor of the pit in the West Field. The impact of this change is to reduce both the final batter angles in that part of the pit and the volume of overburden placed in the bottom of the pit. The latter will also mean that in order to prevent heave of the pit floor post-closure, groundwater pumping may need to be extended for 6 to 12 months to make up for the lost weight of overburden in the bottom of the pit. A detailed study will determine if this is required.

IPRH expects that the closure concept will continue to be refined as time progresses.

1.2 Geology

1.2.1 Regional Geology

The Gippsland Sedimentary Basin is one of the major coal- and oil-producing provinces in the world and is divided into a number of sub-basins. The Latrobe Valley forms part of the onshore Gippsland Sedimentary Basin, which extends from Darnum (in the west) through the Latrobe Valley (from Yallourn to Sale) to the coast between Gelliondale and Orbost. The offshore part of the basin has produced oil and gas in substantial quantities from numerous individual fields in Bass Strait since the 1960s (Woodward-Clyde, 1999).

The Latrobe Valley hosts Victoria's main deposits of brown coal. DPI (2003) estimates reserves of 50 billion tonnes, of which only 1.4 billion tonnes (2.8%) had been mined by 2000 to 2001 (ABARE, 2001).

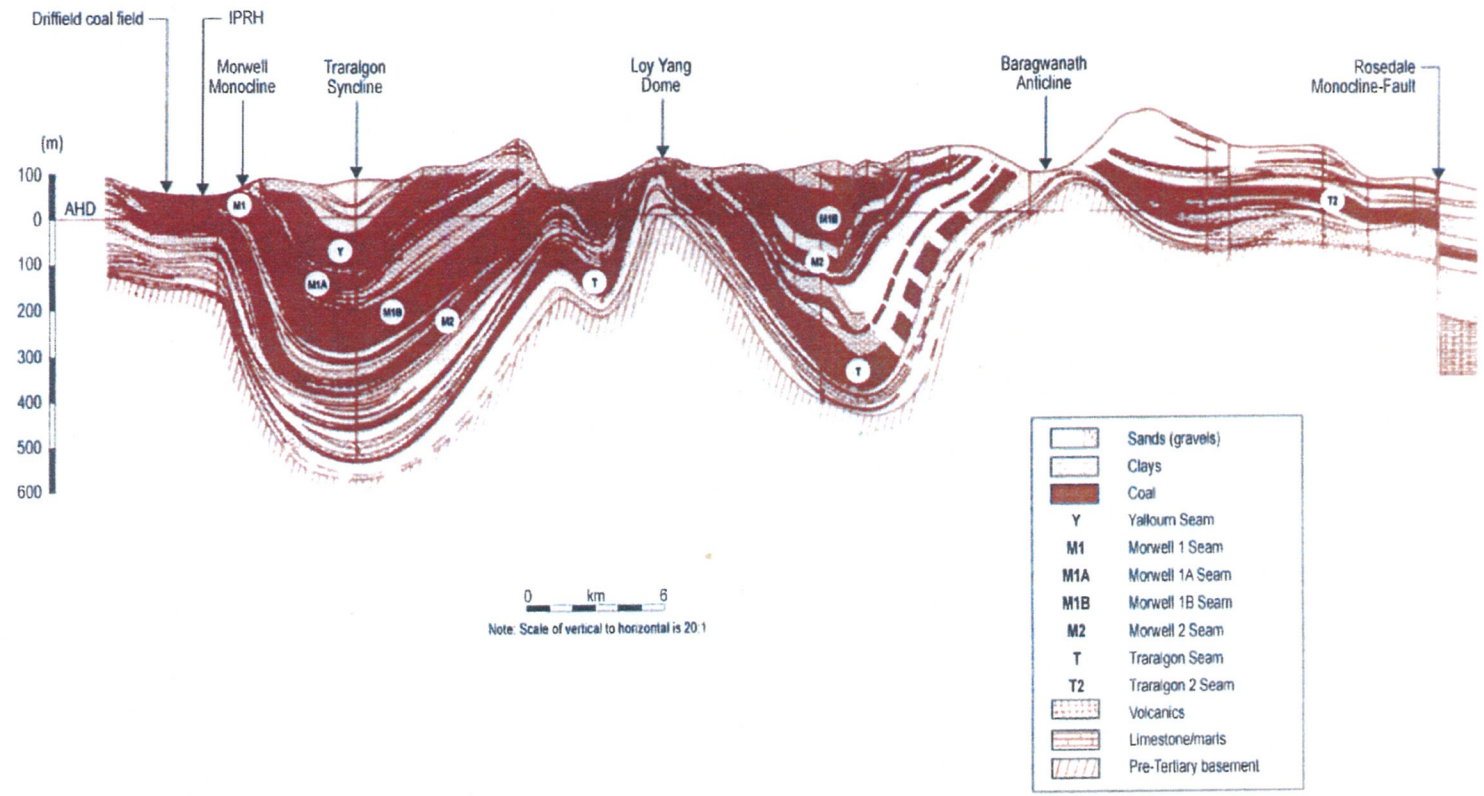
The major Latrobe Valley coal reserves comprise three formations (Figure 1.1) (Kinhill, 1981):

- Traralgon Formation (Eocene Age, 37 to 53 million years ago).
- Morwell Formation (Oligocene and early Miocene Age, 15 to 37 million years ago).
- Yallourn Formation (mid-Miocene Age, 5 to 11 million years ago).

The Morwell 1 seam is favourably located in the West Field, being 100 m thick beneath shallow overburden of unconsolidated sediments at depths between 8 and 15 m below ground surface (Figure 4.2). The Morwell 2 seam underlies the Morwell 1 seam at depth and is not economic to mine at this time.

1.2.2 Coal Reserves

The coal resources of the West Field have been determined from a total of boreholes with an average spacing of . The total coal reserves for Phase 1 and Phase 2 of the West Field Development are and respectively.



Source: Kinhill (1981)

	coffey natural systems	Job No. 1011	Hazelwood	International Power Hazelwood	Latrobe Valley geological cross-section
		File Name: 1011_24_F01.01_HB	Work Plan Variation		Figure No: 1.1

Figure 1.1 Latrobe Valley geological cross-section

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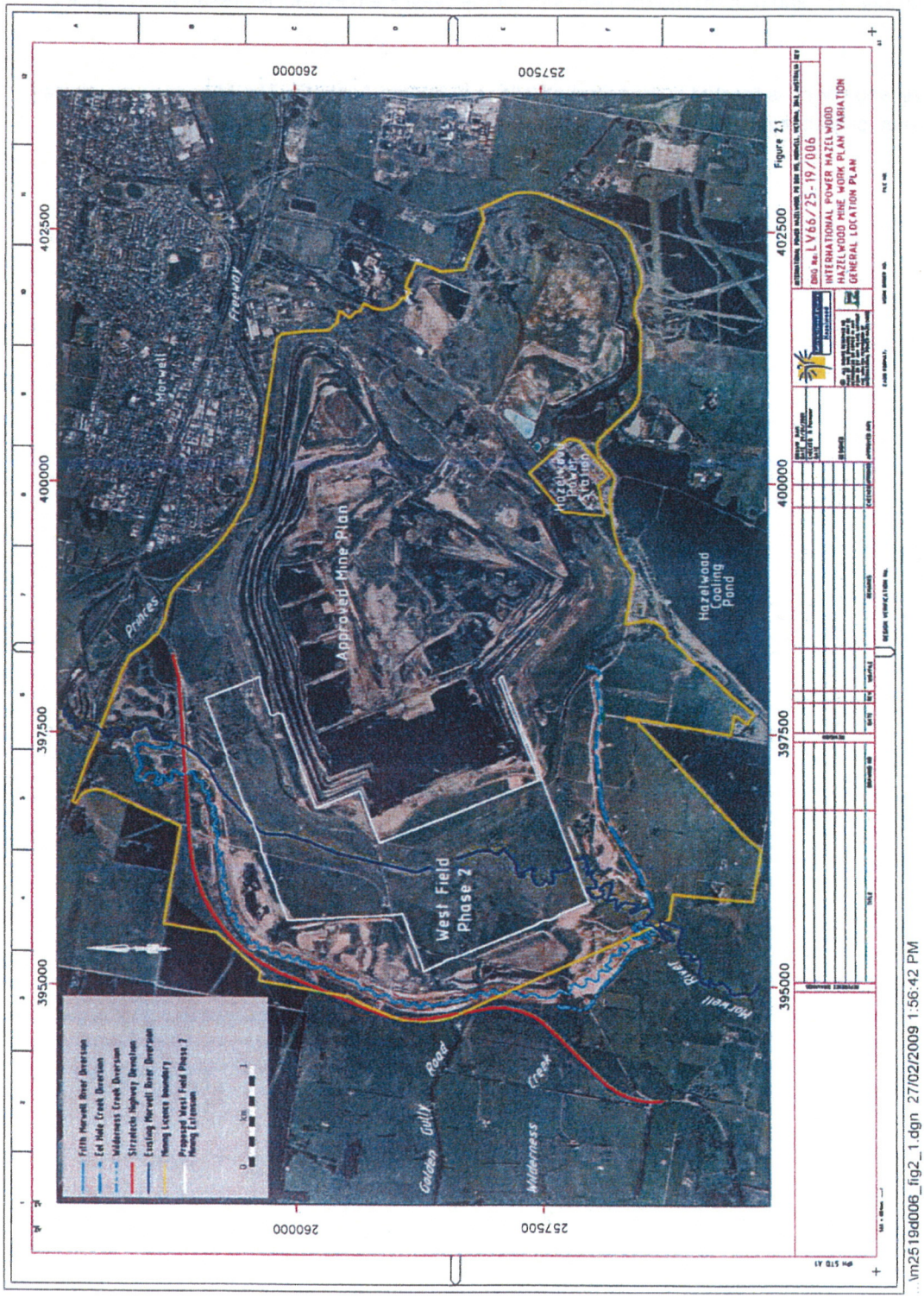
2 GENERAL LOCATION PLAN

A general location plan (approximately 1:45,000) for the West Field Project is presented in Figure 2.1.

The Hazelwood Mine is located in the Latrobe Valley of Victoria, Australia. The Mine is approximately 160 km east of Melbourne.

Figure 2.1 General Location Plan - Hazelwood Mine and West Field



3 REGIONAL PLAN

The project is within the shire of Latrobe City. Under the Latrobe City planning scheme, the principal land use zone for the project area is Special Use Zone 1—Brown Coal. A regional location plan (approximately 1:60,000) for the West Field Project is presented in Figure 3.1. This figure is from the 2004 EES and shows Crown land, private land and, parks and reserves around the site.

private landowners within the project area were impacted by the West Field Project. Of these, have been relocated; however, all land procurement activities have been successfully concluded.

At the time of writing, a land swap between IPRH and the Victorian Government is in progress. The intention is to transfer ownership of land in the area of the current Strzelecki Highway, Wilderness Creek and Morwell River reserves from the Crown to IPRH and to use the opposite process for the new Strzelecki Highway, Wilderness Creek and Morwell River diversions currently under construction, so that IPRH freehold land is transferred to the Crown.

The Morwell River reservation will be relocated with the physical realignment of the new Morwell River and take effect from a date yet to be fixed. Figure 3.2 shows the land tenure following the land swaps planned to conclude in early 2010.

Figure 3.1 Land tenure in 2004

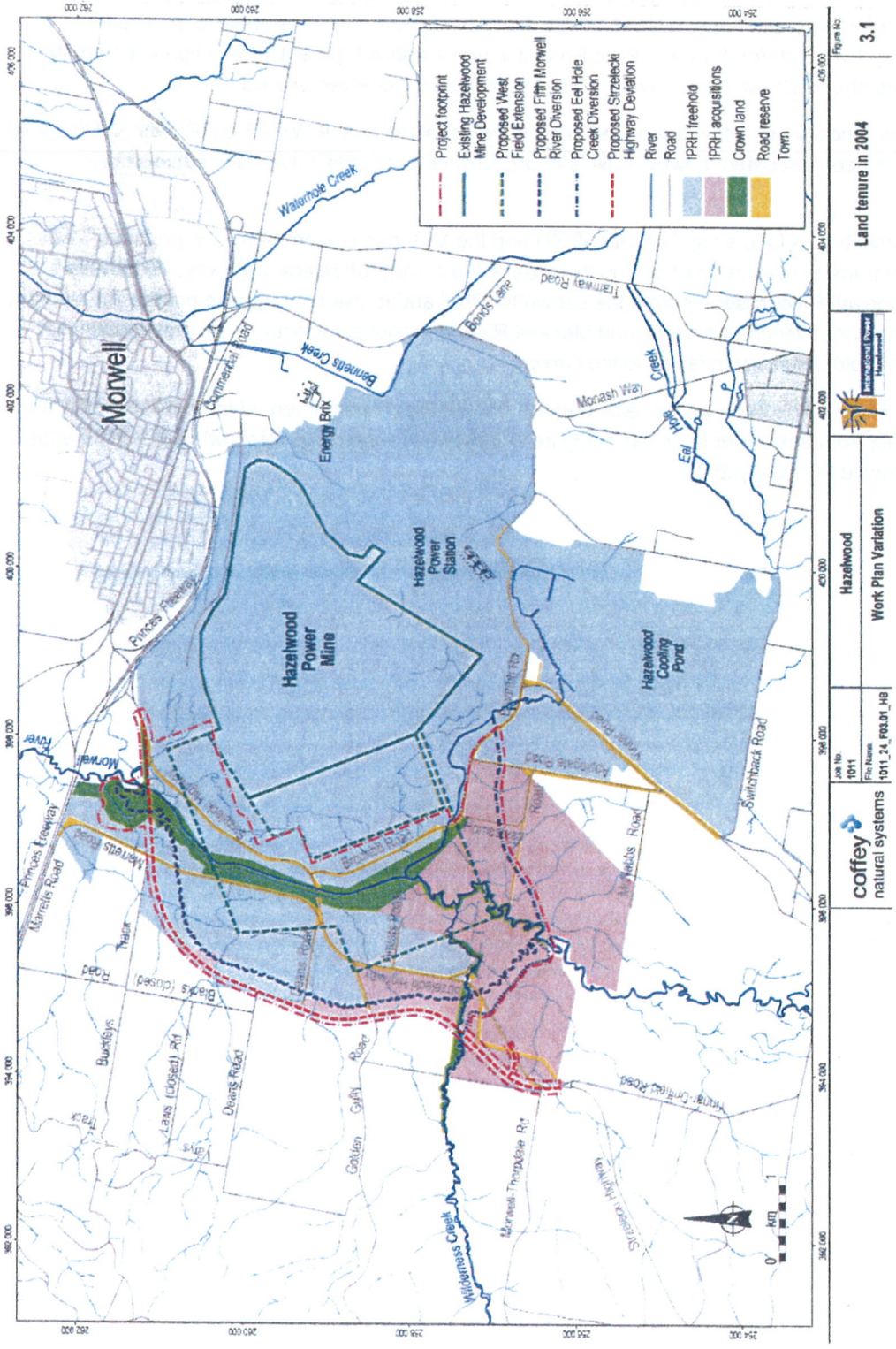
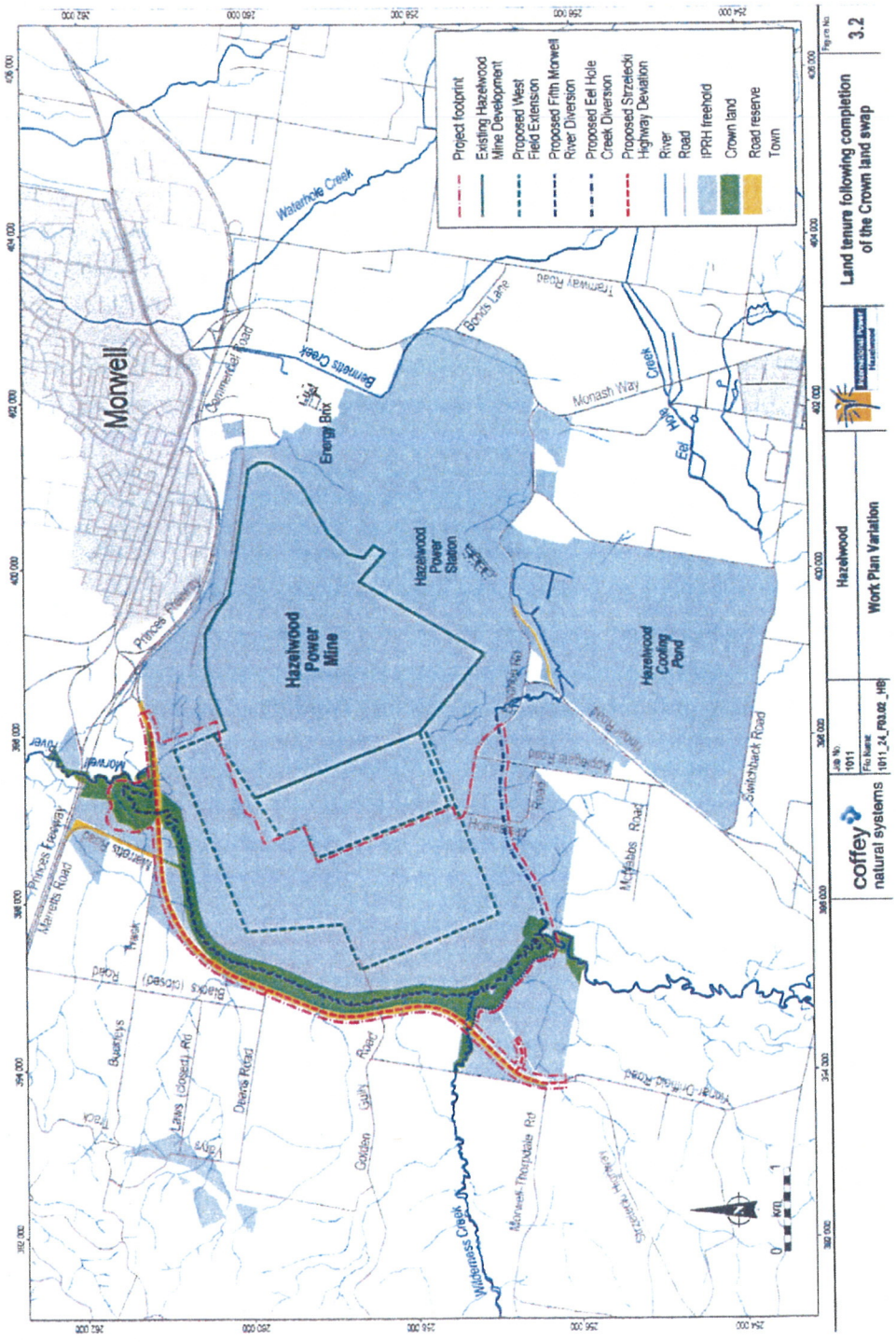


Figure 3.2 Land tenure following completion of the Crown land swap



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4 SITE PLAN

A general site plan, along with the mining sequence of the West Field Project, is presented in Figure 4.1. Note that a site plan at a scale of 1:2,500 as proposed by Schedule 13 of the regulations has not been provided due to the very large project area; such a plan would be several metres across.

Northeast to southwest, and northwest to southeast cross sections through the pit are presented in Figure 4.2.

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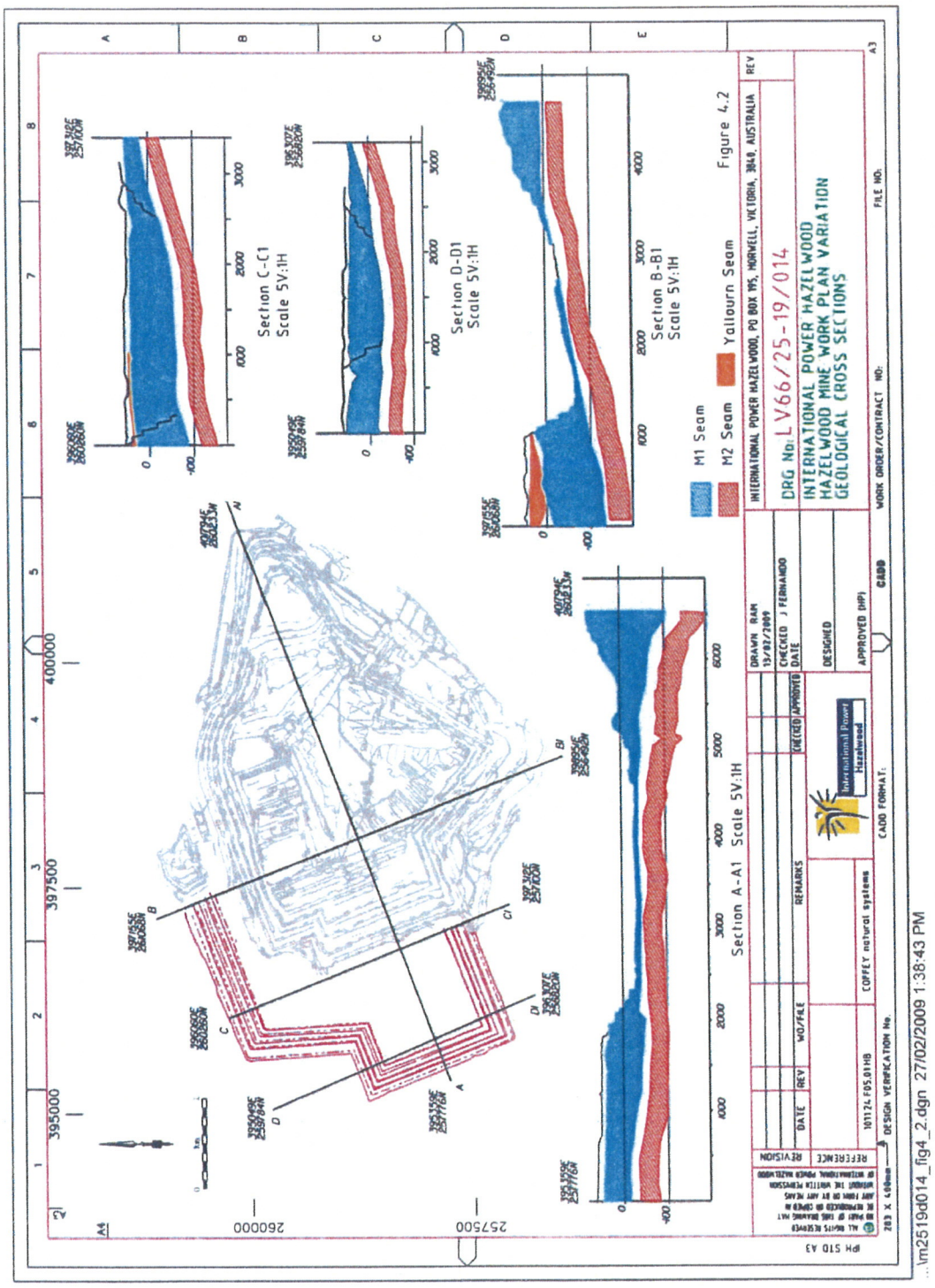
Figure 4.1 West Field mine blocks

Figure 4.2 Geological Cross Sections - Hazelwood Mine



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5 MINERAL RECOVERY METHODS

5.1 West Field Development Sequence

5.1.1 Phase 1 and Phase 2

Development of the West Field began at the western batters of the existing mine and involves two phases moving progressively from east to west. In both phases, mining will continue to use the same dredger (bucket-wheel excavator) and conveyor systems to excavate and transport coal and overburden currently used in the Hazelwood mine.

As each level of the South East Field was completed, the respective dredger and conveyor systems were relocated to the western batters of the mine to enable operations to continue in the West Field. Transfer of mining operations from the South East Field to the West Field and initial development of the West Field up to and including Block 1B within the current mining licence boundary has been approved and is referred to as Phase 1.

Phase 2 mining, for which this WPV has been prepared, involves continuation of mining in the West Field into Block 1C, 2A, 2B, 3 and 4. Authority to carry out the river and highway diversions (known as the Rivers and Roads Relocation Project – RRR Project) has been granted under other Acts (i.e., they are largely outside of the mining licence and not regarded as mining under the *Mineral Resources (Sustainable Development) Act 1990)*. Approvals documents from the non-mining component of phase 2 works, giving rise to obligations, include:

- Roads Agreement (VicRoads)
- River Diversion Licence – MRD5 (WGCMA)
- Planning Scheme Amendment C32 (LCC)
- Planning Permits 04189, 04190, 04191, 04192 (LCC)
- EPBC 2002/903 (C'Wealth)
- Works Approval WA55174 (EPA)
- Net Gain Agreement, and Net Gain Implementation Plan (DSE)
- Works on Waterways Licence (WGCMA)
- EES, Panel report and Ministers Assessment
- Minor community and local government agreements

These obligations are effectively managed through an Obligations Register. Annual updates of progress against these approval obligations will be reported to DPI through the Environmental Review Committee (ERC).

Environmental Management of the RRR Project is discussed in Section 7.1.

5.1.2 Mining Sequence

Coal production from Phase 1 of the West Field began in February 2004 and will continue until 2013 (Blocks 1A and 1B, see Figure 4.1). Mining in Phase 2 requires the Morwell River, Strzelecki Highway and other infrastructure to be moved. Together with the expanded mining

licence area, these infrastructure works enable the mining of the remaining West Field blocks as outlined in the following schedule (Table 5.1).

Table 5.1 Phase 2 mining schedule *

Block	Overburden	Coal
1C		
2A		
2B		
3		
4		

* Approximate dates only

A further refinement that may also be considered is a change to the mining sequence so that mining would occur in Block 1C, then Block 3 prior to Blocks 2A, 2B and then Block 4. This is not considered a material change as the commitment to rehabilitation remains largely unchanged with Block 3 dirt being utilised for South East Field rehabilitation instead of Block 2A dirt.

5.1.3 Stripping Ratios

The stripping ratio for the West Field is t coal /m^3 overburden. Table 5.2 summarises overburden recovery during Phase 2 of the West Field.

Table 5.2 Overburden recovery during Phase 2 of the West Field *

Block	1C	2A	2B	3	4
Years*					
Dredgers ('000 m^3)					
Truck and shovel ('000 m^3)					
Total					

* Approximate dates only

5.1.4 Mine Plan and Mine Life

The total coal production during Phase 2 of the West Field is presented in Table 5.3.

Table 5.3 Coal delivery during Phase 2 of the West Field *

Block	1C	2A	2B	3[1]	4	Total
Years*						
Annual ('000 tonnes)						
Total						

* Approximate dates only

[1] in the final year as dredges are progressively decommissioned.

5.2 Mining Method

5.2.1 Mining and Pit Design

The mining plant for the West Field Project will be a continuation of IPRH's current system of dredgers and conveyors, which have been progressively transferred from the South East Field to Blocks 1A and 1B of the West Field.

5.2.2 Mine Overburden Disposal

Conveyors currently transfer overburden from the active face within the West Field to the internal dump within the mined-out South East Field. A stacker places the material in a single, two-level operation. Phase 2 of the West Field will continue to send overburden to the South East Field void by these same methods. Once the single, two-level operation has been completed in the South East Field, the stacker will emplace overburden over the former batters of the South East Field and a portion of the East Field. Once that has been completed, overburden will be placed on the floor of the pit in the West Field. This represents a change from the project described in the EES. The change is to satisfy concerns raised by DPI about batter treatments proposed during the EES. Table 5.4 shows the planned sequence of dumping operations with approximate timing.

Table 5.4 Conveyor transfer milestone dates *

West Field Block	Activity	Over-burden	Coal System 1	Coal System 2	Coal System 3
1	1C – Complete Block 1.				
2	2A – Progress towards the north.				
	2B – Lengthen for northern section.				
3	Establish western progression.				
	Complete western progression.				

Note: The conveyors will already be located in Block 4, and the work will consist of withdrawing the conveyors from this block.

* Approximate dates only

The completed overburden operating faces will be progressively cut back to a 3H:1V slope ahead of long-term rehabilitation and stability works.

5.2.3 Coal Recovery

The coal dredgers will excavate the exposed coal in the same series of three stepped benches. Working coal batters will be generally laid back to a slope of 1H:1V, until final batters are excavated when they will be flattened to approximately 3H:1V. Whilst the working coal batters are being formed, the overall slope from ground surface to pit floor is approximately 3H:1V.

5.3 Mine Infrastructure

5.3.1 Access Roads

Access and haul roads–existing and new–will provide operational and emergency access for conventional 4WDs, mobile slew conveyors, haul trucks (used in truck-and-shovel operations) and mobile plant. Roads will be generally of clay and gravel construction and 25 m wide.

A 15-m-wide, gravel mine perimeter road will continue to provide access to the pit. The perimeter road will progressively move westwards as the mine develops.

5.3.2 Buildings and Amenities

The numerous buildings that support the mining operation will be maintained or relocated as necessary for Phase 2. There are no additional potable water supply requirements for Phase 2 and the existing septic tank treatment of mine sewerage will be continued. No new external telephone lines will be required although some internal telephone lines will be shortened and new internal lines will be required if the offices are relocated.

5.3.3 Hazelwood Ash Retention Area

In 2006, the Victorian EPA issued Works Approval 54550 for the construction of an ash retaining cell within the Hazelwood Mine for containing power station ash. The cell is known locally as the Hazelwood Ash Retention Area (HARA), and comprises an area of the former East Field internal overburden dump that is confined by coal batters and a constructed embankment known as the Hazelwood Ash Retention Embankment (HARE).

The material deposited within the HARA is power station ash emanating from either the Hazelwood Power Station or Energy Brix and treated to become a dense phase material rather than a traditional wet ash containment.

EPA approval of WA 54550 was only granted after considerable investigation and recommendations from an independent EPA-approved environmental auditor. Because this process was new to the Latrobe Valley, the EPA only granted conditional approval subject to a further review in 2011. IPRH is preparing to meet the EPA requirement to undertake a comprehensive review of the operation. IPRH will then seek an independent EPA-approved environmental auditor's opinion of the review.

5.4 Mine Management

5.4.1 Firehole Management

The State Electricity Commission of Victoria (SECV) identified the fireholes in the West Field Phase 1 and 2 areas when planning the Driffield Mine Development proposed in the 1980s. IPRH uses the SECV data to design drill, sample and test programs in areas of potential fireholes. This program will continue to be carried out prior to overburden operations entering these areas and will define the dimensions of individual fireholes and the nature of the infilled sediments.

Each firehole will be managed according to its location relative to the operation, the geomechanical properties of the material and the volume of contained water. Stability analysis will set excavation and dumping limitations. Other management measures include reducing the height of the excavation's front and side batters either by pre-stripping the overburden from fireholes with truck and shovel or by raising the operating level (design ground level) at which a bucket-wheel excavator will excavate.

5.4.2 Mine Stability and Subsidence

The Mine uses a system of cascading plans to control stability and aquifer depressurisation activities. Both activities have a 30 year plan which is reviewed nominally at 5 year intervals. Each year an annual plan is prepared for each activity. This includes a review of the past years performance and a forecast for the next 5 years of works. All of these plans are independently reviewed with the reviewers' comments included as part of the report. Independent reviews are currently conducted by external resources. IPRH also prepares monthly performance reports for both stability and aquifer depressurisation. These are based on routine weekly and monthly inspection and performance data.

Batter Stability

IPRH carries out routine annual risk assessments of the stability of the permanent overburden batters, the coal batters and the internal overburden dump The results are documented in IPRH's annual geotechnical work plan, which is independently reviewed. This process will continue in the West Field Phase 2. Stability bores and stability pin lines are complemented by weekly and monthly visual inspections of batter slope angles, coal crack orientations, seeping water and subsequent repairs. Where appropriate, pin lines will be extended to incorporate major public or private infrastructure and therefore be included in the annual stability assessments as part of the annual stability review. IPRH will investigate recovery of previous pins in the Morwell Township area. If insufficient pins can be recovered then new pins will be installed. No less than 3 pin lines will be activated with monitoring north of the Mine, up to Commercial Road, including the Morwell By-pass. Whether the pins are recovered or new, a baseline survey will be conducted in 2009. Reporting and analysis of movement monitoring results will be included in IPRH's existing systems commencing 2010. Where deemed necessary, IPRH also conducts investigations and risk assessments of other activities that may have stability implications. Where deemed appropriate, IPRH will continue use of horizontal bores to reduce build up of hydrostatic pressures in coal joints.

Aquifer Depressurisation

The West Field Project will continue the aquifer depressurisation management program currently in use in the existing open pit. This includes radio telemetry monitoring of artesian pump operations as well as weekly, monthly, and quarterly monitoring of observation bores to compare actual pressures with target pressures. Target pressures are derived annually taking into account changes caused by mining during the previous year (ie weight removed and weight replaced). Such calculations form part of the annual review.

Stability Management Plan

Following a stability scoping audit conducted by DPI in 2008, a number of aspects of concern were raised by DPI. These related to potential stability impacts on:

- Public Safety,
- Environmental Impact,
- Infrastructure, and
- Coal Supply Continuity.

Whilst current Work Plan Guidelines do not include requirements covering these matters, IPRH has decided to proactively incorporate such potential impacts as we currently understand DPI may require in future.

Table 5.5 DPI listed aspects of Concern V's Assets at Risk from Instability

Number	Aspect	Risk
PS1	Public Safety	Bridge structures subject to movement • Former ICR bridges on Morwell By-pass • Commercial Road extension over Morwell By-pass • Strzelecki Highway over Morwell River • Strzelecki Highway over Wilderness Creek
PS2		Subsidence of road surfaces
PS3		Collapse of Hazelwood Cooling Pond wall(s)
EI1	Environmental Impact	Ingress of streams into Mine Void
EI2		Failure of Diversion or Backwater levees
EI3		Mine floor heave and batter collapse from high aquifer pressures
EI4		Escape of Hazelwood Ash Retention Area water contents
EI5		Aquifer contaminant
I1	Infrastructure	Morwell Main drain
CCS1	Continuity of Coal Supply	Conveyor transport systems run in discrete interdependent corridors
CCS2		40 to 60 series conveyor interchange occurs in an exposed and potentially vulnerable batter area
CCS3		Batter failure near the key coal conveyor transfer interchange of TP8 could impact continuity of coal supply
CCS4		Transmission and Hazelwood Mine power supplies have easements partially within the corridor around top of batter
CCS5		Inundation of substation MWW due to Hazelwood Cooling Pond Eel Hole Creek wall failure could impact coal supply from Hazelwood Mine

Table 5.6, below, includes details about the:

- Mechanism of Concern,
- Controls, and
- Monitoring

of the above assets at risk.

Those controls deemed to be "critical controls" are highlighted in red, where "critical controls" are those deemed to prevent development of conditions that could lead to failure.

Table 5.6 Mechanisms of Concern, Controls and Monitoring for Assets at Risk of Instability

Number	Aspect	Risk	Mechanism of Concern	Controls	Monitoring
PS1	Public Safety	Bridge structures subject to movement • Former ICR bridges on Morwell By-pass • Commercial Road extension over Morwell By-pass • Strzelecki Highway over Morwell River • Strzelecki Highway over Wilderness Creek	Bridge structures are generally short enough that they are not influenced by regional movement. If a localised issue were to arise the greatest risk to public safety would involve movement of the bridge beams relative to the bridge bearings.	• Bridge design generally allows significant bearing areas however VicRoads also have routine inspection programs that cover this possibility. • Hazelwood Mine has positioned pins on both Strzelecki Highway bridges to allow movement monitoring	• VicRoads have 6 monthly Level 1 inspections which include checking beams on bearings. These are conducted by Level 1 qualified maintenance staff. Level 2 inspections are conducted by Level 2 pre-qualified VicRoads consultants on a 5 yearly basis. Level 3 inspections are in response to concerns raised in a Level 2 inspection. • Hazelwood have included movement monitoring of Strzelecki Highway structures in Structural Integrity Monitoring and Response Plan (SIMRP) required under WGCMA Licence.
PS2		Subsidence of road surfaces.	Generally this is an indicator of sub-surface movement that occurs either as a result of coal	Horizontal bores installed so as to intersect major cracking to allow draining and	Monitor: • Pin line movements along

			block movement.	prevention of pressures that cause block sliding.	stability lines annually • Coal water pressures along stability lines quarterly • Clay piezometric pressures along stability lines quarterly • Annual stability analysis as part of Annual Geotechnical Review
PS3		Collapse of Hazelwood Cooling Pond wall(s)	• Piping failure after a serious earthquake	• Compliance with ANCOLD Guidelines • Earthquake prediction study (2008) • Independent Design Review	• Inspections and review, • Groundwater levels • Survey monitoring of pin lines • Earthquake monitoring • Annual Dams Review
EI1	Environmental Impact	Ingress of streams into Mine Void	Failure mode similar to Yallourn Mine Batter collapse (Nov 2007)	• Assessment of stand-off distances (30 year Geotechnical work plan Report No MF00/515-03 section 7). Recommendation is • Submission and approval of Structural Integrity Monitoring and response	• 30 year Geotechnical work plan to be reviewed at nominally 5 year intervals. • Assumptions in batter stand-off distance to be confirmed closer to the time of digging. • SIMRP actions to be implemented – report to be included in Annual

				Plan (SIMRP) prior to Morwell River diversion required under WGCMA Licence. (SMEC retained to act on behalf of WGCMA in accepting SIMRP.)	Geotechnical Review
EI2		Failure of Diversion or Backwater levees	• Foundation failure of Diversion structure • Overtopping unlikely (ARI >1 in 10,000 year event)	• Detailed site investigation(s). • Design Review in progress with independent 3rd party oversight • Submission and approval of Structural Integrity Monitoring and Response Plan (SIMRP) prior to Morwell River diversion required under WGCMA Licence. (SMEC retained to act on behalf of WGCMA in accepting SIMRP.)	• SIMRP actions to be implemented – report to be included in Annual Geotechnical Review
EI3		Mine floor heave and batter collapse from high aquifer pressures	Pressure build up in M1/M2 aquifers leading to floor heave then batter collapse as pressures are relieved	• Annual establishment of target pressures with a factor of safety. • Depressurisation of	Significant monitoring of: • M1/M2 aquifer observation bores • M1/M2 pump bore flow

				M1/M2 aquifers • Maintain M1/M2 aquifer pressures to, or below, target levels	rates, • Aquifer depressurisation system performance review • 30 year groundwater management plan reviewed nominally every 5 years
EI4		Escape of HARA water contents	Failure of the Hazelwood Ash Retention Embankment or clay liner leading to surface or sub-surface water contamination	• Water pressure monitoring bores • Water quality monitoring bores • HARA pin line installations • HARA horizontal & vertical monitoring gauge installation	• Annual review of HARA as part of Geotechnical review
EI5		Aquifer contamination	Aquifer contaminated by surface water or interconnection of aquifers	• Bore decommissioning per SRW approved procedures	• Annual water quality tests • Bore decommissioning reported in annual Aquifer Depressurisation Review • Decommissioning of bores subject to internal environmental audit
I1	Infrastructure	• Main drain is compromised	Drain was originally designed for running clean water only in the	• IPRH has cleared sections of Main Drain in 2006 to	• Periodic inspections but IPRH is powerless to control

		• No other infrastructure other than roads (included under Public Safety) and streams (included under Environmental Impact). Morwell Town sewer and stormwater systems are generally assisted by differential regional subsidence. Overhead and underground power and telecoms are generally indifferent to regional subsidence.	1950's. Drain now services Morwell Town and Morwell By-pass more than Hazelwood Mine. Drain not designed to accommodate rubbish that is now coming from Town and Freeway.	improve performance. • Recent rainfall event has flushed main drain rubbish into Morwell River.	action or inaction by LCC and VicRoads • Weekly stability inspections and monthly batter performance reporting
CCS1	Continuity of Supply	Conveyor transport systems run in discrete interdependent corridors.	• Batter failure along either the 40 or 60 series conveyors could potentially impact all conveyor systems, impacting upon continuity of coal supply. • Most likely failure mode is block sliding due to build up of excessive water pressures in coal cracks.	• Horizontal bores installed so as to intersect major cracking to allow draining and prevention of pressures that cause block sliding. • Installation of pin lines across batters and grass level	Monitor: • Pin line movements along stability lines annually • Coal water pressures along stability lines quarterly • Clay piezometric pressures along stability lines quarterly • Included in Mine Batter annual geotechnical review
CCS2		40 series to 60 series conveyor interchange	• Batter failure along either the 40 or 60 series conveyors	• Joint mapping and stability assessment prior to	Monitor:

		occurs in an exposed and potentially vulnerable batter area	could potentially impact all conveyor systems, impacting upon continuity of coal supply. • Most likely failure mode is block sliding due to build up of excessive water pressures in coal cracks.	excavation (refer 30 year geotechnical work plan Report No. MF00/515-03 section 6) • Horizontal bores installed so as to intersect major cracking to allow draining and prevention of pressures that cause block sliding. • Installation of pin lines along and across batters and grass level	• Pin line movements along stability lines annually • Coal water pressures along stability lines quarterly • Clay piezometric pressures along stability lines quarterly • Included in Mine Batter annual geotechnical review
CCS3		Batter failure near the key coal conveyor transport interchanges of TP8 could impact continuity of coal supply.	• Batter failure along either the 40 or 60 series conveyors could potentially impact all conveyor systems, impacting upon continuity of coal supply. • Most likely failure mode is block sliding due to build up of excessive water pressures in coal cracks.	• Horizontal bores installed so as to intersect major cracking to allow draining and prevention of pressures that cause block sliding. • Installation of pin lines along and across batters and grass level	Monitor: • Pin line movements along stability lines annually • Coal water pressures along stability lines quarterly • Clay piezometric pressures along stability lines quarterly • Included in Mine Batter annual geotechnical review
CCS4		Transmission and Hazelwood Mine power supply lines have	• Batter failure near a transmission tower impacting upon continuity of power supply	• Horizontal bores installed so as to intersect major cracking to allow draining	Monitor: • Pin line movements along

		easements partially within the corridor around top of batter	to either Melbourne or Hazelwood Mine. • Most likely failure mode is block sliding due to build up of excessive water pressures in coal cracks.	and prevention of pressures that cause block sliding. • Installation of pin lines along and across batters and grass level	stability lines annually • Coal water pressures along stability lines quarterly • Clay piezometric pressures along stability lines quarterly • Included in Mine Batter annual geotechnical review
CCS5		Inundation of substation MWW due to Hazelwood Cooling Pond Eel Hole Creek wall failure could impact coal supply from Hazelwood Mine	• Refer PS3	• Refer PS3	• Refer PS3

"Critical controls" are those that prevent development of conditions that could lead to failure. In this document that are identified by red.

Figure 5.1A Zone of influence for current Mine

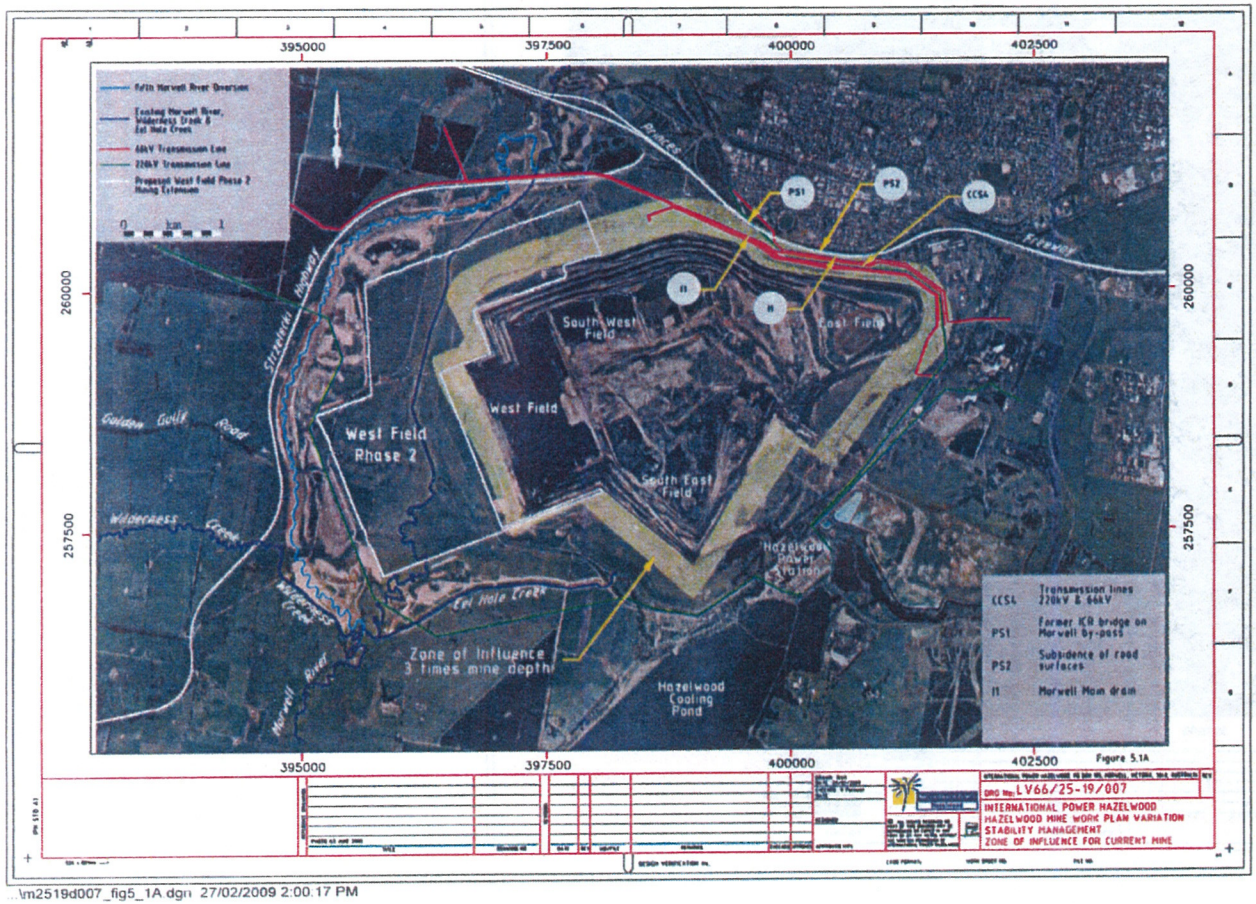

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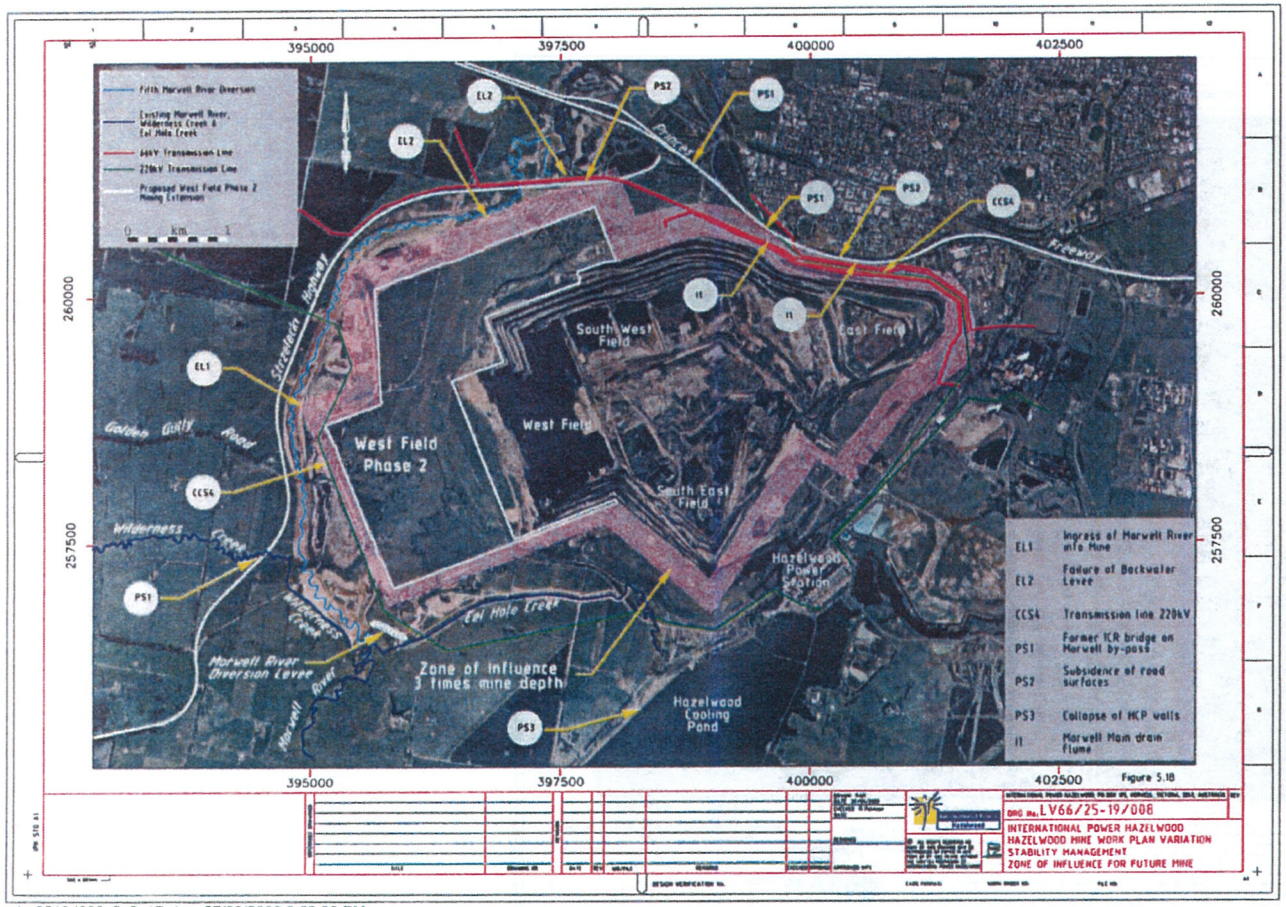
Figure 5.1B Zone of influence for future Mine



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5.4.3 Soils Management

Topsoil mapping has been undertaken for both Phase 1 and Phase 2 mining areas. The topsoil analysis indicates that much of the topsoil is of poor quality and structure and unsuited to storage. No change will be made to the current practice of topsoil being removed by hydraulic excavators ahead of bulk overburden stripping and transported by truck to areas previously prepared for use. Stockpiling of topsoil to date has proven to effectively destroy the topsoil. Further investigations are being considered to try and effectively stockpile topsoil for later use, until this can be successfully undertaken there is no value in stockpiling.

5.4.4 Water Management

Mine Drainage System

The current mine drainage system manages clean and dirty surface runoff, leachate and extracted groundwater of the West Field Project with changes as described below.

Surface Water Diversion

The current surface water diversion system will be extended for Phase 2. Outside the pit, the Morwell River—as it exists now (Second Morwell River Diversion) and following the diversion (Fifth Morwell River Diversion)—will receive clean runoff water on the westward side of the river preventing it from entering the mine.

Dirty Water System

The current dirty water drainage system will be extended for Phase 2 as shown in Figure 5.2. Block 2B will be the low point in the mine void, and water gravitating to this point will be pumped to the current established drainage system comprising ponds in Sectors 4 - 8.

Figure 5.3 shows details of the drainage system at the critical 40's – 60's conveyor interchange area.

Mine Fire Service System

Fire management for the West Field will be a continuation of existing methods, and generally comply with the Latrobe Valley Open Cut Fire Protection Policy. The two main reasons why IPRH cannot strictly comply with the policy are:

- At any point in time, IPRH may not have all duplicate power supplies in service, as they occasionally need maintenance and operational rearranging.
- IPRH has one conveyor installation that supplies Energy Brix, where IPRH do not have duplicate water supplies because of the costs (i.e., Energy Brix were unwilling to fund compliant fire service). This does not; however, materially increase the risk to IPRH's other operating plant, as the installation is physically separate.

Discharge Point

The Environment Protection Authority Victoria (EPA) has issued IPRH with a licence (EM30856 Accredited), pursuant to the *Environment Protection Act 1970* that controls discharges to water from the mine. There will be no change to the licence, which allows an average 12-month discharge of to the Morwell River. This licence is currently in suspension during the Rivers and Roads Relocation

(RRR) project construction activity with the water and pumps being used to supply recycled mine stormwater for dust suppression on those works. No firm decision has yet been made whether to reinstate or relinquish the licence upon completion of the construction activity.

5.5 Road and Stream Infrastructure – RRR Project

5.5.1 Approvals

Section 5.1.1 provides details of the approvals for the RRR Project. These works do not form part of this WPV but are provided for completeness. The Environmental Management for these works and any residual matters after commissioning is discussed in section 7.1.

5.5.2 Strzelecki Highway Deviation

Strzelecki Highway, which is located between Hazelwood Mine and the Second Morwell River Diversion north of Brodribb Road, has been realigned (opened on 13 March 2008). The realignment of the Strzelecki Highway is shown in Figure 5.4. It is has been constructed in accordance to VicRoads requirements and accepted by VicRoads.

5.5.3 Waterway Diversions

General

The Fifth Morwell River Diversion and the Eel Hole and Wilderness creek diversions are being constructed by advancing the excavation upstream from the respective outlet. This ensures the excavation is free draining and minimises the potential for batter failure during construction. A wetland has been established adjacent to the outlet of the Fifth Morwell River Diversion to treat runoff water from the excavation.

Construction of the Fifth Morwell River Diversion will produce up to 10 million m^3 of fill material, of which some was used in the construction of the Strzelecki Highway Deviation formation and associated noise mounds, with the remainder placed in new screening mounds in the area between the new and the existing courses of the river.

Soils

Topsoil has been removed and stockpiled adjacent to the excavations for later use in rehabilitation. Several operating benches are being progressively excavated, with the flexibility to confine operations to the lower benches when unfavourable atmospheric conditions prevail (e.g., early morning and in late afternoon when still conditions reduce dust dispersion). Excavated material, including overburden and coal, will be deposited in screening mounds adjacent to the river diversion to minimise haul distances.

Fill Material

The fill not used in the construction of the Strzelecki Highway Deviation formation and associated noise mounds will be disposed of in screening mounds to be constructed between the stream diversions and the perimeter of the West Field Development as shown in Figure 5.4. Seven mounds (which vary from 5 to 10 m in height to suit landscaping requirements) with minimum batter slopes of 5H:1V will be required. Topsoil will be stripped from the mound sites and stored for later use in rehabilitation.

The mounds, which will contain predominantly silty and sandy clays but also sandy soils and coal, will be constructed as described below to ensure stability and to minimise erosion.

- Fill around the mound perimeters will be comprised of structural fill (i.e., clayey soils) compacted for adequate strength and reduced permeability.
- Saturated sandy soils will be dewatered before excavation, transport and disposal in the mounds; alternatively, these materials will be selectively placed within the mounds where they can drain freely. Any runoff water will be collected and treated prior to discharge.
- The surfaces of the screening mounds will be shaped to promote drainage and allow for consolidation of the fill. The outer layers of the mounds will be compacted to minimise infiltration of water and reduce the potential for erosion. Revegetation of the mounds will further assist in reducing infiltration, protect the surface from deterioration and minimise the potential for erosion. Section 6 describes the landscaping and rehabilitation of the mounds.
- Leaching of coal in the screening mounds may result in low pH discharge. To minimise the likelihood of this occurring, coal deposited in the mounds will be encapsulated with compacted clayey material and any drainage will be directed to a point where it can be collected and treated.
- Coal deposited in the mounds will be mixed with soil and placed away from the mound surfaces to avoid creating areas of low structural strength or density.

Construction Sequence

Construction of the major stream and road works commenced in December 2006 and will finish in May 2009, but diversion of the full Morwell River flow will not occur until early 2010. The lag in timing is to allow for natural aquatic regeneration within the new Morwell River.

Figure 5.2 West Field surface water drainage system layout

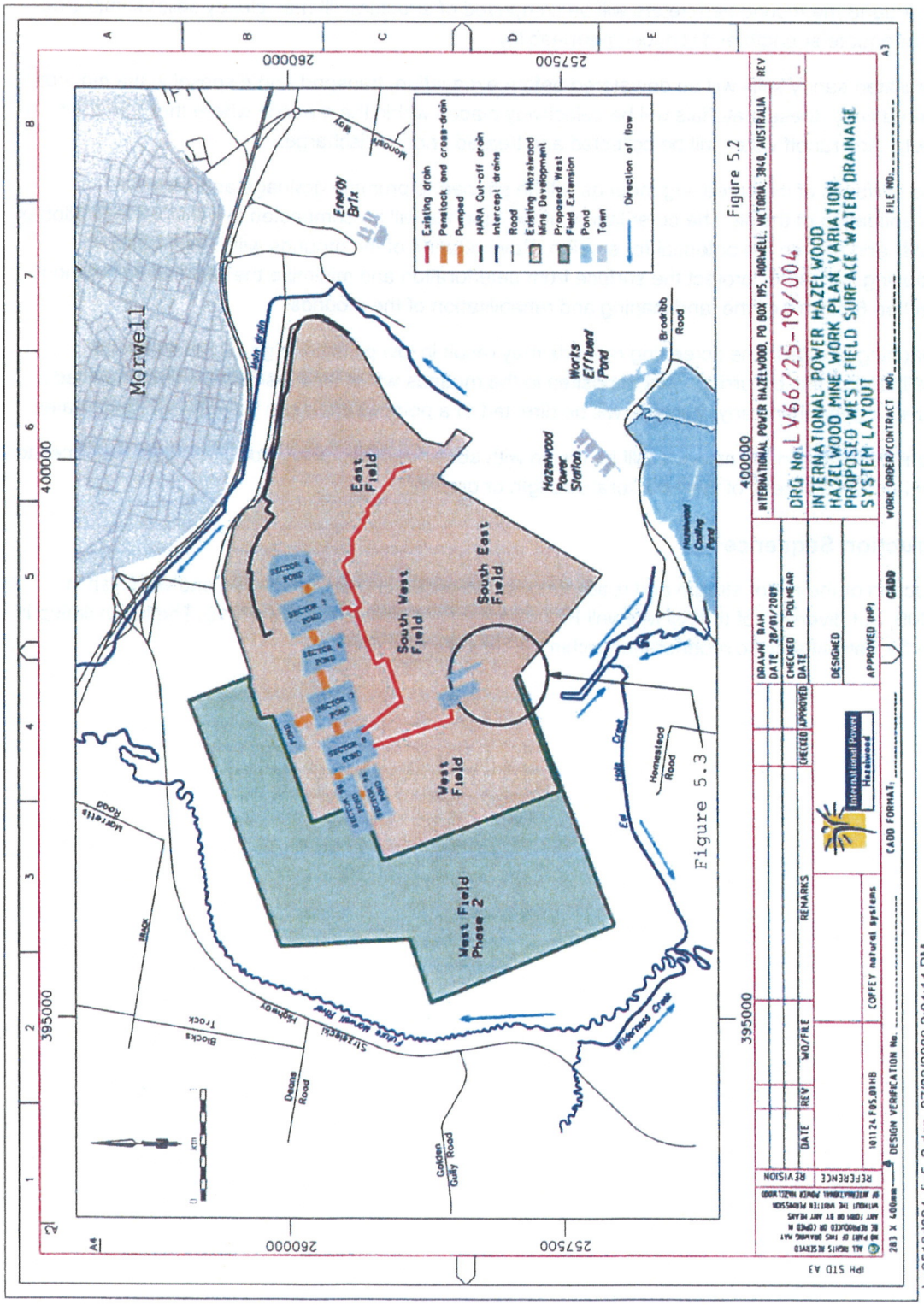


Figure 5.3 M40's – M60's Conveyor Interchange Drainage Layout

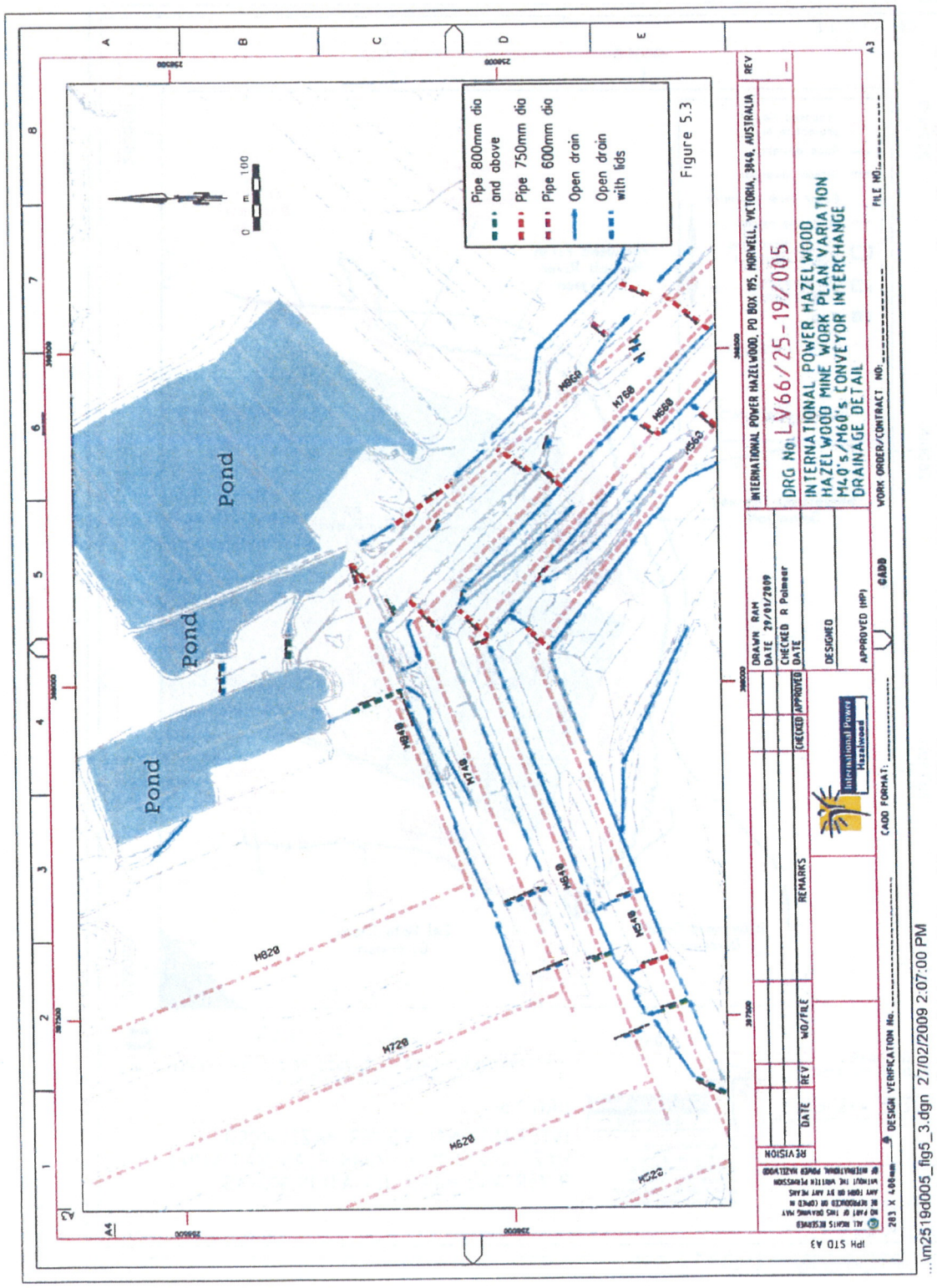
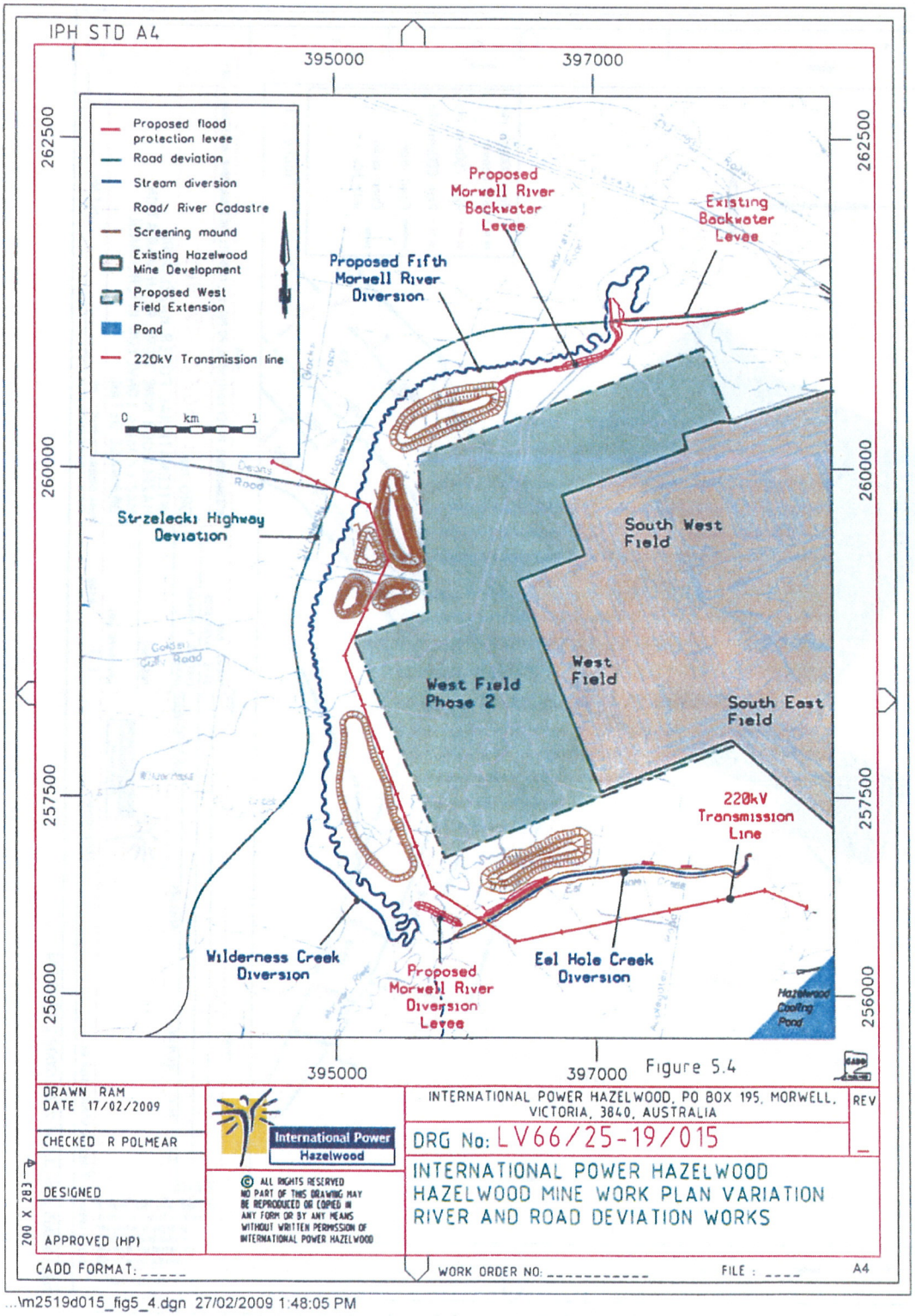


Figure 5.4 River and road deviation works



5.6 Workforce

IPRH has approximately employees (of which are involved in mining) and an additional contractors. Current shift arrangements allow two coal and one overburden dredge and conveyor systems to operate 24 hours per day, 7 days per week on shifts. The 24-hour-per-day operation of the mine will continue for Phase 2 of the West Field Development. Truck-and-shovel activities will occur for limited periods, as required.

Some automation of functions may be adopted as Phase 2 mining begins, but significant changes in the mining operations workforce are not planned.

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6 REHABILITATION

6.1 Introduction

IPRH has progressively rehabilitated the Hazelwood Mine overburden batters and external overburden dumps under a plan that is updated every five years. The mine closure and rehabilitation concept for Phase 2 will be integrated with rehabilitation plans for the entire mine.

6.2 Rehabilitation Goals and Objectives

The strategic rehabilitation and mine closure goal for the ultimate completion of the Hazelwood Mine, including West Field, is to:

> *Provide a technically feasible, safe, stable and sustainable landscape that reflects the aspirations of stakeholders within the practical constraints of rehabilitation for the mine (EES).*

This goal requires the following objectives to be met:

- A safe and stable self-supporting structure.
- To maximise the opportunities for establishment of a self-sustaining ecosystem.
- To minimise the use of natural resources.
- To minimise the cost of recovery of resources.

6.3 Rehabilitation Issues

There are a number of issues that need to be considered in developing and implementing the rehabilitation plan. These include:

- **Mine stability.** Long-term stability following closure requires measures to be implemented that will negate the need to maintain the systems operated by IPRH for mine stability, primarily the aquifer dewatering system. Decommissioning of this system requires placement of sufficient weight in the floor of the mine to counter the upward pressures exerted by the confined aquifers.
- **Natural equilibrium.** In addition to the proportions of overburden and water adopted to achieve the required counterweight, rainfall within the Hazelwood Mine catchment will collect in the floor of the mine. Based on water balance studies, once a mine-void level of is achieved, the mine lake will slowly fill over a period to reach a hydrological equilibrium at .
- **Batter stability.** Stability is achieved by free-draining horizontal bores that drain water captured in cracks and fractures within the coal seams. Options for treating the batters include leaving batters untreated, dozing them down and capping them with overburden, constructing flatter batters with overburden to cover coal faces, and placing overburden on the coal benches and against the batters.
- **Infrastructure.** Rehabilitation options and scheduling of rehabilitation works are subject to a number of siting and timing constraints. IPRH operating infrastructure on permanent batters prevents access and, IPRH and community infrastructure around the mine perimeter affects the ability to cut batters back to reduce slopes. Opportunities for progressive rehabilitation are therefore not necessarily consistent with opportunities for access to areas requiring rehabilitation.

- **Rehabilitation material/ecosystem function**. Material mined comprises approximately 20% overburden (less than 7% of which is topsoil) and 80% coal. As the area of exposed coal batters exceeds the area from which topsoil is removed, final rehabilitation will require revegetation with coal and overburden-tolerant species and will result in a modified ecosystem.
- **Resource recovery**. Two substantial resources exist within and surrounding the Hazelwood Mine and may become commercial in the future: power station ash as magnesium smelter feedstock and the western batters of the mine that will provide low-cost mining access to the Driffield coal fields.
- **Public safety**. The decommissioning, closure and rehabilitation of the Hazelwood Mine must address the public safety and amenity issues of final batter slopes, fire, access to the final void lake and water quality.

6.4 Mine Closure Concept

The constraints arising from issues, described in Section 6.3, particularly timely access to coal batters and benches, limit opportunities for progressive rehabilitation.

The following mine closure concept is considered the base case as it is unreasonable to prejudge community aspirations that may prevail at the time of closure.

Base Case

The main features of the conceptual mine closure and rehabilitation plan for the Hazelwood Mine are:

- **Pit void**. The pit will be allowed to fill with water creating a lake. This will initially take place by continuing aquifer depressurisation pumping, until the weight is enough to stabilise the batters (currently estimated to be . The pit lake will then fill slowly over a period of decades or more to its hydrological equilibrium (currently estimated at).
- **High-magnesium ash**. The power station coal ash is environmentally relatively benign and will be placed at the eastern end of the void, in the Hazelwood Ash Retention Area (HARA). It is separated from the lake by the Hazelwood Ash Retention Embankment (HARE).
- **Overburden batters**. Overburden batters will be reshaped to no steeper than 3H:1V with safety berms introduced where the vertical distance exceeds 20 m, topsoiled and seeded.
- **Coal batters**. New permanent coal batter faces will be shaped to no steeper than 2.5H:1V and preferably 3H:1V. Non-permanent coal batters will be maintained as they are until they are dug as permanent coal batters. Existing batters and benches carrying critical conveying infrastructure are considered non permanent batters as the digging program has been revised to allow a final retreat digging pass that will convert them to permanent batters, i.e., no steeper than 2.5H:1V and preferably 3H:1V. Once the bench has been completed, exposed coal will be progressively covered with overburden from the working face of the mine and revegetated on decommissioning.
- Mining infrastructure will be decommissioned and removed.
- **Public access**. These are matters to be discussed closer to the time of closure, although the intent is to ensure a site that provides safe access if that is deemed a requirement at the time.

- **Ecological function**. Revegetation options are constrained by a shortage of topsoil. IPRH has developed a site-specific species planting guide.

IPRH has developed a 'Code of Practice, Revegetation Guide' (Appendix A), which has been reviewed and accepted by the ERC. The document is designed to assist in the selection of plant species for revegetation programs undertaken by IPRH. All species recommended for revegetation are indigenous to the area and are chosen from the relevant EVC. Also, the species listed within the document are:

- Found within IPRH's boundary or its immediate surrounds.
- Representative of the area.
- Easy and reliable to propagate and establish.

This code of practice will be adhered to during revegetation associated with Phase 2.

IPRH have also produced the 'IPRH Mine Rehabilitation Progress Report 2007' (Appendix B). This document outlines the necessary steps to be followed to rehabilitate disturbed land and provides an update on IPRH's 'progressive rehabilitation' program. Of particular note, is that IPRH have made a commitment to plant and maintain at least 2,500 native trees or shrubs each year as part of this program and to continue with the pioneering work of using native grasses for revegetation.

6.5 Progressive Rehabilitation Staging/sequencing

Use of overburden materials for rehabilitation roles within the Mine is determined taking into account the nature of the overburden materials and the role that is required to be fulfilled.

There are 2 major tasks to be completed using overburden;

1. coverage of coal batters to provide fire protection and a nutrient base to support plant growth that in turn provides long term batter stability,
2. placement of the balance of overburden material on the floor of the mine to assist with counterbalancing aquifer pressures.

Overburden from mining Blocks 1a, 1b and 1c comprises significant volumes of fine grained sands from the former Morwell River valley. These sands are saturated and are therefore most suited to placement on the floor of the Mine. The overburden could be used for batter coverage however it needs time to allow dissipation of the water content which will otherwise build to unacceptable pressures and create instability. Given that IPRH's high production needs do not allow sufficient time for dissipation of the water content, the material is considered unsuitable for batter coverage under this Work Plan. Overburden from mining Blocks 1a, 1b and 1c is planned to be strategically placed on the floor of the pit within the former South East Field. The only change from IPRH's currently approved Mine Plan is the inclusion of Block 1c overburden within this same dump area. The dump is planned as a single layer (2 level operation) with nominal dump heights of 20 metres bottomside and 6-8 metres topside dumping. However the anticipated excavated volume and available dump volume are very tight such that it may prove necessary to create a multi level dump to house all of the material from Block 1c.

A series of conceptual Stage plans are provided as follows:

- Stage 1 (Fig 6.1) shows mining at the end of Block 1C overburden operations.

1. The final overburden from the original Morwell River floodplain (comprising mostly fine grained sands and silts) is being placed in the South East Field internal overburden dump.
2. It can be seen that the additional excavated overburden and coal batters are all considered to be temporary, meaning that the rehabilitation liability is not increasing other than the volume of water ultimately required to fill the increasing void.
3. Stacker dumping in the South-East Field is indicative only as the preferred direction of dumping is under review.

- Stage 2 (Fig 6.2) shows mining in Block 2 B where:

1. Because overburden materials from mining Blocks 2a and 2b are inherently more stable materials than those from Block 1, they have been scheduled for placement on the worked out South-East Field and East Field permanent batters. Placement is to be via the overburden system. Truck and shovel overburden operations will also be required for establishment works and over-height removal in Block 2b This overburden material will be used to rehabilitate the balance of the worked out northern and eastern batters from the original workings of the mine. It is likely that more overburden will be encountered in mining Blocks 2a and 2b than will be placed on the batters so the balance of mining Block 2b and Block 3 overburden will be placed on the floor of the pit in the area of the initial West Field area (former mining Blocks 1a and 1b).
2. The permanent coal batters will be shaped to final slope as part of the "normal" mining operation (nominally 2.5 – 3H:1V). The finer details of this change to the method of mining are still to be developed and may or may not require a subsequent Work Plan Variation.
3. Overburden faces from above the completed coal benches will be pushed down to create final shape. This same overburden will be placed over the coal batters in sufficient quantities to allow plant growth to achieve long term stability. Benches are already covered in overburden materials (as part of "normal' operations) to allow vehicle passage and reduce fire risk. The benches will be retained as safety berms, form part of the permanent drainage plan and provide limited access and egress.

- Stage 3 (Fig 6.3) shows mining at the end of Block 3 overburden operations.

1. Overburden materials from Block 3 are planned to be placed on the floor of the Mine to add weight against aquifer pressures. The current dump location is former Block 1 of West Field.
2. Similar to Block 2, the permanent coal batters will be shaped to final slope as part of the "normal" mining operation (nominally 2.5 – 3H:1V).
3. The final overburden face from above the completed coal benches will be pushed down to create final shape. This same overburden will be placed over the coal batters in sufficient quantities to allow plant growth to achieve long term stability. Benches are already covered in overburden materials (as part of "normal' operations) to allow vehicle passage and reduce fire risk. The benches will be retained as safety berms, form part of the permanent drainage plan and provide limited access and egress.

- Stage 4 (Fig 6.4) shows mining at the end of Block 4 coal operations.

1. The only overburden operations in Block 4 comprise creation of the final overburden slope with the overburden used to cover the coal batters – similar to Block 2 and 3 operations.

2. Similar to Blocks 2 and 3, the permanent coal batters will be shaped to final slope as part of the last pass mining operation (nominally 2.5 – 3H:1V).

- Figure 6.5 provides typical cross-sections showing treatment of both the old section of mine and the new permanent faces associated with West Field operations.

The mining Block sequence of Block 2b, 3 and then Block 4 creates "retreat" digging. Along with allowing progressive rehabilitation and material placement for rehabilitation profiling, it also allows progressive removal of mining infrastructure and delays any decision on future resource access along the western batters to Driffield for as long as possible.

6.6 Screening Mound Rehabilitation

The seven screening mounds up to 10 m high between the Fifth Morwell River Diversion and the West Field will be landscaped, topsoiled and progressively revegetated—initially with pasture grasses and isolated trees. Concern exists not to create vegetation too dense for fear of creating a large fuel load for bushfires that may increase the risk of external wildfires entering the mine.

6.7 Monitoring and Investigations

6.7.1 Monitoring

IPRH monitors, and will continue to monitor, rehabilitated areas and remedies deficiencies by reseeding, replanting and controlling noxious weeds and pest animals. Progress is reported to IPRH's Environment Review Committee (ERC) quarterly.

IPRH will manage and monitor the stream diversions under standard procedures for weeds, feral animals, fire and erosion, with provision for additional watering, replacement of failed plantings and other remediation where needed (see Section 7.5). Such actions are covered under the Licence to Divert Three Water Courses issued by the West Gippsland Catchment Management Authority (WGCMA) in February 2006.

6.7.2 Further Work- Mine Closure Investigations

Further investigations to provide data for mine-closure planning may be required to address the complex issues associated with, in particular, long-term stability of the mine. These investigations include a review of previous studies to establish whether the results of those studies hold for expected changes in external influences.

The IPRH site-specific species planting guide may be augmented by vegetation trials to identify vegetation that is either coal/overburden tolerant or adaptable to inundation. Such trials will not commence before completion of the RRR project revegetation works program (nominally 2011) to balance resource demands.

Figure 6.1 Progressive rehabilitation staging / sequencing – Rehabilitation at end of Block 1C

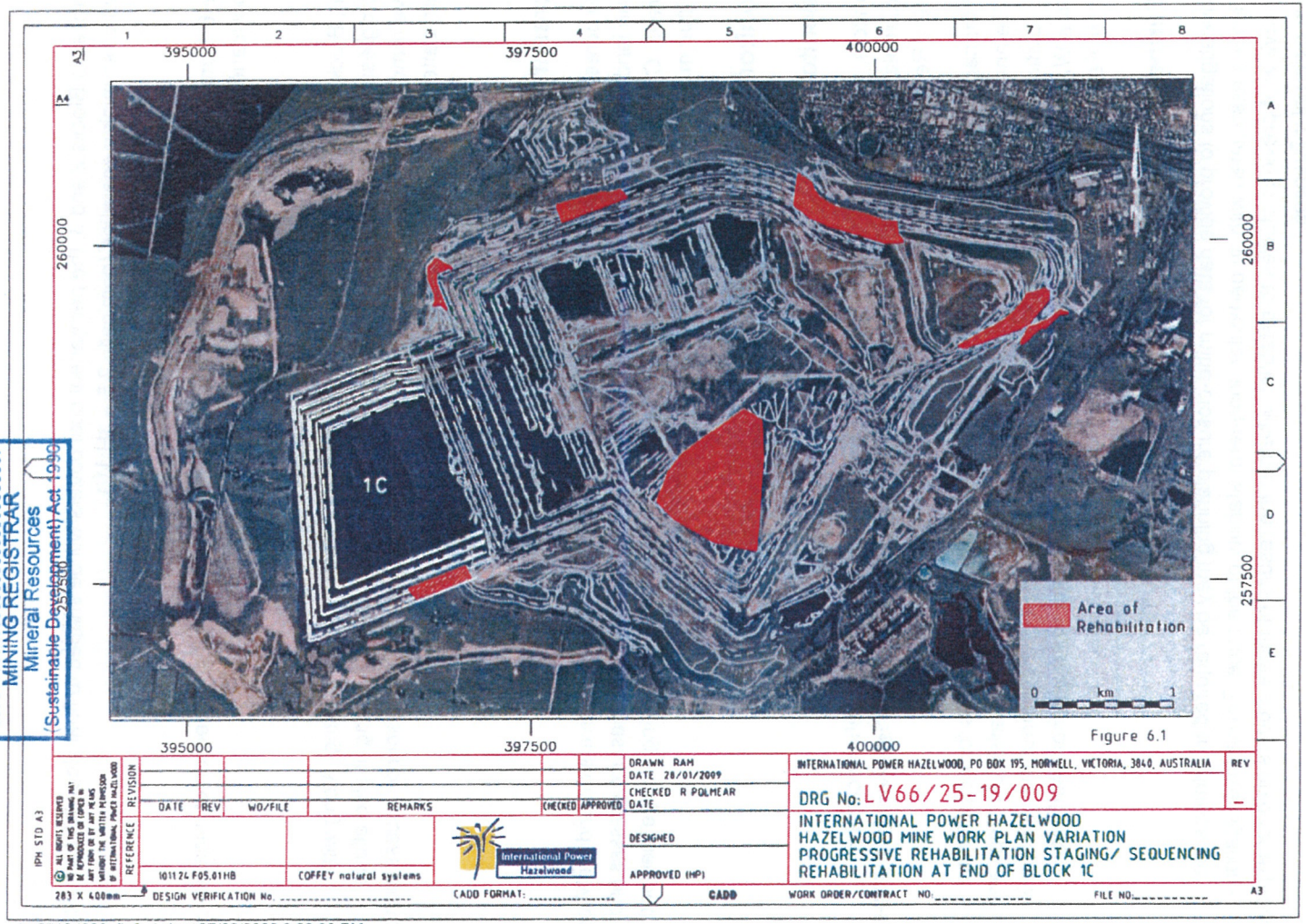

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Figure 6.2 Progressive rehabilitation staging / sequencing – Rehabilitation at end of Block 2B

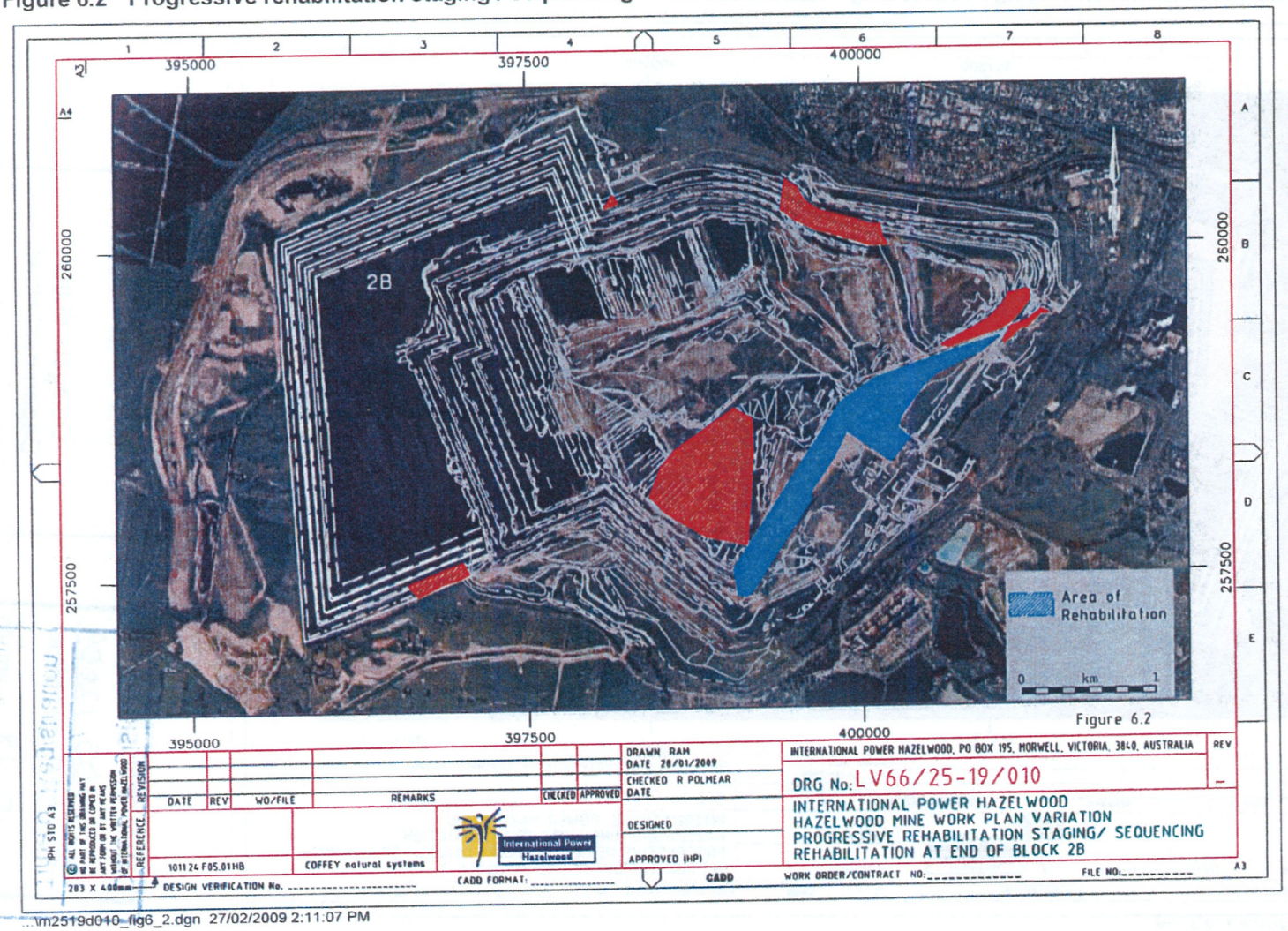
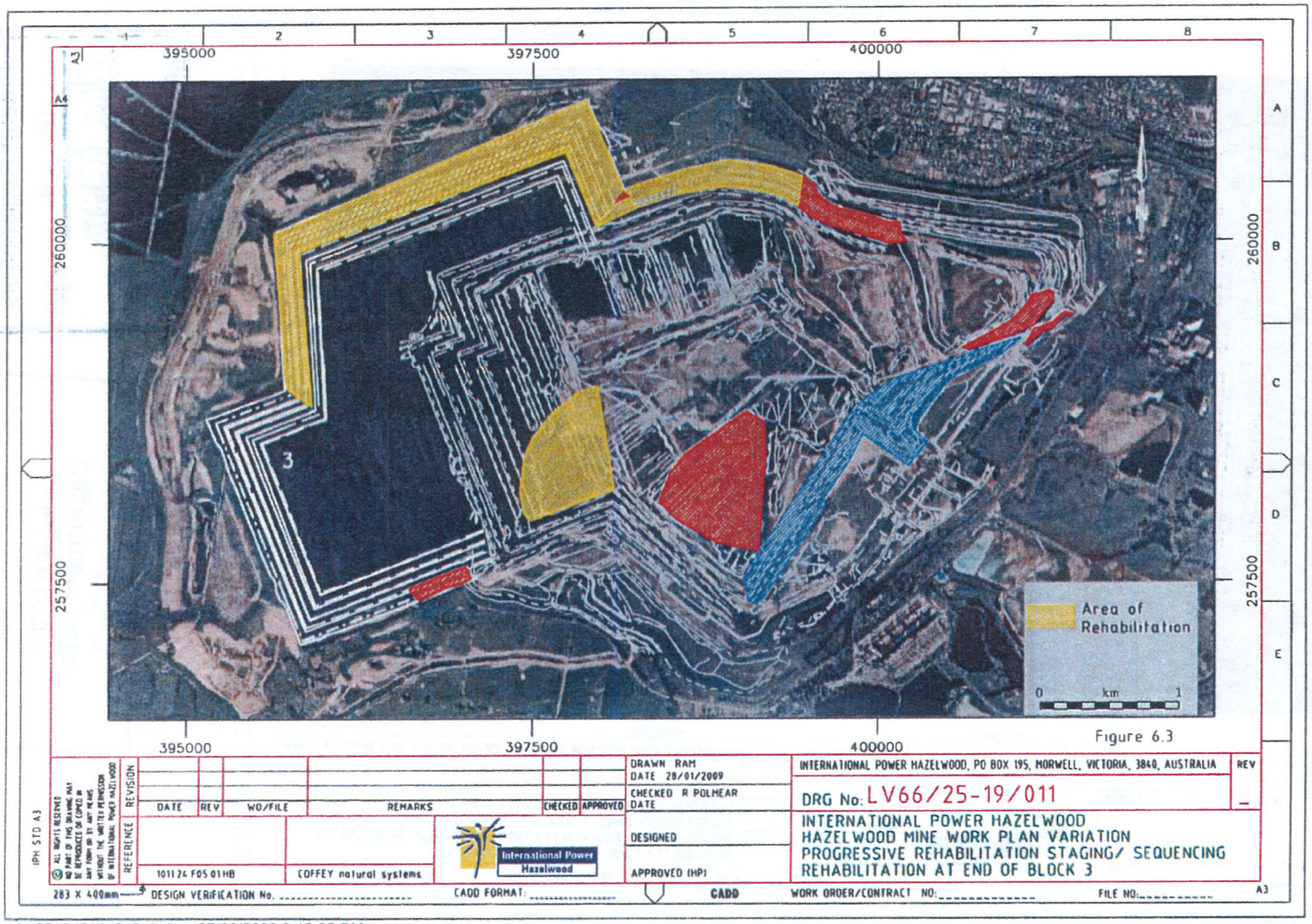


Figure 6.3 Progressive rehabilitation staging / sequencing – Rehabilitation at end of Block 3



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Work Plan Variation Approved
Delegate of the Department Head
Date: 11/5/09

Date of Registration
11/05/2009
Time of Registration
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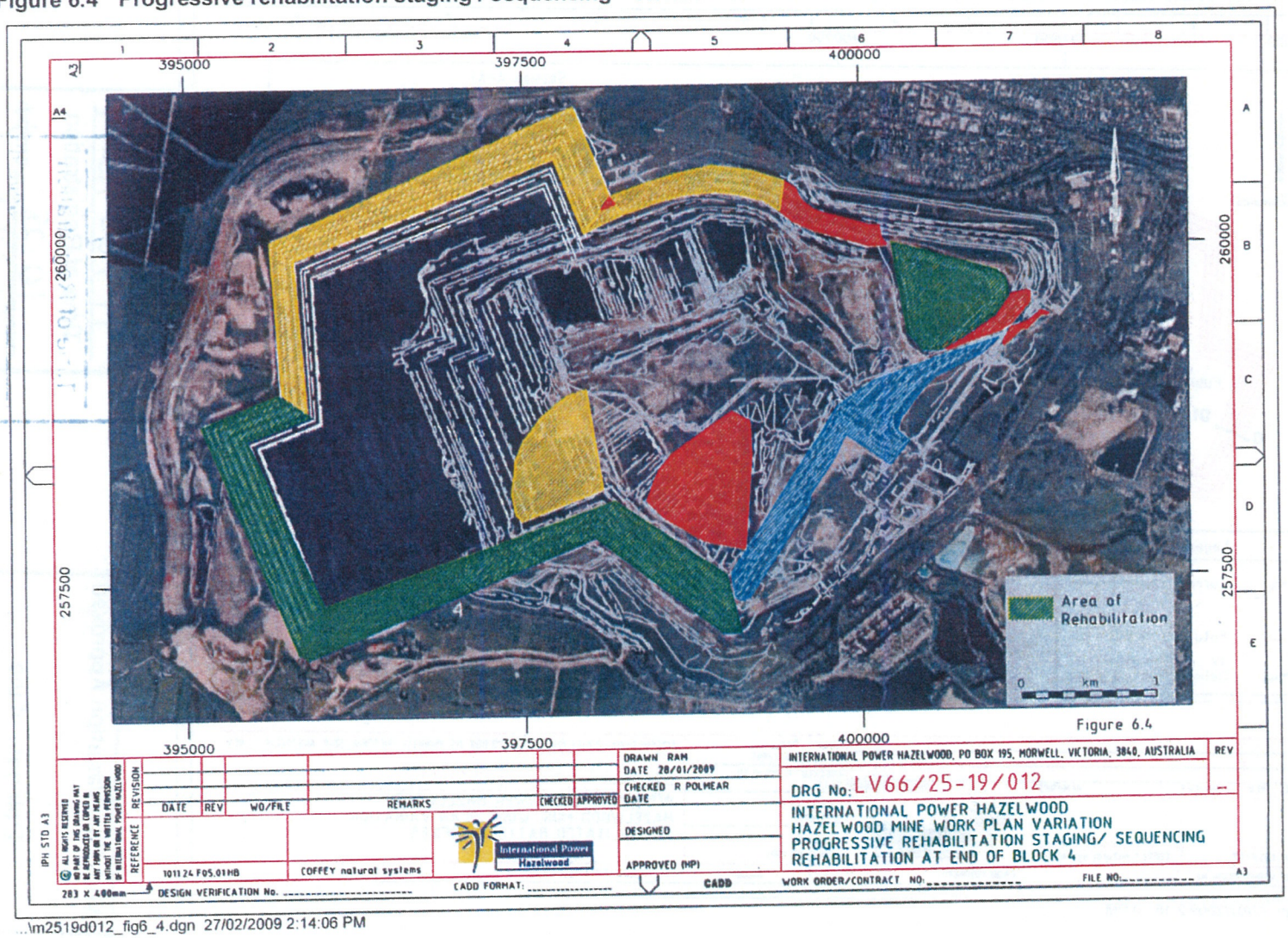
(Sustainable Development) Act 1990

Figure 6.4 Progressive rehabilitation staging / sequencing – Rehabilitation at end of Block 4



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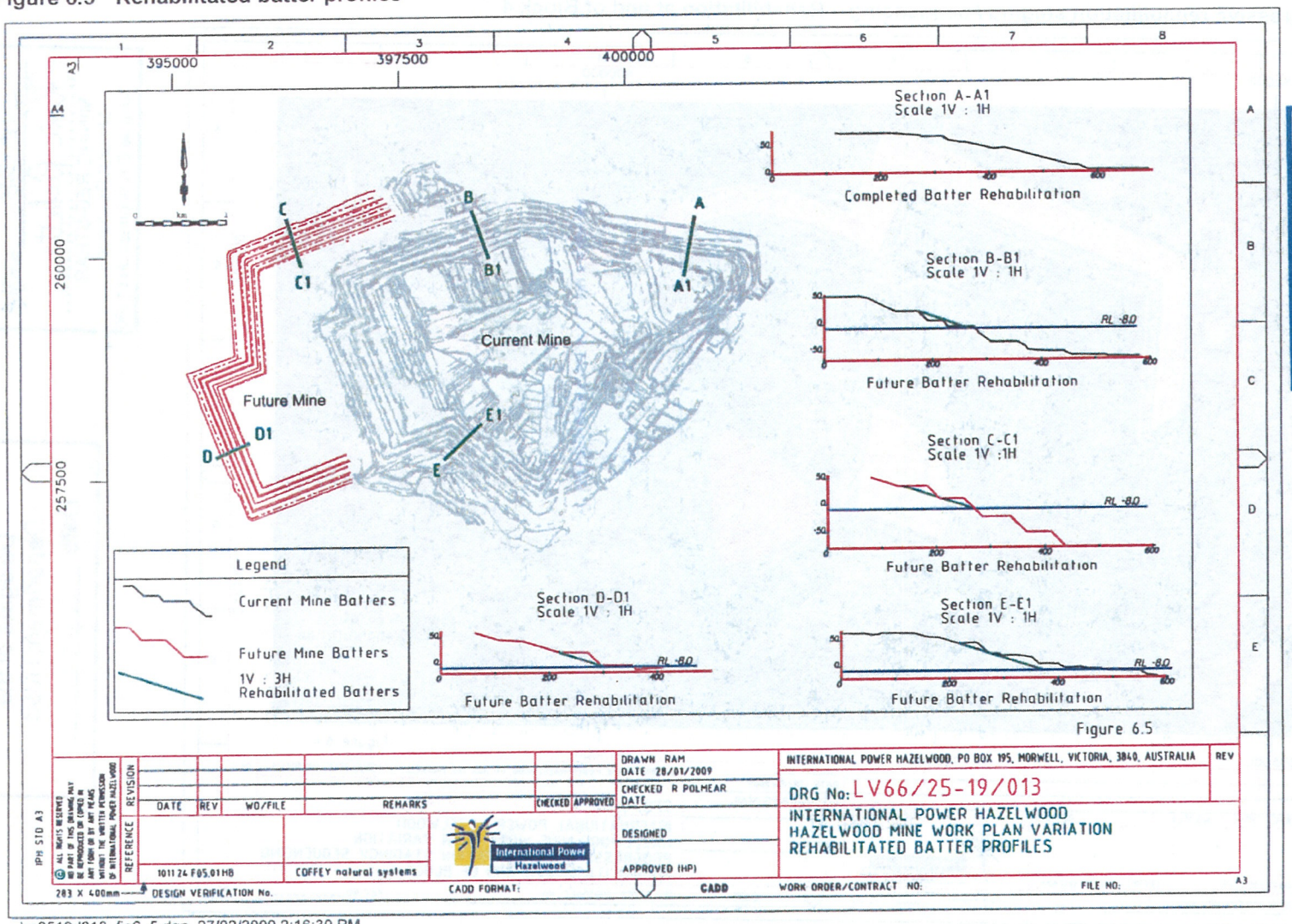
Work Plan Variation Approved
Delegate of the Department Head
Date: 11/5/09

Figure 6.5 Rehabilitated batter profiles



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Mineral Resources
(Sustainable Development) Act 1990

Work Plan Variation Approved
Delegate of the Department Head
Date: 11/5/09

7 ENVIRONMENTAL MANAGEMENT PLAN

7.1 Phase 2 (Rivers and Roads Relocation – RRR Project) Construction Management

All construction works on the RRR Project are subject to a formal Project Environmental Management Plan which comprises a Construction Environment Management Plan (CEMP) and an Operations Environmental Management Plan (OEMP). All plans have been approved by DSE on behalf of West Gippsland Catchment Management Authority, Environment Protection Authority and Latrobe City Council as well as VicRoads. All RRR Project Regulators receive comprehensive monthly reporting and site inspections. This same information is provided to our ERC. A formal annual environmental performance report is compiled and submitted to the EPA for RRR Project activities.

These works and their approvals do not form part of this Work Plan Variation (WPV) however residual or enduring requirements / obligations carry forward from the CEMP into the OEMP. The OEMP will be melded into IPRH's existing EMS after final commissioning of the RRR Project works.

7.1.1 Water Management

Surface Water

All surface water flowing through the RRR project area are directed to and treated at the project's treatment and settlement facility.

Groundwater

The stream diversion channel excavations will intersect the water table and shallow aquifers above the coal seam, resulting in seepage into the channels primarily through sandy soils. Rock facing has been placed on areas of persistent seepage to facilitate controlled drainage into the river channel and through to the surface water treatment facility.

7.1.2 Hydrocarbon and Waste Management

There are existing hydrocarbon and waste management facilities at the
Drilling Depot Road site office and mine maintenance facility. Earthmoving plant and equipment will be refuelled at these sites using fixed installations (RTL has dry-break connections) or at the construction site by mobile refuelling vehicles operated by trained personnel. Emergency spill kits are kept at refuelling locations and in the refuelling vehicles.

Waste oil and grease are collected and retained in concrete bunds for collection by an EPA-licensed contractor. There has been considerable reduction of hydrocarbon waste, including empty drums, due to installation of bulk delivery systems.

7.1.3 Dust Control

Dust suppression techniques currently used will be applied in the West Field to control fugitive dust. The EES included modelling of dust emissions during the RRR project construction activity and after the RRR project construction activity, when only mining is being undertaken. The results indicate that dust levels are acceptable and that current techniques for dust suppression are adequate in all but exceptional weather conditions, such as hot, northerly winds during summer. In these exceptional

conditions, mine operations that generate dust will be reduced as far as is practicable. However, this is unlikely to be necessary for coal extraction as the coal is inherently moist and the emission is a point source.

7.1.4 Noise Control

The construction method, sequence and the hours of operation have been designed to minimise any potential residual impacts arising from noise. In addition, all equipment will be maintained in good working order and comply with EPA noise limits. Noise levels will be routinely monitored to confirm these predictions and enable additional mitigation measures if necessary.

The EES included noise modelling during the RRR project construction activity, and after the RRR project construction activity, when only mining is being undertaken. The results indicate that noise levels are acceptable.

Figure 7.1 shows the structure of the IPRH EMS and how environmental management of the West Field Project fits within that framework.

7.2 Phase 2 Mining - Environmental Management System

Environmental management of mining in the West Field will be in accordance with the requirements set out for the project through the EES approvals process and, as a minimum, to the standards of the IPRH EMS. The environmental management plan (EMP) for mining activities forms part of IPRH's EMS. The EMP details the methods and procedures that IPRH uses to achieve its environmental targets and objectives. The plan allocates environmental tasks and responsibilities to specific personnel. The EMP differs from the series of action plans and work instructions as it focuses on the implementation of the EMS components, rather than implementation of detailed technical specifications and procedures.

IPRH manages the environmental impacts of its day-to-day operations at Hazelwood Mine and Hazelwood Power Station through the IPRH Environmental Management System (EMS). Major contractors (alliance partners) are required to have and maintain systems that reflect the requirements of the IPRH EMS.

IPRH's Environmental Policy (Figure 7.2) is implemented through the EMS. The EMS is consistent with the principles of AS/NZS ISO 14001 and was certified on 2 February 1998. It has been recertified in 2000, 2003 and 2006.

The EMS is managed and maintained electronically using software, and is accessible on all workstations (computers) throughout IPRH's business. has eight levels of documents that are controlled through the Environmental Management Manual. The Paradigm documents are:

- Management systems.
- Policies.
- Procedures.
- Work instructions.
- Reference documents.
- Records.
- Manuals.
- Environmental action plans.

Figure 7.1 IPRH EMS and West Field Project environmental management framework

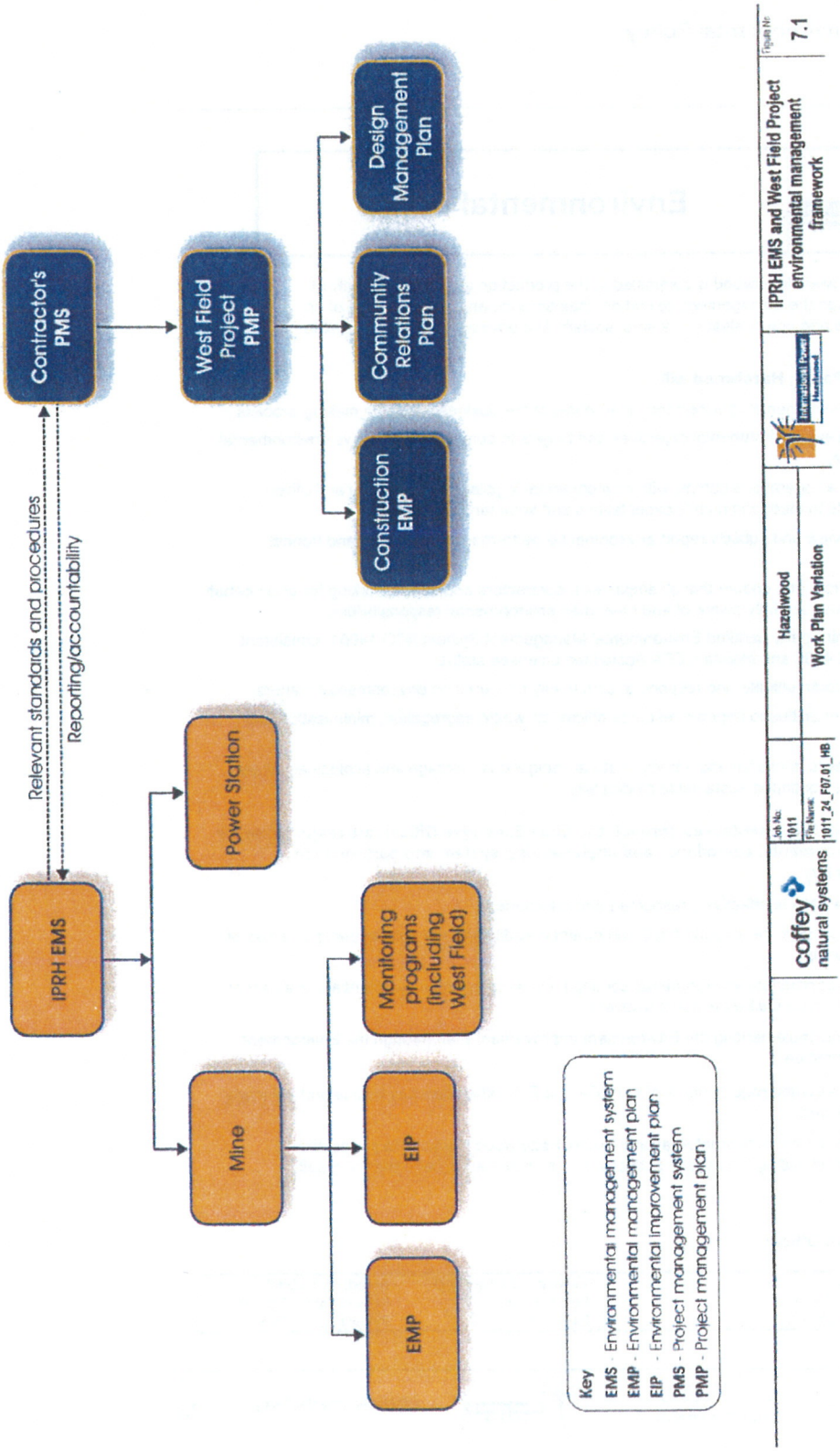

Figure 7.2 IPRH Environmental Policy

Environmental Policy

International Power Hazelwood is committed to the production and reliable supply of electricity through the management, operation, maintenance and administration of an integrated mine and power station in a safe, socially and environmentally responsible manner.

International Power, Hazelwood will:

- consider environmental requirements at all levels of the business decision making process;
- set and achieve environmental objectives and targets to continuously improve environmental performance;
- ensure that all operations comply with environmental legislation, regulations and other requirements to meet community expectations and voluntary agreements;
- regularly review and publicly report environmental performance in an open and honest manner;
- seek input from and ensure that all employees, contractors and others working for or on behalf of the business are fully aware of and meet their environmental responsibilities;
- operate a third-party certified Environmental Management System (ISO 14001) consistent with AS/NZ 4360 and maintain EPA Accredited Licensee status;
- recognise, communicate and respond to community concerns on environmental matters;
- identify opportunities to improve resource efficiency, waste segregation, minimisation and re-use; and
- identify, seek to conserve and improve natural, indigenous, heritage and ecological values and promote continued sustainable biodiversity.

The Partnership Representatives, through the Chief Executive Officer, are responsible for ensuring environmental compliance and implementing system and performance improvements by:

- ensuring the EMS is effectively resourced and maintained;
- lidentifying compliance through the Environmental Audit Program and actioning all areas of non-compliance;
- maintaining appropriate environmental contingency plans to minimise potential impacts that may occur from an unlikely incident/accident;
- reviewing and implementing the Environment Improvement Plan through the Environment Review Committee;
- meeting all reporting requirements of the EPA, the DPI, other statutory bodies and voluntary agreements; and
- informing the community of International Power Hazelwood's actions to protect the environment, including the regular publication of environmental performance results.

Graeme York

Chief Executive Officer

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coffey natural systems	Job No: 1011	Hazelwood		IPRH Environmental Policy	Figure No: 7.2
	File Name: 1011_24_F08.01_HB	Work Plan Variation			

is an integrated business management tool that brings together the environmental, safety, risk and quality management systems. The quality management system is certified to ISO 9002 and the safety management system is certified to AS 4801. These systems assist IPRH in maintaining compliance with the statutory requirements of its mining licence (MIN 5004), EPA discharge licence (EM30856) and groundwater licence (2007412).

An environmental improvement plan (EIP) was developed in consultation with the IPRH environmental review committee (ERC) (see also Section 7.6.2) as a tool for addressing community issues and minimising environmental impacts and comprised a list of environmental projects (action plans) that addressed all aspects of the business.

The introduction of the EMS has resulted in IPRH achieving Accredited Licensee status from the EPA. This status is achieved by having:

- An acceptable EMS.
- Satisfactory environmental performance.
- An environmental audit program.
- A community-endorsed environmental improvement program.

7.3 Environmental Management Commitments

In planning for the West Field Project, IPRH made a number of commitments in respect of the management of potential and residual environmental impacts (IPRH, 2004). The commitments addressed in this section do not include activities that are a continuation of current mining operations or criteria to be met by the river and road works, as these must comply with the requirements of the relevant government agency, such as, VicRoads road design guidelines and standards, or the requirements of permits, licences or legislation, e.g., planning permits from the Latrobe City Council.

Aboriginal Cultural Heritage and Non-Aboriginal History and Heritage

- At the time of writing, only one clearance remains outstanding for the RRR project and future mine areas. It is a non-Aboriginal clearance on a former residence and related commercial kennel. The residence is currently in use by project personnel so the clearance will be completed upon vacation and demolition.
- The protocols for dealing with unexpected Aboriginal or non-Aboriginal artefacts remain the same as those put in place for Phase 1 mine development.

Biodiversity Conservation

- Where possible, IPRH avoids remnant vegetation and, in particular, individuals of Strzelecki gum.
- Comprehensive net gain agreements are in place to cover the impacts of the RRR project construction and future mining impacts. The net gain agreement has been signed off by the Regional Director of DSE.
- An EPBC agreement was put in place with the then Department of Environment and Heritage for impacts on the Strzelecki gum. The offset works have been implemented and IPRH has been comprehensively audited by the then DEH (now Department of the Environment, Water, Heritage

and the Arts, [DEWHA]) in 2006. The findings of the audit are summarised on the DEWHA website at www.environment.gov.au/epbc/publications/compliance-auditing-2006.html (DEWHA, 2006).

Community/Consultation

- IPRH will continue to communicate with stakeholders, including neighbouring landowners, government agencies, community representatives and the general public, through our Environmental Review Committee (ERC).
- IPRH will participate in appropriate forums with Latrobe City Council and the state planning authorities on long-term studies into development of the coal resource.

Dust

- Dust levels attributable to mining operations are monitored at agreed boundary locations and reported to the Environmental Review Committee quarterly. This will continue during Phase 2 mining.

Greenhouse

- IPRH will maintain its commitment to planting approximately 2,500 trees per annum to provide a carbon-sink to assist in greenhouse gas abatement and landscape enhancement.

Ground Movement

- The existing ground movement monitoring program will be expanded to include the Fifth Morwell River Diversion, backwater levee and other key structures and infrastructure in the vicinity of the West Field Development. This will be undertaken prior to the commencement of mining in Block 2B to update ground movement predictions.
- Horizontal and vertical ground-movement surveys will be resumed in Morwell, if mine batter stability surveys indicate increased movements at the township boundary.
- Regular inspections will be undertaken to ensure the integrity of the channel and levees; and provision will be made for repair, to the satisfaction of the West Gippsland Catchment Management Authority (WGCMA), should inspections or survey data indicate development of unfavourable conditions.

A comprehensive Structural Integrity Monitoring and Response Plan is to be presented to the WGCMA prior to diversion of the Morwell River flow expected in 2009. This is a requirement of the Licence to Divert Three Water Courses issued by WGCMA in February 2006.

Mine Closure and Rehabilitation

- IPRH will undertake further investigations to continue the process of optimising outcomes for mine closure and rehabilitation, including:
  - Review the potential for rebound of the Morwell and Traralgon aquifers, expected water levels, mine floor and batter stability, inflows, outflows and evaporation.
  - Assess the potential for erosion of batters due to wave action for batter profiles considered for final rehabilitation.

- Assess the potential for erosion of coal batters and degradation with time.
- Evaluate the merits of longer-term dewatering options. These options may incorporate a combination of groundwater pumping, rainfall and other options for filling of the mine void from external sources (e.g., wastewater) that have been, or will be, considered by IPRH.
- Establish trial plots to determine the ratio of coal to overburden required to achieve optimal revegetation treatments (i.e., moisture content, nutrient level, organic matter, fertiliser application and stability).
- Establish controlled test plots to determine the indigenous species most responsive to the planned revegetation treatment.
- Assess planting techniques to determine which ones achieve optimal coverage of tree species, particularly those species that regenerate following fire.

Noise

- EES modelling and historic performance indicate that noise from mining operations is not, and will not be, a problem for future mining. This is due to the increasing distance between the active mine face and the nearest residences and the town of Morwell and, the effectiveness of shielding afforded by the RRR project screening mounds.

Revegetation

- Selection of pre-1750 EVC species for planting will follow IPRH's Code of Practice Revegetation Design.
- IPRH will preferentially source propagation material for revegetation or habitat improvement from vegetation to be cleared and local plants.

7.4 Environmental Monitoring Programs

7.4.1 Ongoing Monitoring

IPRH has developed environmental monitoring programs to monitor the performance of its operations and to ensure compliance with the conditions of its licences. Currently, 14 environmental monitoring programs address monitoring and reporting requirements in relation to the mine. These are:

- Background Water Quality Monitoring Spec (3).
- Baseline Biological Monitoring Program.
- Bennetts Creek Monitoring Program.
- Biodiversity Monitoring Program.
- Blue/Green Algae Monitoring Program.
- Eastern Overburden Soaks.
- Fugitive Dust Monitoring Program.
- Groundwater Monitoring Program.
- Mine Artesian De-watering Monitoring Program.
- Mine Western Perimeter Monitoring Program.

- Mine Wetland Dams Monitoring Program.
- PCB (Polychlorinated Biphenyls) Waste Oil Monitoring Program.
- River Monitoring Program.
- West Field Phase 1.

Results from the environmental monitoring programs are included in IPRH's annual environmental, health and safety, and community report and reported quarterly to ERC.

7.4.2 Additional Monitoring for Phase 2

Environmental monitoring for Phase 2 has been developed in consultation with the relevant Government agencies during the 2004 EES process and incorporates conditions of approval of the project. However, IPRH has followed up on commitments made in the EES in regard to noise, dust and water quality for example and has reached agreement with government that no further monitoring is required. The following points are non-prescriptive monitoring and management aspects that IPRH will undertake:

- Batter stability and aquifer depressurisation optimisation management programs will continue during mining of the West Field.
- The network of pin lines, stability bores and horizontal bore programs will continue to monitor batter stability as the mine develops into Phase 2 of West Field.
- If mine batter stability surveys indicate increased movements at the Morwell township boundary, horizontal and vertical ground-movement surveys will resume in Morwell.
- The ground movement monitoring program will be expanded to include the Fifth Morwell River Diversion, backwater levee and other key structures and infrastructure in the vicinity of the West Field Development. This will be undertaken prior to the commencement of mining in Block 2B to update ground movement predictions.
- The existing M1 and M2 aquifer groundwater-observation bore networks will be expanded to incorporate more aquifer observation points in the mine vicinity as the mine progresses into the West Field.
- IPRH will participate in the Regional Groundwater Committee and fund regional works consistent with their Ground Water Extraction Licence conditions (Licence issued by Southern Rural Water).
- Groundwater extraction monitoring practices will be periodically reviewed (i.e., every 5 years) for improvement and quality assurance purposes.
- The dust monitoring gauges located on the western batters will be relocated further west to positions contiguous with the new mining boundary.
- IPRH have annual reporting obligations to the EPA for the monitoring and management of greenhouse emissions associated with the West Field Project as well as its normal operations.
- IPRH has developed a Waterway Monitoring Program, which comprises the Water Quality Monitoring Program, Aquatic Ecology Monitoring Program and the Index of Stream Condition Monitoring Program. The general principle of the Water Quality Monitoring Program was to adopt a very high standard of testing and monitoring for the baseline period, whilst adopting more pragmatic testing and monitoring during construction and commission and reasonable levels of

testing and monitoring post construction. All baseline surveys have been completed and construction impact monitoring is in place. All of these commitments are contained as conditions in the Licence to Divert Three Water Courses (Licence issued by West Gippsland Catchment Management Authority).

- Residual matters from the RRR project PEMP/CEMP and net gain commitments.

7.5 Environmental Management Audit Committee

The Environmental Management Audit Committee comprises Director Mining, Director Power Generation, Chemical and Environmental Manager, Environmental Officer Power Station, Environmental Officer Mine, Quality Manager, Manager Internal Audit and, Property and Land Issues Officer (Secretary).

The committee audits and reports on the effective operation of IPRH's EMS and monitors progress on environmental action plans including those developed to address EIP issues. It also provides a forum for IPRH environmental officers to report to senior management on environmental performance (including compliance).

The Environmental Management Audit Committee meets quarterly, as a minimum, its meetings are minuted and it is run to a standard agenda.

8 COMMUNITY ENGAGEMENT PLAN

8.1 Introduction

IPRH have a community engagement plan in place, which has evolved since 1999 when the feasibility investigations for Phase 1 of the West Field Development were taking place. The community engagement plan is now well developed and has proven to provide an efficient and structured means of communication. The stakeholder consultation program, as it is known by IPRH, was established to inform key stakeholders and the wider community of IPRH's plans for future development beyond the South East Field. The development of the program is ongoing and the applications flexible. It is therefore suitable for IPRH to use when liaising with the community and conveying information and/or issues relating to the RRR project.

Stakeholder consultation is a core operating principle of IPRH. A summary of key elements of the Community Engagement Plan follows:

8.2 Stakeholders

IPRH, through its existing operation, has developed relationships with its neighbours and other stakeholders. A summary of stakeholders identified as having an interest in the West Field Project include:

- Affected landowners.
- Affected utility and infrastructure owners.
- Employee and industry groups.
- Holders of neighbouring tenements.
- Indigenous community.
- Local and regional services and businesses.
- Interest groups and organisations.
- Government agencies.
- Politicians.
- Wider community and the general public.

In general, IPRH's approach to consultation has been to prioritise contact with stakeholders identified as being directly affected by the project.

8.3 Engagement Methods

Methods of engagement that IPRH have and will continue to employ in relation to mining activities and development of mining projects include:

- Media and advertising releases associated with milestones and activities.
- The company magazine.
- Usage of the Australian regional website (www.ipplc.com.au).
- Ad hoc advice to landowners affected by project development (i.e., letters and visits).
- West Field hotline (1300 793 783).
- Project information on display at PowerWorks and other key locations in the Latrobe Valley.

- Community flyers distributed via local post offices.
- Inserts and stories into local community newsletters.
- Letters to key stakeholders.
- Briefings of local politicians and interest groups.
- Use of a community survey to gauge community sentiment.
- Speaking to community groups by request (such as Rotary, Advance Morwell and Yinnar Ratepayers Association).

8.3.1 Identifying Community Attitudes and Expectations

Community survey responses are gathered on a basis and also reported via a research team from Monash University. The issues are identified and reported to Executive Management for analysis.

8.3.2 Providing Information in Relation to Mining Activities

- Regular coverage in the **company magazine**. Printed and electronic versions available.
- **Media release** on key mining milestones. Mainly disseminated by electronic mail. Copies to key local stakeholders and website.
- **Briefings program to local politicians.** Semi-structured program for local Members of Parliament (MPs) or available on request.
- **Signage.** Placed at strategic locations to describe project and advise key dates.
- **ERC**. Key component of IPRH's community engagement program.

8.3.3 Community Feedback on Mining Activities

- Usage of **hotline** for encouraging community feedback and prompt answering of any queries.
- **ERC**. An advisory body that includes representatives of the community, key regulators and government agencies and, interest groups.
- **Generic email address** from company website for Hazelwood asset issues (commrelations@hazelwoodpower.com).

The primary method of engagement with stakeholders continues to be IPRH's Environmental Review Committee (ERC).

The ERC comprises stakeholders with an interest in IPRH's environmental performance. It plays an active role in setting priorities for IPRH to follow and for where IPRH should direct efforts to minimise environmental impacts. The ERC is the primary tool for stakeholder engagement on environmental issues related to IPRH's operations.

The Environmental Review Committee meets every months to review progress. It sets priorities for minimising environmental impacts and improving performance via the 32 specific action items of the Environment Improvement Plan (EIP). The committee undertakes an tour of the IPRH site.

8.3.4 Analysing Community Feedback/Considering Concerns/Expectations

IPRH's approach to feedback from the community is to provide prompt responses to all requests for information or analysis of concerns after referral to resident mining experts or managers.

More generic responses to the findings of community survey for local issues are based on an approach of managing the specific issues.

8.4 Complaints

The complaints procedure incorporated in the EMS ensures a prompt response to any complaints regarding IPRH's operations. The West Field Project has broadened the use of this procedure to include enquiries and their response. Findings from the investigations of all complaints are reported to the complainant. Where complaints are judged as sustained they are reported to the ERC and government agencies. Where a complaint raises an issue of significance to the environment, an action plan or environmental project is prepared under the EIP and that matter is included in the annual review of environmental aspects.

8.5 Documentation of Stakeholder Engagement

A stakeholder database of individuals and parties' interests and inquiries was established during Phase 1 and Phase 2 approvals and is held on record to comply with a commitment made by IPRH during the EES. The database is held by IPRH in a secure area of its computer network to comply with privacy requirements.

For Phase 2 RRR Project, IPRH have and will continue to review enquiries/complaints generated through the project information hotline, website, project information bulletins and project information displays.

For mining activities associated with this Work Plan Variation, IPRH will revert to the EMS processes and document accordingly.

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9 HEALTH AND SAFETY MANAGEMENT PLAN

9.1 Health and Safety Policies

IPRH is AS 4801 certified and has developed a Health and Safety Policy and supporting policies that are implemented in all relevant operations, and include:

- Health and Safety Policy.
- Drug and Alcohol Policy.
- Eye Protection Policy.
- Health and Safety Policy Violations.
- Materials Handling Policy.
- Mine Fire Service Policy and Code of Practice.
- Seat Belts Policy.
- Test Policy.

Standards for Health and Safety performance are set out in the following table. These include both proactive and reactive objectives and targets.

Table 9.1 Health and Safety Performance Standards

Action	Standard
Proactive	Fresh eyes observation audits - IPRH and alliance partners.
Proactive	Toolbox talks – IPRH and alliance partners.
Proactive	Health and Safety action plan items.
Proactive	Management review of safety management systems.
Proactive	Safety related opportunities for improvement (OFI).
Proactive	Health and safety meetings.
Proactive	Maintain OHSAS ISO18001 and AS4801 certification.
Proactive	Employee health: health assessments programs.
Proactive	Hazard reports.
Proactive	Safety document review.
Reactive	Lost time incidents IPRH and alliance partners.
Reactive	Medical treatment injuries - IPRH and alliance partners.

Table 9.1 Health and Safety Performance Standards (cont'd)

Action	Standard
Reactive	Number of electrical incidents: nil, serious or fatal injury.
Reactive	First Aid treatment injuries - IPRH and alliance partners.
Reactive	Near misses IPRH and alliance partners.

The Health and Safety Policy is shown in Figure 9.1. This policy outlines the health and safety requirements that must be considered at all levels of the business decision-making process and the commitments outlined apply to Phase 2 of the West Field Development of Hazelwood Mine.

9.2 Hazard Risk Assessment

To ensure that the work plan contains information as prescribed in Schedule 13 of Mineral Resources Development Regulations 2002, IPRH undertook a risk assessment to identify major occupational, health and safety mining hazards associated with the development of the West Field (Qest, 2003). The assessment was aimed at achieving compliance with the requirements for a safety assessment as per the Occupational Health and Safety (Mines) Regulations 2002. A Major Mining Hazard (MMH) is defined under these Regulations as; "a mining hazard that has the potential to cause an incident that causes, or poses a significant risk of causing, more than one death". The assessment was completed through a three-staged approach, as shown in Table 9.2.

Table 9.2 Three-Staged Approach To Risk Assessment

Stage	Outcome	Process
Stage 1	Identification of major mining hazards.	Qualitative risk assessment of hazard scenarios. Development of bow-tie diagrams.
Stage 2	Base case risk assessment and critical control selection.	Semi-quantitative risk assessment (SQRA) considering existing control measures. Identification of critical and major controls.
Stage 3	Critical control adequacy assessment and reduced case risk assessment.	Assessment of critical and major controls. MMH safety action plan. SQRA considering improvement actions.

A risk assessment team was established at the beginning of the project and engaged throughout each stage of the process. The team was made up of IPRH personnel, from Operations, Maintenance, Engineering and Safety including personnel from shop floor, supervisory and management ranks.

Stage 1. Identification of Major Mining Hazards

The first step in the identification of MMHs was to divide the mine up into its major processes and activities and then apply a brainstorming technique using guidewords as prompts. This step generated an initial list of 53 mining hazards for further assessment and consideration as potential MMHs.