FINDINGS FROM THE 2011 VERIFICATION OF

DREDGER 11 OUTAGE – REPLACEMENT OF PIVOT No3
Incorporating comments from IPRH (July 2011)

International Power Hazelwood (IPRH), Mine (MIN 5004)
Morwell, VIC 3840

February 2011

Hazard Management Division
WorkSafe Victoria
Level 18, 222 Exhibition Street, Melbourne 3000

DOCUMENT REVISION RECORD

Rev	Date	Description/Comments	Prepared by	Reviewed by
0	12/04/2011	Draft prepared for internal review	Greg Sleziak (GS), Kevin Hayes (KH) & Donna Conley (DC)	
1	10/05/2011	Draft prepared for review by Operator	GS, KH	TG & SB
2		Report issued incorporating comments by Operator (Hazelwood Mine)		

WorkSafe Internal Review (Completed after finalisation of report)

Reviewed By	Confirmed	Comment
Group Leader	Sean Byrne (SB)	14/04/2011
Manager – Earth Resources	Tim Gosling (TG)	19/042011

CONTENTS

1. EXECUTIVE SUMMARY **4**

2. OBJECTIVES OF THE VERIFICATION **4**

3. METHODOLOGY **4**

3.1 Justification of Verification Focus 4

3.2 On site Inspection 5

4. INSPECTION FINDINGS **5**

4.1 Control Measure Findings 5

4.2 Safety Management System Findings 5

5. CONCLUSIONS AND OPPORTUNITIES FOR IMPROVEMENT **7**

5.1 Strategic or Regulatory Intervention 7

5.2 Opportunities for Improvement 8

5.3 Conclusions 8

ATTACHMENT A - DETAILED INSPECTION FINDINGS (FIELD REPORT) **10**

ATTACHMENT B – VERIFICATION FINDINGS TOOL – FOR INFORMATION ONLY **37**

ATTACHMENT C – ADDITIONAL INFORMATION **40**

C1 Plant Related Incidents at International Power Hazelwood - Mine, MIN5004, Apr 2008 - Dec 2010 40

C2 Entry Reports and Improvement Notice issued 40

1. EXECUTIVE SUMMARY

WorkSafe conducts detailed audits annually on major prescribed mines which are called "Verifications". It is an attempt to assess compliance across all such mines covering a variety of control measures to manage risk and related SMS elements.

In addition to the objectives of this Verification, WorkSafe sought also to understand the impact of external influences on the mine operator to effectively manage SMS and to provide satisfactory level of Safety Management.

The Verification at Hazelwood Mine (the Mine) focused on the maintenance of 'mining plant' (specifically 'Jacking of Plant') as the Major Mining Hazard. Relevant documents were reviewed prior to producing a series of focused issues for the verification by the field visits. These included activities, processes and procedures identified in the Mine Maintenance System, including the Independent Structural Inspection (ISI) of Dredger 11 (D11) and Jacking of the D11 during the major outage that was carried out during February 2011. The verification took place over a number of days due to delays caused by rain and cracks in the D11 structure.

The Verification findings are summarised in Part 4 of this report against the 'Objectives of the Verification' with details provided in the relevant Attachments. Feedback was also given to the Mine staff after the various visits or meetings.

SMS elements and Control Measures that were subject of this Verification, except one Control Measure were found implemented and 'In Part' functional. Although a great deal of work and care was taken to plan and carry out this task safely, a number of shortfalls were revealed, particularly with the site's Safety Management System being used in parallel to that effort, rather than supporting the implementation and maintenance of the risk control measures selected.

2. OBJECTIVES OF THE VERIFICATION

The objectives of the Verification process are to:

- Identify areas where strategic intervention is required
- Ensure regulatory breaches or non-conformances detected during the inspection are appropriately dealt with
- Assess whether or not a mine operator is providing a satisfactory level of Safety Management

3. METHODOLOGY

3.1 Justification of Verification Focus

The purpose of the verification was to conduct a number of visits in relation to D11 outage that was carried out in February 2011, and to verify a sample of control measures and elements of the Safety Management System relating to the maintenance and Jacking of D11 as a Major Mining Hazard.

The plant (dredgers and stackers) were originally designed in Germany and were commissioned about 40 years ago. Numerous mechanical and plant related incidents have occurred in the last ten years at coal mines in Latrobe Valley. WorkSafe's record of incidents that occurred at Hazelwood Mine supports WorkSafe's focus on the maintenance system and associated activities. An analysis of incidents related to plant and maintenance at Hazelwood Mine was carried out and a summary is presented in Attachment C1.

A desk-top review of documents obtained provided the basis for the development and application of the verification tool that was used during the field visits. The verification summary of selected control measures is presented in the Control Measures Findings and the summary of findings in relation to the selected elements of IPRH SMS is presented in the Safety

Management System Findings. Where explanations and/or clarifications are required, see details of findings that are contained in Attachment A.

At the conclusion of the site and/or field visit to the Hazelwood Mine, the Inspector issued Entry Reports wherein issues raised, identified and addressed during the verification have been recorded and documents voluntarily provided or obtained have been listed see Attachment C2.

3.2 On site Inspection

Duration: 4 days	Start: 03/02/11	Finish: 28/02/11
Agency	**Name**	**Role**
WorkSafe	Kevin Hayes	Lead Inspector
WorkSafe	Donna Conley	Inspector
WorkSafe	Greg Sleziak	Senior Mining Engineer/Inspector

4. INSPECTION FINDINGS

4.1 Control Measure Findings

The findings on the control measure are summarised in Table 1 below. The detailed findings for each control measure are presented in Attachment A.

Table 1 – Control Measure Inspection Findings Summary

Control Measure	Implemented	Functional	Level	Comments
No. 1: Exclusion Zone Around Plant – CM No 0418	YES	IN PART	3	Control exists as required and is doing the job but distance is not being tested for effectiveness.
No. 2: Hazard Identification, Risk Assessment and Control – CM 0471	YES	IN PART	3	Control exists as required but is not totally effective - achieving some performance standards at controlling the MMH.
No. 3: Design – Jack and Failsafe Devices – CM 0138	YES	IN PART	3	Control exists as required but is lacking description and is being informally used.
No. 4: Established Geotechnical Standards – CM No 0248	YES	IN PART	3	Control exists as required but is not properly performance monitored and is being informally used.
No. 5: Planning – Access to the Outage Site *	NO	NO	0	Control does not exist at all.

* WorkSafe expectation and industry good practice.

4.2 Safety Management System Findings

The findings of the SMS elements verification are summarised in Table2 below. The detailed findings for each element are presented in Attachment A.

Table 2 – SMS Element Verification Findings Summary

SMS Element	Implemented	Functional	Level	Comments
SMS 1: System Audit and Review	YES	IN PART	3	An external auditing is undertaken every six months on elements of the SMS. The scheduling of internal auditing activities (that help measure the effectiveness of the SMS) is not clear. The internal auditing lacks also report status, review of any actions and effectiveness. External auditing has not scrutinized the mine's compliance with the Occupational Health and Safety (2007) regulatory requirements or as per the performance standards [reg 5.3.21(3)(g)] selected by the mine (AS/NZS 4801:2001. Auditing or review activities have not been implemented to measure the effectiveness of the SMS element.
SMS 2: Roles and Responsibilities – Jacking of D11	IN PART	IN PART	2	The Safety Management System does not provide a comprehensive and integrated management system for all aspects of this SMS element/control measures adopted because the SMS element Roles and Responsibilities exists but: • Some key components of this SMS element have not been implemented. Auditing activities have not been developed or have been ineffective in identifying issues with implementation.
SMS 3: Maintenance System	YES	NO	3	The SMS does not contain a description of the maintenance system to ensure general requirements [sec 21(1) and 21(2)(a)] and specific requirements of reg 3.5.30] (Employer duties to provide or maintain plant) is being audited for effectiveness [reg 5.3.21(3)(i)]. The Safety Management System does not provide a comprehensive and integrated management system for all aspects of this SMS element/control measures adopted because: • The SMS element and key components are all present, but are not being used to manage the control measure, i.e. use of other system not included within the Mine SMS. Furthermore, auditing activities surrounding

SMS Element	Implemented	Functional	Level	Comments
				the ISI system have not been developed.
SMS 4: Incident Investigation and Reporting *	IN PART	NO	1	The SMS element Incident Investigation and Reporting does not provide a comprehensive and integrated management system for all aspects of Incident Investigation because: ▪ The SMS element and key components are all present but are not being used as intended/or designed to manage the issue or control measure that it is designed to support.

* Due to a number of incidents and the Mine site, WorkSafe interventions were required in relation to the reporting and quality of incident investigations.

5. CONCLUSIONS and OPPORTUNITIES for IMPROVEMENT

5.1 Strategic or Regulatory Intervention

When viewed against each of the objectives of the Verification process in Section 2, the inspection team concluded:

Objective	Findings
Identify areas where strategic intervention is required (subject to oversight visits and possible compliance and enforcement actions).	1. Safety Assessment (SA) of the Major Mining Hazards has been completed at a desk-top level. The SA of the Jacking of Plant was done without reference to relevant documents such as "D11 Pivot No1 and No3 Replacement" and "D11 Pivot No3 Replacement, rev6" or similar procedures. The SA was found to be incomplete and missing relevant control measures that are otherwise well described in the procedure. The provided Bow-tie diagram contains other control measures that are not preventative measures and scenarios produced have been incorrectly developed. The SA is not comprehensive and systematic as is required by Regulation 5.3.23(1) and lacks investigation and analysis of the major mining hazard as is required by Regulation 5.3.23(2). 2. The development of roles for employees and the procedures employees are required to follow to assist the operator (specifically to conduct a Safety Assessment under regulation 5.3.23 and adopt, review and test risk control measures under regulations 5.3.8, 5.3.9 and 5.3.24) requires major revision. 3. The scheduling of internal auditing activities (that help measure the effectiveness of the SMS) is not clear. The internal auditing lacks also report status, a review of any actions and their effectiveness.
Ensure regulatory breaches or non-conformances detected	Improvement Notice V01017400156L/111-01 was issued in relation to inspection and testing of lifting equipment located at the D11 outage site.

during the inspection are appropriately dealt with.	
Assess whether or not a mine operator is providing a satisfactory level of safety management.	IPRH corporate initiatives that dominate OHS on the Mine site are not completely compatible with the Mine's OHS requirements and/or the regulatory needs of an SMS and SA. It appears that the corporate OHS initiatives have not covered or completely matched the Mine OHS needs and requirements in relation to providing satisfactory level of Safety Management at the Mine site.

5.2 Opportunities for Improvement

A number of Opportunities for Improvement (OFI) were identified based on the findings of this verification. These are listed in abbreviated form here. **The reader should refer to the Detailed Findings in Attachment A for the full list of OFI and recommendations, and why they were made.**

Provide feedback and recommendations to the mine operator so that they can improve the level of safety management at the facility	**CM 1 – Exclusion Zone Around Plant – CM No 0418** IPRH should consider vibration monitoring and testing to the extent necessary to ensure that the fifty metre exclusion zone is sufficient to control the risk of vibration whilst plant is being jacked. **CM 3 – Design – Jack and Failsafe Devices – CM No 0138** IPRH must ensure that the formal process for recording jacking pressures on an established basis is being maintained via the Inspection Test Plan. **CM 4 – Established Geotechnical Standards – CM No 0248** IPRH must ensure that the formal process for verifying the Site Location and Specification of Maintenance Pad is established and is being maintained via the Inspection Test Plan. **CM 5 – Planning – Access to the Outage Site** IPRH must review and revise the current mine plan to clearly indicate the location and access to major outage sites. **SMS 3: Maintenance System** IPRH to review the Independent Structural Inspection program contained within the site's maintenance system and QA procedure manual.

5.3 Conclusions

The mine operator has addressed OHS issues such as Safety Assessment (SA) at the Mine in a semi structured and planned manner. The corporate or organizational objectives dominate OHS priorities or there is not enough in-house understanding of specific Mines Regulations requirements. As a result, some mine personnel are left with the management of difficult and sometimes complex OHS or related administrative tasks and resulting in control measures only achieving 'In-Part' functionality.

The Verification shows that a lot work has been done by IPRH at the corporate level and quite often by an individual effort and commitment. Difficulty in achieving some of the regulatory requirements [reg 5.3.21 and 5.3.23] was found in several areas. For example SA of MMH re Jacking of Machine was not completed correctly nor contained within the SMS. The maintenance system of the plant appears to stand alone rather than being integrated into the SMS. Safety roles and responsibilities for the employees have been developed at the management level only.

It appears that IPRH management has not provided enough input into the SA process to ensure that SAs are completed correctly.

A number of recommendations on other issues of less impact were made in the findings of this verification. These are only listed in abbreviated form here. **The reader should refer to the Detailed Findings in Attachment A for the full recommendations, and why they were made.**

ATTACHMENT A - Detailed Inspection Findings (Field Report)

MMH Control	Key areas of interest / Inspection Guidance
CM 1 – Exclusion Zone Around Plant – CM No 0418	**Ref:** Bow-tie diagram 'Jacking of Plant' dated 3 March 2010 and 'Jacking MMH control description and standards' dated 21/01/2011. **Purpose of Control:** To ensure that the operation of heavy equipment in close proximity to the area where jacking is occurring is controlled to minimize the impact of vibration on the jacking operation. **Please Note:** The scenario is 'Plant Movement in the Vicinity'; An exclusion zone should be specified for the vibration and physical impact by different mobile plant. **Performance information:** *Implemented:* 1. The work site is barricaded or separated from the normal operation (*as per established site requirements and conditions).* 2. The Recipient in Charge (RIC) or person in charge of the jacking operation is aware of operational plant and able to control either the heavy plant operation or the jacking operation to ensure there is no impact. *Functional:* 1. The size of the exclusion zone is sufficient, maintained and no mobile plant works in close proximity to the area where jacking is occurring.

Findings (Fact & Opinion)

Implemented:

1. D11 outage site observations: barricading erected to control traffic flow and pedestrian access. No barricading (indicating 50 metre exclusion zone **see A38** page 6) erected at the time of verification (21st Feb 2011). Management indicated that this will be in place during the jacking of the machine (est. to be on 23rd Feb 2011). Observed barricading on 28th Feb indicating 50 metre exclusion zone from jacking area.

2. Discussed traffic management issues including 50 metre exclusion zone with RIC. RIC indicated knowledge and understanding of this requirement and issues with vibration **(see A38,** page 6). RIC stated that whilst jacking, no plant movement is allowed within the 50 metre exclusion zone, with the exception of an elevated work platform (to assist in jacking). RIC informed WorkSafe that he was able to either control the movement of plant and/or the jacking process.

Functional:

This control measure (50 metre exclusion zone) is believed to be industry standard. No documented evidence was provided to indicate that 50 metres is a sufficient distance however the distance is considered "industry good practice". Fifty metres is considered more than adequate to prevent plant collision.

Status (Yes/In Part/No - include explanation)

Implemented: YES

Functional: IN PART (3)

Control exists as required and is doing the job but is not being tested.

Opportunities for Improvement

Recommendations:

IPRH should consider vibration monitoring and testing to the extent necessary to ensure that the fifty metre exclusion zone is sufficient to control the risk of vibration whilst plant is being jacked. Vibration testing or similar will assist IPRH in ensuring compliance with Occupational Health and Safety Regulation 5.3.24 - Testing risk control measures for major mining hazards.

Comments from the Operator on the Findings and Required Actions

There have been no reported issues with the current procedure in 40 years of heavy jacking, which includes feedback from personnel located at the jacks when heavy vehicles have passed the site with no exclusion zone.

The jacking in this exercise was conducted with an increased 50m exclusion zone (based on the practices of a similar mine). Feedback from the attending engineer and personnel located at the individual jacks during the jacking was that the level of vibration felt was low and there was no effect on the jack stability or operation.

This observation and feedback tests the effectiveness of the control.

MMH Control	Key areas of interest / Inspection Guidance
CM 2 – Hazard Identification, Risk Assessment and Control – CM 0471	**Ref:** Bow-tie diagram 'Jacking of Plant' dated 3 March 2010 and 'Jacking MMH control description and standards' dated 21/01/2011. **Purpose of Control:** To ensure that the hazards associated with jacking have been risk assessed and controlled to a level acceptable to the business. **Note:** The scenario is 'Plant Movement in the Vicinity' **Performance information:** *Implemented:* 1. Risk level acceptable to business is established and controls used. 2. Employees are trained in hazard identification and risk assessment. *Functional:* 1. Responsible persons are aware of the business risk level. 2. JSA completed and quality checked to ensure their correctness. 3. The assessed risk level is at the acceptable level.

Findings (Fact & Opinion)

Implemented:

1. Interviews with IPRH personnel including Projects, Compliance, Investigation and Outage Line Manager (PCIO), D11 Outage Manager, D11 Outage Supervisor, Health and Safety Officer and later D11 Recipient In Charge (RIC) indicated that they were either unaware of acceptable levels, or that acceptable levels have been implemented and exist. Management was unable to provide documented information on what risk level is accepted by the business.

Further, interviews reveal that personnel are unsure/unaware of when/if "escalation of responsibility" occurs. E.g. dependant on activity and risk.

- Risk > than Low - Supervisor to sight and sign off, including further actions required;
- Risk > than Medium - Engineer/Outage Manager to sight and sign off, including further actions required;
- Risk > than High - Line Manager to sight and sign off, including further actions required;
- Risk =/> Very High - Director of Mining to sight and sign off, including further actions required.

2. Observed names on JSA **(see A35)**. The employee names were then cross referenced against the most current "JSA Training Register". Employees were last provided training in Feb/Mar 2010, with the exception of one employee who received training in Oct 2008.

Functional:

1. Responsible persons (including PCIO Line Manager, D11 Outage Manager, D11 Outage Supervisor, RIC and H & S officer) were interviewed and were unable to identify an established "acceptable risk level". However, a colour version of the JSA sighted indicates a yellow band diagonally crossing the JSA risk matrix and this may be indicative of an "acceptable risk level" **(see A35)**.

2. Review of JSAs **(see A35, A40 and A41)** comments:

- JSA contains number of 'outcomes' under the column titled "potential hazards" e.g. fatality, back injury, hand injuries. To ensure that the JSA remains effective, IPRH must ensure that the JSA correctly identifies specific hazards related to the specific task, rather than the potential outcomes.
- The JSA must list specific controls (using the hierarchy of controls) to manage the hazard rather than the generic statements e.g. "take care, use of correct manual handling techniques".
- The JSA has not been reviewed and modified accordingly in circumstances that are not specific to the planned task or activity e.g. use of jacking beam **(see A38)**. Jacking beam insertion not mentioned in JSA **(see A35)**.
- JSA **(see A40)** details job step - (generic) Rotating Equipment and a potential hazard - Fatality. Risk controls listed (generic) - appropriate PPE, gloves to be worn, only people familiar with the task to be involved, look up down and around and good communication. The JSA has been entered into Paradigm by IPRH. Risk scores are determined by personnel performing the task and are not generically recorded. The risk score determined by the work party prior to controls was 21 (Very high). The risk level was reassessed and reduced to 8 (medium).
- Another JSA **(see A41)** listed the same generic job step, potential hazard and risk control measures. The risk score determined by the work party prior to controls was 21 (Very high). The risk level was reassessed and reduced to 5 (low). It is appears that (from these examples) the 'generic' component of the JSAs require reviewing to ensure that specific hazards and appropriate controls (using the hierarchy of controls) are listed and implemented.

3. Level of "acceptable risk" has not been determined.

Other Observations:

The risk control measure 0471 "Hazard Identification, Risk Assessment and Control" as listed in the "Bow-tie" diagram Jacking of Plant (MMH 4) was presented to WorkSafe as a job step in a JSA **(see A35)**. The same JSA is also listed in the "Bow-tie" diagram Jacking of Plant (MMH 4) as system control 0381 - JSA.

Status (Yes/In Part/No - include explanation)

Implemented: YES

Functional: IN PART (3)

Control exists as required but is not totally effective - achieving some performance standards at controlling the MMH.

Opportunities for Improvement

Recommendations:

1. **(a)** IPRH must establish acceptable risk levels that 'trigger' escalation points and actions required/steps taken to reduce the risk e.g.
   - Risk > than Low - Supervisor to sight and sign off;
   - Risk > than Medium - Engineer/Outage Manager to sight and sign off;
   - Risk > than High - Line Manager to sight and sign off;
   - Risk = Very High - Director of Mining to sight and sign off.

   (b) IPRH must review the JSA training package to include practical examples of properly completed JSA, the process and JSA format that incorporates acceptable risk levels, escalation and sign off.

2. (a) IPRH must review JSA training to ensure employees are aware of the differences between 'potential hazards' and 'potential outcomes'. This will ensure specific controls are implemented rather than generic statements e.g. "take care" and "use of correct manual handling techniques".

(b) IPRH must review JSA training to ensure that employees correctly apply the JSA when circumstances that are not specific to the planned task or activity arise or when conditions affecting the planned task or activity change.

(c) IPRH must review the 'generic' components of all JSAs located in Paradigm to ensure the information (job steps and potential hazards) provided to their employees is accurate. Furthermore, the generic controls listed must be in accordance with the hierarchy of controls.

(d) IPRH must ensure that Supervisors/Management regularly audit employee's JSAs, for accuracy.

(e) IPRH to review the JSA training registers to ensure that all employees have undertaken the most current JSA training available. Employees who are classed as 'out of date' must receive JSA training ASAP.

Other Recommendations:

IPRH must review the Safety Assessment for MMH No.4 (Jacking of Plant) to provide clarity surrounding CM 0471 - Hazard Identification, Risk Assessment and Control, CM 0381 - JSA and CM 0137 - Engineer approved procedure.

Comments from the Operator on the Findings and Required Actions

A review of acceptable risk assessment level has been conducted and a proposed change has been presented to the H&S Manager for review prior to implementing a change within our system.

The changes recommended to the Training Package have been passed to the Training Officer for incorporation in the next round of JSA training.

The implication that sign off by a manager abrogates the responsibility of the workers is to be avoided. The workers must accept that the work can be done safely and must implement and maintain the control measures nominated. The manager is to review and authorise all work where there is an elevated level of risk.

Regular audits of JSA's does occur, however not all JSA's are audited.

Personnel are retrained when their training becomes out of date. This is subject to the availability of personnel for training, sufficient number for a course and the ability of the RTO to provide the training at the required time. As a business we are looking to use a 3 month grace period for out of date training, to allow for this difficulty.

All controls developed for the MMH Regulations will be reviewed after the Verification process as part of the ongoing regular review process in our SMS.

MMH Control	Key areas of interest / Inspection Guidance
CM 3 – Design – Jack and Failsafe Devices – CM No 0138	**Ref:** Bow-tie diagram 'Jacking of Plant' dated 3 March 2010 and 'Jacking MMH control description and standards' dated 21/01/2011. **Purpose of Control:** To ensure that hydraulic jacks used for lifting Large Open Cut Machines (or parts thereof) are suitable for the design loads including any safety margins and have installed protective equipment to minimize the risk of uncontrolled lowering. **Please Note:** There are 3 scenarios to which this CM applies. Scenario 1 – Jack/Pump/Hose/Packing Failure, scenario 2 – Wind and scenario 3 – Incorrect Procedure or failure to Follow procedure; Human Error (please check which procedure and how it can impact or cause a jack failure). **Performance information:** *Implemented:* 1. Pressure rating of jacks and safety devices (gauges, Pilot operated valves, pressure relief valves, hoses and power packs) is greater than system maximum pressure. 2. They are selected with a safety margin for the plant overload and for the maximum wind velocity as specified in the relevant procedures. 3. Manuals and specification sheets including pressure curves for the jacks have been prepared, readily available and used. *Functional:* 1. Competent person is monitoring and recording the pressure on gauges. 2. Pressure gauges are monitored on the established basis and pressure is within the design limit.

Findings (Fact & Opinion)

Implemented:

1. IPRH informed WorkSafe that the pressure rating of jacks and safety devices (gauges, Pilot operated valves, pressure relief valves, hoses and power packs) is greater than system maximum pressure. Test certificates were obtained **(see A36 and 37)**, the jacks and system utilized was certified by an external engineering company as fit for service. The 'Hy-Tork' unit was found to be unserviceable and was repaired and re-certified **(see A37)** as fit for service prior to jacking.

2. IPRH informed WorkSafe that the jacks are selected with a safety margin of 10% for the plant overload. Weight of plant jacked was calculated at approximately 360t, the combined rating of jacks is 400t (2 X 200t). WorkSafe was also informed that the jacks are selected with a 150kph (safety margin) maximum wind velocity, however this is not documented and is based in the engineer's knowledge and experience.

3. Specification sheets including pressure curves for the jacks have been prepared, are readily available and are utilized on the job **(see A38)**. WorkSafe was also informed by employees performing the jacking task that these specification sheets (aka jack pressure tables) are regularly checked whilst the machine is being jacked. Engineer's notes obtained **(see A39)** also indicate informal monitoring of pressures with reference to the jack pressure tables.

Functional:

1. WorkSafe was informed by IPRH that a suitably qualified engineer continually monitored

the progress of the jacking activity (from start to end). This was also confirmed by the employees who performed the jacking task. Informal recording of the pressure as indicated on the gauges is also performed by the site engineer **(see A39).** 2. There is an established basis for monitoring and recording the pressures on the gauges. However WorkSafe was informed that the Jack Load Record sheets **(see A38,** page 25**)** have not been provided to the employees and/or engineer to formally record the pressures on the gauges. Nevertheless, WorkSafe was informed that the employees and engineer on site continually monitor these gauges as the machine in being jacked up/lowered. The gauges are located in close proximity to the jacks, are visible and readily accessible.
Status (Yes/In Part/No - include explanation)
Implemented: YES *Functional:* IN PART (3) Control exists as required but is lacking description and is being informally used.
Opportunities for Improvement
Recommendations: IPRH must ensure that the formal process for recording jacking pressures on an established basis is being maintained via the Inspection Test Plan (ITP) documented within IPRH procedures **(see A38,** page 25**).** This will ensure that accurate records are kept (on a data base) for future referencing and when planning same/similar tasks. This will also assist IPRH in ensuring compliance with Occupational Health and Safety Regulation 5.3.24 - Testing risk control measures for major mining hazards.
Comments from the Operator on the Findings and Required Actions
The results were recorded by the engineer as part of his field notes. These are kept on file as part of the outage records. Due to an oversight, the results were not transcribed onto the prepared form. Next time the results will be recorded on the prepared form.

MMH Control	Key areas of interest / Inspection Guidance
CM 4 – Established Geotechnical Standards – CM No 0248	**Ref:** Bow-tie diagram 3 March 20010, Jacking of Plant and 'Jacking MMH control description and standards' dated 21/01/2011. **Purpose of Control:** To have geotechnical standards established for the specific materials and conditions in the Mine. **Note**: The standards are based on the Australian Standards and are specific for the operational and maintenance practices used in the Mine. **Performance information:** *Implemented:* 1. The geotechnical inspection or review of the materials and conditions at the outage site take place. 2. Load cases (geo-technical standards) for standard maintenance equipment including (but not limited to) D11 outage, is available on IPRH systems. *Functional:*

	1. Competent geotechnical practitioner prepared geotechnical standards. 2. Jacking raft loads and trestles loads have been checked against the load bearing capacity of the ground at the outage site. 3. Evidence that there is no ground movement.

Findings (Fact & Opinion)

Implemented:

1. WorkSafe was informed that a plan is developed (pre-outage planning) detailing the location of the outage site (plan not observed or obtained). The outage site is located on the coal surface. WorkSafe was informed that IPRH inspected the outage site prior to final 'park-up' D11. This inspection was informal and no detail/documented information was available. A copy of procedure titled "D11 Pivot No.3 Replacement" rev #6 (blank copy obtained **see A38**) was sighted at D11 outage site. The procedure contains an Inspection Test Plan (ITP) that requires the recording and actioning of critical activities. One of these critical activities (no.2 Site Location and Specification of Maintenance Pad) requires an inspection 'hold' point. This activity requires dating and initialing. The copy located at the D11 outage site had NOT been dated, initialed or signed off as being completed.

2. Load cases or procedures for assessment of the ground condition prior to jacking dredgers and other heavy machinery **(see A19)** have been developed and are available on the IPRH intranet. These standards have been developed by IPRH qualified geotechnical practitioner. These standards are readily available and detail the numerous jacking calculations and configurations.

Functional:

1. A competent geotechnical practitioner has prepared the IPRH geotechnical standards.

2. Not Applicable - Jacking rafts and trestles were not utilized during this outage.

3. D11 Outage site ground conditions were not being monitored as jacking pads were located on the machine and NOT directly impacting on the coal surface. There was no visible evidence of ground movement (cracking/heave etc...) during the verification/site inspection. IPRH informed WorkSafe that they informally inspect the ground conditions on a regular basis however these inspections were not recorded or documented.

Other Observations:

The risk control measure CM 0137 - Engineer approved procedure **(see A38)**, details other maintenance pad specifications (control measures) including 'provision of adequate machine capacity to prevent subsidence - where jacking loads are reacted by the ground' should not exceed 400kPa', 'maintenance pad to be graded to a level to 1:300 in both axes, across the entire footprint of the machine' and 'provision of adequate drainage'.

Status (Yes/In Part/No - include explanation)

Implemented: YES

Functional: IN PART (3)

Control exists as required but is not properly performance monitored and is being informally used.

Opportunities for Improvement

Recommendations:

IPRH must ensure that the formal process for verifying the Site Location and Specification of Maintenance Pad is established and is being maintained via the Inspection Test Plan (ITP) documented within IPRH procedures (**see A38**, page 24).
Furthermore, the verification of risk control measure CM 0137 - Engineer approved

procedure **(see A38)**, requires confirmation RE: other maintenance pad specifications (control measures) including provision of adequate machine capacity to prevent subsidence - where jacking loads are reacted by the ground, should not exceed 400kPa, maintenance pad to be graded to a level to 1:300 in both axes, across the entire footprint of the machine and provision of adequate drainage. This will assist IPRH in ensuring compliance with Occupational Health and Safety Regulation 5.3.24 - Testing risk control measures for major mining hazards.
Comments from the Operator on the Findings and Required Actions
The formal ITP was not completed in this aspect, although the required inspection and checks were completed. This non-conformance will be entered into our system for review and possible changes to procedure, documentation or both.

MMH Control	Key areas of interest / Inspection Guidance
CM 5 – Planning – Access to the Outage Site	**Ref:** **Purpose of Control:** To provide well established access to the outage site including an alternative one to ensure unobstructed and timely access to the outage site in case of an emergency. **Performance information:** *Implemented:* 1. The outage site and access to the outage site are clearly marked on the mine plan. 2. There is sufficient signage in the Mine that clearly shows the access to the outage site for any condition during the day and night. *Functional:* 1. All involved in the outage and emergency services are familiar with the updated mine plan. 2. The access is well maintained and unobstructed. 3. Signs are well posted and clearly visible.

Findings (Fact & Opinion)

Implemented:

1. IPRH were unable to provide a mine plan that clearly indicates the outage site, however the outage site access is generally known to all involved with the outage including the Mine Control Centre (MCC). Enquiries with random sample of employees confirmed knowledge of site access.

2. No outage signage was observed within the mine other than the permanent mine signage including road names and speed signage and the D11 sign on the Dredger. No night shift work being performed during the outage. However signage was observed at the D11 Outage site (No Unauthorized Access etc...)

Functional:

1. Emergencies are controlled via the MCC. Emergency services are directed to the MCC and are then provided with an escort to the outage site. The Emergency Management protocols have been verified in past visits and emergency training drills are performed periodically.

2. Access to the site has been upgraded and gravel has been laid on coal surfaces. Access has been well maintained considering the large volume of traffic and rain that was present.

3. Signage observed at the D11 outage site was clearly legible and visible.

Status (Yes/In Part/No - include explanation)

Implemented: NO

Functional: NO

Control does not exist at all

Opportunities for Improvement

Recommendations:

Key IPRH (MCC) and emergency services personnel are aware of the preferred directions to be taken to access the D11 outage site however, consideration must be given to the nature of the work being performed at the outage site (involving Major Mining Hazards) and the mitigative control measures listed within the Safety Assessment No.4 Jacking of Plant including:

- Onsite emergency response provider;
- Emergency response plan; and
- Access to emergency services.

With this in mind, it is WorkSafe's expectation (and good industry practice) that when work involving major mining hazards (during major outages) takes place, the employer must review and revise the current mine plan to clearly indicate the location and access to the major outage site. This practice would also include the use of temporary signage to indicate preferred routes taken to access the outage site area.

Comments from the Operator on the Findings and Required Actions

The IPRH Mine Plan was updated to show the current location of Dredger 11 while it was on the maintenance site.

Maintenance sites that are only temporary are not specifically marked on the mine plan, although the location of a dredger on maintenance can be determined from the mine plan.

As required by the SMS and determined in the findings, all relevant people knew the location and a means of access to the maintenance site.

Where external people, i.e. emergency services personnel, are required to access the site they would be escorted.

For operational reasons the route to the D11 site could have been changed at any time, i.e. a road closed. This would be communicated to all mine personnel through the normal communication systems as required by the SMS.

SMS Element	Key areas of interest / Inspection Guidance
SMS1: System Audit and Review	**Ref:** 1) OHS Regulations 2007, Regulation 5.3.21(3)(i) A Safety Management System must set out processes, including method and frequency, for the audit of the effectiveness of the Safety Management System against the performance standards; 2) Hazelwood Mine SMS Management System Manual, I.D. 44622/3150 issued 2510/2010, section 13 states IPRH has established, implemented and maintains an audit program and procedures for periodic SMS audits to be carried out by a competent personnel, in order to determine whether the SMS: - Conforms to planned arrangements for OHS management including the requirements of AS4801/OHSAS18001; - Has been properly implemented and maintained; and - is effective in meeting the organisation's policy as well as objectives and targets for continual OHS improvement and provide the results to management and employees. 3) There is also an IPRH procedure I.D. 44719/3452 dated 22/10/2010 - SMS Management Review **(see A8)** that describes the method used by IPHR to conduct a review of the effectiveness of the SMS to achieve the objectives of the business and to comply with the requirements of AS/NZS 4801/OHSAS 18001 for ongoing certification. **Note:** There is a three yearly internal Health and Safety audit program schedule. Obtain a copy of the program, the results and corrective actions of the last audit. IPRH has a Safety Management System Audit Procedure and a Management Review Procedure. Obtain a copy of these procedures. 4) It is a requirement under AS4801 certification to conduct at regular intervals a documented Management review of the SMS. SMS Safety Management Plan, I.D. 42127/37721 issued 12/05/2010 **(see A4.1- 0)**, states that there was to be 2 reviews of the SMS in 2010 conducted by managers. **Purpose:** a) Auditing is the main means the mine uses to assure itself that its systems are current and functioning effectively. b) Review is required to ensure its continuing suitability, adequacy and effectiveness. **Performance:** As per audit and review procedures and SMS Safety Management Plan 2010. ***Implemented:*** 1. An audit program exists and it is implemented. 2. An audit methodology exists. 3. Results of audits and recommendations have been recorded and acted up on. 4. 2 reviews are carried out by managers in 2010. ***Functional:***

	1. The audit methodology is applied as intended. 2. Audits incorporate workplace observations and inputs from a representative sample of employees to confirm the effectiveness of the system. 3. Deficiencies highlighted by audits are prioritized and progress is monitored to ensure that corrective actions are implemented. 4. Employees are informed of the audits and reviews results and corrective actions.

Findings (Fact & Opinion)

Implemented

1. NCS International conducted a scheduled Surveillance/Verification audit of IPRH SMS in October 2010 to ensure ongoing compliance with AS/NZS 4801/OHSAS18000 and ISO 31000. A copy of the audit report was provided **(see A11).**

2. Inspectors were given a copy of the current Internal Safety Management System & Legislative Compliance Audits procedure version 1.1 **(see A22)** issue date 18/1/2011. This procedure lists an audit program.

3. Inspectors were shown the current internal audit schedule listed within the above procedure **(see A22)**. The schedule relates to internal auditing of high risk work activities e.g. Work at heights. No evidence was provided to determine if internal audits were completed as per schedule. The procedure notes that a full SMS audit is required every three years and is scheduled to occur in the fourth quarter of 2011. The methodology of audits is based on AS/NZS 4801/OHSAS 18001.

4. External auditing is undertaken by a third party. A copy of the last external SMS Audit Action Plan was provided **(see A21)** dated October 2010. Inspectors were informed that the actions have been entered into Paradigm (electronic tracking system/data base). This database assists with the implementation of corrective actions identified as a result of audits. At the time of the audit no completed action print out could be provided to the inspectors as evidence that corrective actions have been completed or are being monitored. Further, no evidence was available to determine that the site conducts verification of the effectiveness of the actions.

5. A Safety Blimp (documented safety message) No: 224, dated November 2010 **(see A10)** was issued to all employees both electronically and via notice boards. The message relayed that an external audit was conducted in October 2010 and summarized the findings.

6. A copy of the Safety Management Plan 2010 was prepared in line with the SMS Identification & Setting of Objectives & Targets **(see A4 - 0).** In preparing the objectives all legislative requirements were not considered.

Functional

1. The NCS International certification audit states that " The hazard identification, risk assessment and implementation of operational controls are not yet fully effective at the Mine as found from the following findings.....**(see A11)** page 12 of the audit report.

2. The OHSE Manager stated to Inspectors that it is IPRH's intent that the audit procedure is reviewed to include more mine related activities. E.g. no scheduled auditing was listed for MMH controls.

3. Audit actions are entered into Paradigm. External Auditors track actions and report on status, in report titled Quality Management Internal Audit Report Status **(see A24).** However, no evidence was available to determine the status of internal actions. OHSE

Manager stated he was speaking with IT to extrapolate a report which would then be forwarded to the Inspector.

4. A management team reviews SMS on regular basis. A copy of a review report titled SMS Management Review dated October 2010 was obtained **(see A12).**

5. No evidence was provided that audits incorporate workplace observations and input from a representative sample of employees to confirm the effectiveness of the system. IPRH has introduced a formal review of some elements of IPRH SMS in this instance the review of incidents report. The first review was undertaken (after WorkSafe intervention) and was in relation to the D25 Batter Slip. It should be noted that a review by an internal or external expert in the filed should be included.

6. No evidence exist that all legislative requirements were considered re Safety Assessments.

7. In preparing the objectives of the Safety Management Plan all legislative requirements must be considered.

Status (Yes/In Part/No - include explanation)

Implemented: YES

Functional: IN PART (3)

It appears that external auditing is undertaken every six months on elements of the SMS. Internal auditing lacks report status, review of any actions and effectiveness. In addition to this, scheduling of these internal auditing activities (that is designed help measure the effectiveness of the SMS) is not clear.

External auditing has not scrutinized the mine's compliance with the Occupational Health and Safety (2007) regulatory requirements as per AS/NZS 4801:2001 part 4. OHSMS Legal and Responsibility Requirements.

Opportunities for Improvement

Recommendations:

1. A clear set of SMS performance standards should be developed and implemented to help measure the effectiveness of the SMS as per Regulation 5.3.21(3)(g).

2. Audit Procedure should list the method on how to provide information on the results of audits, including actions, to management, and employees as per AS4801 requirements.

3. Audit Procedure schedule should be evaluated in line with OHS Annual Plans to determine IPRH meets its regulatory requirements for testing risk control measures for MMHs.

4. External Audit AIMS status reports are tracked **(see A24)**. Develop internal audit status/tracking reports to ensure that auditing is completed as per schedule.

Comments from the Operator on the Findings and Required Actions

The external auditing company has not "scrutinized the mine's compliance with the Occupational Health and Safety (2007) regulatory requirements". This is an incorrect finding as the purpose of the Independent Audit is to validate the business compliance with multiple regulatory and legislative requirements through regular sampling of various aspects of our systems. As the auditor is independent and maintains its own accreditation by being independent, IPRH have very little influence as to how a fully accredited independent auditor tests our accreditation, as any undue influence would invalidate the independence of the

auditor. The process of selecting an independent auditor competent to test all aspects of business compliance is in place.

The internal audits are determined annually by the Quality Assurance Manager in conjunction with senior management. This is documented within the business management systems. Again, these are random samples meant to test our systems in area where management perceive weakness. Reports and actions from internal audits are managed within the same system as reports and actions from the independent auditor.

The SMS specifically requires targets to be developed and reviewed annually (see Paradigm document "SMS Identification & Setting of Objective Targets")

There is review of audits and actions (see Paradigm document "SMS Management Review")

Checks on regulatory compliance are also conducted (see Paradigm document "SMS Evaluation of Risk Control Measures"). The whole MMH process is still in development, including the necessary auditing required under the regulations. MMH's are specifically being incorporated into our internal audit schedule.

SMS Element	Key areas of interest / Inspection Guidance
SMS2: Roles and Responsibilities	**Ref:** 1) Regulation 5.3.25 Safety Role for Employees in relation to section 5. Site Location and Specification of the D11 Underframe Pivot #1 and #3 Replacement, Draft 4.0, printed 08/12/2010 **(Changed to Pivot 3 Replacement due to cracks in the D11 structure)** 2) SMS Roles and Responsibilities, ID 44721/3233 issued 22/10/2010. 3) Outage Management – D11 Outage 2011. 4) D11 Underframe Pivot #1 and #3 Replacement, Draft 4.0, printed 28/12/2010. 5) Bow-tie Diagram – Jacking of Plant – SQRA Date 3 March 2010. 6) Inspection and Test Plan – D11 Underframe Pivot #1 and #3 Replacement, Draft 4.0, printed 28/12/2010. **Purpose:** To ensure that those involved in the Jacking of D11 have clear understanding of their roles and responsibilities to: 1. perform allocated jobs during jacking in safe manner; 2. assist operator of the mine in complying with Regulation 5.3.25(1)(a) to (d). **Note:** *There is no documented evidence that specific roles have been developed for employees under 5.3.25(1)(a) to (d) for D11 Jacking.* *The accountabilities for all-individual roles and responsibilities with IPRH's SMS are defined in the IPRH Accountability Matrix [Para-Link] that is located in 01 Management Systems/Certified Management Systems/SMS.* **Performance:** ***Implemented:*** 1. Employees have been given and trained in the use of hazard identification tools e.g. JSA. 2. Employees have been trained in the development and implementation of SA of MMH. 3. There is a specific procedure for employees to follow during Jacking of D11 re testing of control measures. ***Functional:*** 1. Employees participated in the hazard identification using specific tools. 2. Management reviewed the quality of completed hazard identification tools. 3. Employees participated in the SA of Jacking D11. 4. Employees conducted or participated in the testing of control measures.
Findings (Fact & Opinion)	
Implemented	

1. Persons engaged in work at the Hazelwood mine site undergo the full site induction which instructs people in the requirements/use of the hazard identification tools e.g. JSA. IPRH training module Job Safety Analysis Training, dated March 2010, **(see A6)** was provided to demonstrate the training provided in house. Inspectors chose two Fitters who are expected to be involved in the Jacking to of D11, to check competencies and training records. Evidence was viewed on live training database and copies printed which show both employees have completed JSA training and may be viewed in **(A17; A18)**.

2. There is no evidence that the management reviews completed JSAs. Such reviews should provide important feedback during JSA Refresher Training. It is also noted that the training material does not contain examples of correctly and incorrectly completed JSA.

3. Further training is undergone by permanent employees of IPRH in the MMH (An Introduction to Major Mining Hazards and their Controls at Hazelwood Mine, undated **(see A3)**. Records show that employees have signed attendance sheets to record their participation in the 1 day MMH introduction training session. Training files and Paradigm training database show both Fitters (see above point) attended MMH training. Inspectors were advised that the Senior Project Manager responsible for the D11 Jacking also attended MMH introduction training. However, no evidence was provided at the time of the verification that the Senior Project Manager was involved in the development of the SA for MMH – Jacking.

4. The standard Jacking D11 Procedure **(see A38)** procedure exists. The procedure does not provide a clear list of actions for responsible persons. Inspectors were advised that a detailed JSA will be developed from the procedure for the D11 outage. A JSA was obtained **(see A35)** and reviewed (see comments under Control Measure CM2). The JSA was completed and procedure reviewed on the 19th of February 2011. No evidence was provided (by Employees or Management) to indicate that the JSA is being reviewed on a daily basis as per D11 Outage Action List **(see A25)** which allocates a responsibility to J Macaffee to review the JSA on a daily basis.

The procedure for Jacking D11 **(see A38)** was sighted at the D11 Outage site and was verified as being readily available to employees. The procedure does not provide or list specific roles and responsibilities for employees, however the content and detail provides a clear step by step description for safely jacking the machine. In addition to this, the procedure details specific controls to minimise the risk of plant collapse whilst jacking, e.g. maintenance pad preparation 1:300 gradient, considerations for extreme wind and inadvertent plant movement (chocking crawlers) etc...

The Inspection Test Plan (ITP) at D11 outage site (found at the back of the Jacking procedure) had NOT been filled out, dated and signed off at the critical activity points.

Functional

1. Employees have not yet participated in hazard identification for the D11 outage. It is expected that a JSA will be done for all D11 outage works in consultation with workers. There is no evidence that the quality of completed JSAs was reviewed and correlated with the quality of a JSA refresher training that is provided to employees to ensure it's relevance and effectiveness..

2. The Senior Project Manager for the D11 outage works provided a D11 Outage Action List **(see A25)** which allocates a responsibility to J Macaffee to review the JSA on a daily basis.

3. No evidence provided at the time to confirm employees participated in the SA for the Jacking.

4. No evidence that employees conducted or participated in the testing of control measures for the Jacking.

Status (Yes/In Part/No - include explanation)

Implemented: IN PART

Functional: IN PART (2)

The Safety Management System does not provide a comprehensive and integrated management system for all aspects of this SMS element/control measures adopted because the SMS element Roles and Responsibilities exists but:

- Some key components of this SMS element have not been implemented, and

Auditing activities have not been developed or have been ineffective in identifying issues with implementation.

Opportunities for Improvement

Recommendations:

1. In line with other IPRH procedures (formatting) review the Jacking D11 procedure to include clear Roles and Responsibilities.
2. Consider adding value to the procedure by attaching the D11 Outage Action List as a guide for set up requirements for future works
3. Audit/Review the D11 Outage Action List and ensure that the relevant actions listed are/have been assigned and completed.
4. Review the MMH for Jacking against the Jacking D11 procedure to ensure controls are listed.
5. Ensure all personnel assigned roles and responsibilities within Inspection Test Plans (ITPs) are fulfilling these responsibilities and are completing each activity and that they are actioning all control points accordingly.

Comments from the Operator on the Findings and Required Actions

The understanding of a correctly completed JSA is very subjective. While IPRH does provide feedback to groups on completed JSA's, there is no specific JSA for a common mine maintenance activity included in our training presentation.

As stated previously our JSA training course will be reviewed as a result of this verification report.

A review of the MMH Bowtie, and Controls for Heavy Jacking will be undertaken in conjunction with the MMH process review. IPRH Management have committed to this as part of our ongoing review process, as required in our SMS.

SMS Element	Key areas of interest / Inspection Guidance
SMS 3: Maintenance System	**Ref:** 1) OHS Act 2004, section 21(2)(a) – the employer to provide or maintain plant that is, so far as reasonably practicable, safe and without risks to health. 2) Hazelwood Asset Management Plan, International Power, June 2009, Part 4 – Operating Plant, section 4.1.3. 6, Dredger No.11. 3) Dredger No.11 – Independent Structural Inspection, January 2009. **Purpose:** To ensure that used plant operates in a safe manner. **Performance:** The Mine must have a record of key performance indicators for D11 that demonstrate that D11 is safe to work on and operates in safe manner. ***Implemented:*** 1. Maintenance strategies have been developed. 2. Independent Structural Inspections have been carried out as per established schedule. 3. Engineering faults and defects are reported. ***Functional:*** 1. Strategies have been implemented. 2. Reduction in number of faults identified by an independent inspector and backlog of works identified from previous ISI. 3. Engineering faults and defects are reported are repaired in timely manner. 4. Faults and defects that impact or have a potential to impact on OHS are identified, risk rated and acted upon accordingly.

Findings (Fact & Opinion)

Implemented

1. Maintenance strategies have been developed for the continued safe operation and reliability of Large Mining Equipment (LME). WorkSafe was informed that these strategies include a number of 'sub' systems including:

- Condition Monitoring;
- Routine Maintenance;
- Safety Device Testing (SDT);
- Independent Structural Inspections;
- Safe walk inspections including daily operator checks;
- Fresh eyes; and
- Continuous Improvement strategies.

These 'sub' systems input and drive the maintenance system.

2. IPRH produces an Asset Management Plan annually. WorkSafe inspector sighted the Hazelwood Asset Management Plan, International Power June 2009 for D11 9 **(see A3 - 0)**. The Asset Management Plan for 2010 was not produced at the time of the verification. The 2009 Plan contains: Significant Maintenance History, ISI Fault List, Issues and Strategies for the structure and major components. A number of concerns are expressed in relation to the

latest ISI that identified 54 items that require attention in addition to a backlog of works identified from previous ISIs. The strategies attempt to address the issues from the reliability and integrity points of view, but neither ISI nor strategies have a safety component or an assessment that states that the dredger is safe to operate use or conduct dredger maintenance.

3. Independent Structural Inspections (ISI) have been carried out as per the established schedule. WorkSafe were informed that ISI are required to be conducted every two years (as per German specifications and Industry practice). IPRH provided to WorkSafe via email, (prior to verification) a document titled "Dredger No. 11 Independent Structural Inspection", dated January 2009. WorkSafe were also informed that due to the complexity of issues surrounding 'ageing plant', a strategy has been developed that now incorporates (an additional) annual Independent Structural Inspection. The next scheduled ISI for Dredger No. 11 is set for February 2011.

4. Engineering faults and defects are reported and recorded via the number of 'sub' systems as documented in dot point no.1. These defects are prioritized and work orders are generated through the maintenance system via "Maximo" (MMS).

Functional

1. Maintenance strategies have been implemented. The verification focused on ISI strategies, and it was observed **(see A26)** that 21 of the 51 defects identified have now been rectified. Inconsistencies have been found between document **(A26)** ISI Summary sheet and the document titled "Dredger No. 11 Independent Structural Inspection", dated January 2009. These are highlighted in the table below.

Category Description	Defects reported as per ISI document.	ISI Summary sheet (A26)
A	0	0
B	16	13
C	4	3
D	7	8
E	25	27
Total	52	51

2. A total number of 51 faults were identified **(see A26)** during the last ISI conducted in Jan 2009. Total number of outstanding defects is 20 with a further 10 requiring ongoing monitoring indicating a reduction of 21 defects within the two year period. Random samples of previous defects identified in 2008 appear to have been addressed. Evidence of ongoing monitoring of a randomly selected defect was provided **(see A32, A33 and A34)**.

3. Twenty one (21) defects were repaired in the two year period (2009/2011). WorkSafe was unable to determine whether these defects had been addressed in a timely manner as the defects contained within the ISI report (held by IPRH) had been manually signed off en masse in May 2010. WorkSafe found this system to be cumbersome and labor intensive as work order numbers were not listed on the original defect page (in ISI report) The tracking of completed actions/work orders requires a manual search through the work order system. It was noted that Management suggested it would be easier/quicker to visually inspect the listed defect on site, on Dredger 11 to verify if the defect had been repaired.

4. A number of defects noted within document titled "Dredger No. 11 Independent

Structural Inspection", dated January 2009 contains defects including (but not limited to) - broken knee rail, loose and corroded bolts on stairways and landings and corroded grid mesh that appear to impact or have a potential to impact on OHS. If ISI inspections are to be utilised to identify/quantify safety related hazards and defects then:

- The overall risk ranking "Category of Non Conformance" requires clarification to reflect what risk the external ISI expert is trying to identify e.g. risk to Health and Safety, risk to plant reliability and production or risk to environment.

The ISI report appears to have only addressed corrosion issues relating to plant and reliability risk.

Status (Yes/In Part/No - include explanation)

Implemented: YES

Functional: NO (3)

The SMS does not contain a description of the maintenance system to ensure that the legislative requirements of the Occupational Health and Safety Act 2004 21(1) and 21(2)(a) (Employer duties to provide or maintain plant) is being monitored for effectiveness.

The Safety Management System does not provide a comprehensive and integrated management system for all aspects of this SMS element/control measures adopted because:

- The SMS element and key components are all present, but are not being used to manage the control measure, i.e. use of other system not included within the Mine SMS.

Furthermore, auditing activities surrounding the ISI system have not been developed.

Opportunities for Improvement

Recommendations:

1. IPRH must consider implementing a description of the maintenance system or a system element within the SMS to monitor the effectiveness of the maintenance system, ensuring compliance with the Occupational Health and Safety Act 2004 S21(1) and S21(2)(a) (Employer duties to maintain plant) i.e. how is this being achieved and monitored? E.g. QA Manual for Large Open Cut Machines.

2. It would enhance the effectiveness of the ISI process if IPRH implements a system to formally track completed and uncompleted actions arising from defects identified through the ISI process.

3. If the ISI process is to be utilized for identifying defects that relate to OHS (as stated by IPRH) then the defects must be risk ranked and categorised accordingly.

4. IPRH should consider categorizing the risk associated with identified defects (OHS, Plant Reliability, and Environment) as this will reduce the confusion as to what risk the Independent Inspector is trying to identify.

5. Defects identified through the ISI process must be risk ranked in accordance with a risk ranking methodology that is utilized by IPRH, to eliminate confusion and any inconsistencies.

6. Defects identified through the ISI process must then be addressed in a timely manner. If the defect is not/or will not be repaired within the recommended time frames, IPRH must justify and document the reasons and other alternative courses of action to address the defect e.g. limiting operation of machine/speed/movement, limiting access through the use of barricading etc as per the QA Manual.

7. Defects that have been identified as an OHS risk must have work orders developed and be given the highest priority (as per IPRH) policy. These defects can then be tracked through the 'H&S WO History' as provided to WorkSafe **(see A31)**. Furthermore these 'outstanding' OHS defects could then be reported at the Mine Health and Safety Committee meeting. This would assist IPRH in complying with **S35** of the Occupational Health and

Safety Act 2004 - Duty of Employers to consult with employees. 8. IPRH must develop an auditing process to ensure defects identified through the ISI process are being addressed in a timely manner.
Comments from the Operator on the Findings and Required Actions
ISI faults are reviewed for OH&S impact. ISI faults are placed in Maximo and where so assessed, designated OH&S. OH&S faults in Maximo are reviewed & scheduled regularly by the mine maintenance planners. OH&S faults are discussed at each monthly mine OH&S meeting.

SMS Element	Key areas of interest / Inspection Guidance
SMS 4: Incident Investigation and Reporting	**Ref:** 1) Incident investigation and Reporting Procedure I.D. 43767/35510 issued 25/10/2010. 2) SMS Safety Management Plan 2010 item 5.1 **Note:** The list of engineering related incident is in Attachment C. **Purpose:** Effectively manage and investigate incidents at IPRH to prevent their reoccurrence. **Performance:** ***Implemented:*** 1. The incident investigation process is implemented. 2. Accountabilities and responsibilities under this procedure are developed and allocated. 3. Special incident investigation techniques are used if required, re section 5 of the Incident Investigation and Reporting. 4. Results of incidents investigations have been recorded and acted up on. ***Functional:*** 1. The incident investigation process is applied as per section 5 of the Incident Investigation and Reporting Process: a) Gathering of Evidence; b) Incident Cause Analysis Method is used for more detailed level of investigation 2. Employees and supervisors are involved in incidents investigation as per Accountabilities and Responsibilities section on page 11 of the Incident Investigation and Reporting. Interview a representative sample of employees and supervisors and review 2 to 3 incidents reports to confirm the effectiveness of this Element. 3. Divisional Managers/Directors: a) Review incidents and ensure the appropriate level of investigation has occurred; b) Verify that corrective actions are implemented in timely manner.

Findings (Fact & Opinion)

Implemented:

1. IPRH have developed and incident investigation process and provided it to WorkSafe (prior to verification) a document titled "Incident Investigation and Reporting" dated 25/10/2010.

2. Specific accountabilities and responsibilities under this procedure have been developed (see page 11 of document titled "Incident Investigation and Reporting" dated 25/10/2010.

3. Special incident investigation techniques are used if required re section 5 of the Incident Investigation and Reporting procedure. IPRH informed WorkSafe that depending on the category of the incident, the Incident Management System (IMS) or the Incident Cause Analysis Method (ICAM) will be utilized. The OHS Manager informed WorkSafe that there are no defined criteria to determine when the different techniques are utilized. At present, the

OHS Manager decides the technique that is to be utilized.

4. Investigation outcomes and results are recorded on IPRH systems including the IMS and Paradigm. A report can then be generated on all outstanding actions arising from investigations or audits (RAG report) and this report is also reviewed at Senior Management level. An example was obtained **(see A7 and A24)**. A random incident 'Finger Injury' was tracked and found to be consistent with the process as described. However another incident 'D25 Batter Slip' does not detail an Incident/audit description and states that 2 of 11 actions are overdue. The action status indicates orange, meaning that the actions are 'at risk' of being overdue. Another incident involving the 6.6kV trailing cable being crushed between the rail end stop and tripper carriage wheel - Investigation status, actions determined and action status are all at risk of being overdue.

Functional:

1. The incident investigation process is applied as per section 5 of the Incident Investigation and Reporting Process:

(a) Gathering of Evidence - this requirement is achieved via a number of different methods including:

- Site observations;
- Interviews with relevant employees, supervisors and Managers;
- Analyzing data and records e.g. time and space;
- Reviewing the current standards and site procedures;
- Relevant technical expertise input.

Three incident investigations were reviewed **(see A1, A2 and A4)**, all provide examples of the above mentioned evidence gathering.

(b) Incident Cause Analysis Method (ICAM) is intended to be used for more detailed level of investigation - the three incident investigations provided are examples of IPRH ICAM investigations. The formatting of the three investigations appears to be inconsistent, however all investigations included techniques as described above 'Gathering of Evidence'

Conclusions and recommendations appear to be drawn from the factual information gathered from the investigation process, however a more detailed approach to investigation **(see A4)** should be considered. E.g. Incident Investigation titled "TS2 Collision with Dozer", Dec 2011 **(see A4)** details a number of 'potential causes' and 'recommendations' including cameras not working, and reporting of faults yet the 'conclusion' states "The operator of TS2 made a mistake by not remaining aware of the other plant item on the overburden dump".

2. Employees and supervisors are involved in incident investigations as per Accountabilities and Responsibilities section on page 11 of the Incident Investigation and Reporting procedure. Enquiries with a random sample of employees and supervisors indicated that they are aware of their responsibilities regarding incident investigation and reporting. These responsibilities include (but is not limited to):

- Immediate reporting;
- Site preservation;
- Notification to H&S Manager;
- Employee roles RE: Incident Investigation - interviews and participation.

However the responsibility of the supervisor to form and lead an appropriate Investigation Team is unclear. Enquiries with H&S Manager revealed that a line supervisor is responsible for input into the IMS (but it would be unlikely that they would form an investigation team to conduct an ICAM investigation. Furthermore, (as stated earlier), the OHS Manager informed WorkSafe that there are no defined criteria to determine when the different techniques IMS

or ICAM are utilized. At present, the OHS Manager decides the technique that is to be utilized.

Mine Senior Management also confirmed that it is unlikely that a line supervisor would form and lead an investigation team.

WorkSafe was also informed that the Mine has recently set up a new management group titled "Projects, Compliance, Investigation and Outage (PCIO) group". A key responsibility of this group is to form, lead and conduct investigations into incidents at the Mine.

3. Divisional Managers/Directors:

(a) Review incidents and ensure the appropriate level of investigation has occurred and

(b) Verify that corrective actions are implemented in timely manner.

WorkSafe was informed that presently the OHS Manager decides the technique that is to be utilized (IMS or ICAM) and to ensure that the appropriate level of investigation has occurred - also see comments re: PCIO group in point 2 (above). IPRH also informed WorkSafe that Senior Line Managers review incidents and verify that corrective actions are implemented in a timely manner. A number of process are involved and include:

- Reporting and updating of incident progress at weekly staff meetings;
- Reporting and reviewing of incidents, and resultant actions at monthly OHS Committee meetings; and
- Reviewing and tracking of actions through the monthly Senior Management meetings (reporting on RAG report status).

Furthermore, the three sample incident investigations obtained indicate the Senior Line Management have either reviewed or approved the investigations. This was also confirmed through enquiries with Senior Line Management.

Other Observations:

1. Incident Investigation titled "TS2 Collision with Dozer", Dec 2011 **(see A4)** details a number of 'potential causes' and 'recommendations' including cameras not working, and reporting of faults yet the 'conclusion' states "The operator of TS2 made a mistake by not remaining aware of the other plant item on the overburden dump".

Visibility was also poor, the incident occurred at approx 0230hrs and it was reported that it was raining quite heavily.

If the cameras were fully functional, and monitors were available for viewing all operational cameras, the operator would have had a greater chance of seeing the parked dozer.

The statement, "The operator of TS2 made a mistake by not remaining aware of the other plant item on the overburden dump" directly contradicts a statement found in the Incident Investigation and Reporting procedure, page 3, "It is not the purpose of any investigation to apportion blame to individuals". The investigation should be an impartial, objective, non-judgemental exercise in establishing and analysing the facts of the incident".

2. Incident/near miss process on page 8 of the Incident Investigation and Reporting procedure details a step by step description requiring steps that the supervisor must follow. Enquiries with site personnel revealed that these steps *may* be followed by Senior Line Managers, not supervisors as they are unaware of the exact nature of the process. Most notable:

- Compile relevant information, evidence, witness, photos etc...
- Identifying the primary category of business impact;
- Identifying the severity of the incident; and
- Determining the level of incident.

It appears through enquiries with site personnel that the process as detailed in the above mention procedure is not properly followed by the personnel listed with the accountabilities and responsibilities.

Status (Yes/In Part/No - include explanation)

Implemented: IN PART

Functional: NO (1)

The SMS element Incident Investigation and Reporting does not provide a comprehensive and integrated management system for all aspects of Incident Investigation because:

- The SMS element and key components are all present but are not being used as intended/or designed to manage the issue or control measure that it is designed to support.

There was a number of WorkSafe incident management interventions aiming at improving the Mine's incident management.

Opportunities for Improvement

Recommendations:

IPRH must review the Incident Investigation and Reporting procedure to:

- Include consistent terminology in line with the IPRH org chart e.g. Mining Director, Managers, Superintendents, Supervisors, Team Leaders etc...
- Establish clear accountabilities and responsibilities for the above mentioned positions;
- Include a description of the recently formed PCIO team, include accountabilities and responsibilities assigned to this team;
- Develop criteria that guides/determines the level of investigation required (IMS/ICAM); and
- Remove all references to old legislation and include reporting requirements for mine related incidents.

Further, IPRH should review the TS2 Collision with Dozer Incident and ensure that the investigation follows the Incident Investigation and Reporting procedure e.g. "The operator of TS2 made a mistake by not remaining aware of the other plant item on the overburden dump" directly contradicts a statement found in the Incident Investigation and Reporting procedure, page 3, "It is not the purpose of any investigation to apportion blame to individuals". The investigation should be an impartial, objective, non-judgemental exercise in establishing and analysing the facts of the incident".

Comments from the Operator on the Findings and Required Actions

The health and safety incident reporting procedure has been reviewed, with old references updated The business incident reporting system is being reviewed to include criteria as to what level of investigation should be conducted.

Other comments not directly related to the verification

Observations:

Quality Management Internal Audit Report Status **(see A24)** details and audit title 'Lifting Equipment Register (LER)' and audit scope 'Assessment of the process involved in maintaining the accuracy of the LER'. At D11 outage site - a random sample of lifting equipment observed (stored in the onsite sea container) was 'out of inspection date'. The color code for 2011 is bronze. The color coding on the lifting equipment sighted included white (2010) and green (2009). Furthermore, some of the equipment was not tagged or color coded. "Lifting Plant and Equipment Procedure" dated 16/03/10 was sighted and contained errors most notably, the document incorrectly stated that the color code for 2011 was blue.

WorkSafe issued an Improvement Notice **(see C2)** to ensure that IPRH create a register of the lifting equipment, and schedule and conduct inspections / test at the intervals recommended by the manufacturer, as specified in the relevant Australian Standard and as stated in "Lifting Plant and Equipment Procedure" dated 16/03/10.

Recommendation:

WorkSafe have also recommended that the "Lifting Plant and Equipment Procedure" dated 16/03/10 be reviewed and revised to ensure that the appropriate colour code is applied.

Comments from the Operator on the Findings and Required Actions

This error in our system has been corrected.

ATTACHMENT B – Verification findings tool – for information only

Control measures findings

Implemented	Functional	Level	Description
No	No	0	Control does not exist (at all) as described by the Mine
In Part		1	Key components required for the control to prevent the MMH are missing
Yes		2	Control exists as required but is not working or not being used
	In Part	3	Control exists as required but is: • not effective at controlling the MMH and/or • not properly performance monitored / tested
		4	Control exists, is effective and is performance monitored but does not meet its performance standard
	Yes	5	Control fully implemented and fully functional

Safety management system findings

Implemented	Functional	Level	Description
No	No	0	The operator of the mine has not established and implemented a Safety Management System that supports selected control measures because: • The SMS element does not exist at all or is not directly relevant to the mine Performance standards for measuring the effectiveness of the Safety Management System have not been developed
In Part	No	1	The Safety Management System does not provide a comprehensive and integrated management system for all aspects of control measures adopted under regulation 5.3.21(3)(b) because the SMS element exists but: • Key components of the SMS element required to manage the control measure are missing such as lack of maintenance, inspection or training systems, or • Key components are present but are not being used to manage control measures, i.e. a process that sits outside the formal SMS system is being used to manage the control measure, or • Those aspects of the SMS element which have been implemented have been demonstrated to not be functional. • Performance standards for measuring the effectiveness of the

			Safety Management System may have been developed, but they have not been undertaken to a satisfactory level. Auditing activities have not been developed or have been ineffective in identifying issues with implementation.
In Part	In Part	2	The Safety Management System does not provide a comprehensive and integrated management system for all aspects of control measures adopted because the SMS element exists but: • Some key components of the SMS element have not been implemented, and • Those aspects of the SMS element which have been implemented have been demonstrated to functional. • Performance standards for measuring the effectiveness of the Safety Management System have been developed covering those aspects of the SMS element that have been implemented and monitoring has been undertaken. Auditing activities have been developed, effectiveness in identifying issues with implementation/functionality range from ineffective to fully effective.
Yes	No	3	The Safety Management System does not provide a comprehensive and integrated management system for all aspects of control measures adopted because: • The SMS element and key components are all present but are not being used to manage the control measure, i.e. use of other systems not included within the Mine SMS. • Performance standards for measuring the effectiveness of the Safety Management System have not been developed. Auditing activities have been developed, effectiveness in identifying issues with implementation/functionality range from ineffective to fully effective.
Yes	In Part	4	The Safety Management System does not provide a comprehensive and integrated management system for all aspects of control measures adopted because: • The SMS elements and key components are present, are being used and performance standards have been developed but; • The performance is not being monitored in accordance to the criteria detailed within the Mine SMS. Auditing activities have been developed, effectiveness in identifying issues with implementation/functionality range from ineffective to fully effective.
Yes	In Part	5	The Safety Management System does provide a comprehensive and integrated management system for all aspects of control measures adopted, however: • Performance monitoring activities indicate that the SMS is not meeting its required performance standard, and • Corrective action has not been developed or implemented Auditing activities have been developed but are deemed to be only

			partially effective in identifying issues with implementation/ functionality.
		6	The Safety Management System does provide a comprehensive and integrated management system for all aspects of control measures adopted because SMS elements are implemented and are demonstrated to be effective by: • Performance monitoring activities that indicate the SMS is meeting its required performance standard, or • Performance monitoring activities indicate that the SMS is meeting its required performance standard, or where monitoring indicates deficiency in performance, that corrective action(s) have been developed, and monitored for implementation and effectiveness. Auditing activities have been developed and have been effective in identifying any issues related to implementation/functionality.

ATTACHMENT C – ADDITIONAL INFORMATION

C1 Plant Related Incidents at International Power Hazelwood - Mine, MIN5004, Apr 2008 - Dec 2010

DATE	INCIDENT
1) 11/12/2008	Bucket Wheel Excavator slowly rotated when liners were being replaced -utilizing a crane. The crane rope entangled with BW.
2) 02/03/2009	Hopper H1802 'runaway' - hopper traveled uncontrolled 960m - employee jumped out just prior to collision.
3) 20/04/2009	Stacker TS2 RHS conveyor 5t drive fallen off mounts onto walkway.*
4) 26/04/2009	LV collision with conveyor counterweight tower-access road, lighting maintenance issues.
5) 26/06/2009	D11 BWB collision driver's cabin with batter.
6) 28/07/2009	Contractor injury (laceration to hand) whilst belt splicing.
7) 24/08/2009	Hopper H1828 collision with slew conveyor S94.
8) 25/08/2009	Hopper H1815 collision with slew conveyor S96.
9) 03/09/2009	Dozer/LV collision during recovery.
10) 08/10/2009	Maintenance works in jungle area when conveyor chute adjacent to work party became blocked spilling coal near work party.
11) 20/10/2009	D11 LHS Bucket Wheel Excavator (Blind side) slewed into batter damaging walkway and gear box oil pump.
12) 12/11/2009	D24 Collision with S96 slew conveyor.
13) 11/04/2010	Employee severed finger on D9 cat1.1 whilst fault finding faulty u/s device.
14) 08/12/2010	Stacker 'slewed' and collided with dozer - dozer driver not in cabin at time of collision.

C2 Entry Reports and Improvement Notice issued

V01017400156L	28/02/2011
V01017400156L/111-01	(Improvement Notice)
V01017400153L	21/02/2011
V01017400150L	04/02/2011
V01017400149L	03/02/2011
V01017400147L	14/01/2011
V01017400136L	09/12/2010