GOVERNMENT OF WESTERN AUSTRALIA

MINISTER FOR THE ENVIRONMENT; SCIENCE

Statement No.

000679

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (PURSUANT TO THE PROVISIONS OF THE ENVIRONMENTAL PROTECTION ACT 1986)

MARILLANA CREEK (YANDI) LIFE-OF-MINE PROPOSAL
MINING LEASES 270SA & 47/292, 90 KM NORTH-WEST OF NEWMAN
SHIRE OF EAST PILBARA

Proposal:	Life-of-mine proposal to mine iron ore within Mining Leases 270SA and 47/292 at a rate of approximately 45 million tonnes per annum, and subsequent rehabilitation and decommissioning of the site, as documented in schedule 1 of this statement.
Proponent:	BHP Billiton Iron Ore Pty Ltd
Proponent Address:	225 St George's Terrace, PERTH WA 6000
Assessment Number:	1555

Report of the Environmental Protection Authority: Bulletin 1166

The conditions of this statement supersede those of Statements Nos. 029, 259, 357 and 405.

The proposal referred to above may be implemented by the proponent subject to the following conditions and procedures:

1 Implementation

1-1 The proponent shall implement the proposal as documented in schedule 1 of this statement subject to the conditions of this statement.

2 Proponent Nomination and Contact Details

2-1 The proponent for the time being nominated by the Minister for the Environment under section 38(6) or (7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal until such time as the Minister for the Environment has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person as the proponent for the proposal.

Published on
06 JUL 2005

29th FLOOR, ALLENDALE SQUARE, 77 ST. GEORGE'S TERRACE, PERTH 6000
TELEPHONE: (08) 9220 5050 FACSIMILE: (08) 9221 4665
E-MAIL: judy-edwards@dpc.wa.gov.au
WEBSITE: www.ministers.wa.gov.au/edwards

2-2 If the proponent wishes to relinquish the nomination, the proponent shall apply for the transfer of proponent and provide a letter with a copy of this statement endorsed by the proposed replacement proponent that the proposal will be carried out in accordance with this statement. Contact details and appropriate documentation on the capability of the proposed replacement proponent to carry out the proposal shall also be provided.

2-3 The nominated proponent shall notify the Department of Environment of any change of contact name and address within 60 days of such change.

3 Commencement and Time Limit of Approval

3-1 The proponent shall substantially commence the proposal within five years of the date of this statement or the approval granted in this statement shall lapse and be void.

Note: The Minister for the Environment will determine any dispute as to whether the proposal has been substantially commenced.

3-2 The proponent shall make application for any extension of approval for the substantial commencement of the proposal beyond five years from the date of this statement to the Minister for the Environment, prior to the expiration of the five-year period referred to in condition 3-1.

The application shall demonstrate that:

1. the environmental factors of the proposal have not changed significantly;

2. new, significant, environmental issues have not arisen; and

3. all relevant government authorities have been consulted.

Note: The Minister for the Environment may consider the grant of an extension of the time limit of approval not exceeding five years for the substantial commencement of the proposal.

4 Compliance Audit and Performance Review

4-1 The proponent shall prepare an audit program and submit compliance reports to the Department of Environment which address:

1. the status of implementation of the proposal as defined in schedule 1 of this statement;

2. evidence of compliance with the conditions; and

3. the performance of the environmental management plans and programmes.

Note: Under sections 48(1) and 47(2) of the *Environmental Protection Act 1986*, the Chief Executive Officer of the Department of Environment is empowered to monitor the compliance of the proponent with the statement and should directly receive the compliance documentation, including environmental management plans, related to the conditions and procedures contained in this statement.

4-2 The proponent shall submit a performance review report every five years following the formal authority issued to the decision-making authorities under section 45(7) of the *Environmental Protection Act 1986*, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority, which addresses:

1. the major environmental issues associated with implementing the project; the environmental objectives for those issues; the methodologies used to achieve these; and the key indicators of environmental performance measured against those objectives;

2. the level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best practicable measures available;

3. significant improvements gained in environmental management, including the use of external peer reviews;

4. stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and

5. the proposed environmental objectives over the next five years, including improvements in technology and management processes.

4-3 The proponent may submit a report prepared by an auditor approved by the Department of Environment under the "Compliance Auditor Accreditation Scheme" to the Chief Executive Officer of the Department of Environment on each condition of this statement which requires the preparation of a management plan, programme, strategy or system, stating whether the requirements of each condition have been fulfilled within the timeframe stated within each condition.

5 Decommissioning and Final Rehabilitation

5-1 Within 12 months following the formal authority issued to the decision-making authorities under section 45(7) of the *Environmental Protection Act 1986*, the proponent shall prepare a Decommissioning and Final Rehabilitation Plan to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority, the Department of Conservation and Land Management and the Department of Industry and Resources.

The objective of this Plan is to ensure that rehabilitation achieves a stable and functioning landform, which is consistent with the surrounding landscape, other environmental values and, as far as practicable, the pre-mining environmental state.

This Plan shall include:

1. A description of the key components of the mine (i.e. mining method, mine dewatering, overburden management, ore processing, ore loading and transportation, water and power supply and service infrastructure);

2. Development of a 'walk away' solution for the decommissioned mine site;

   Note: A 'walk away' solution means that the site shall either no longer require management at the time the proponent ceases mining operations, or if further management is deemed necessary, the proponent shall make adequate provisions so that the required management is undertaken with no liability to the State.

3. A description of how the project will be closed and disturbance areas rehabilitated, with consideration of the potential impacts of climate change, to fulfil the following guiding closure principles:

   Surface Water Resources

   - Maintain the overall Marillana Creek surface water flow regime (i.e. hydraulic conditions) upstream and downstream of the diverted sections of Marillana Creek, within mining lease 270SA;
   - Maintain the integrity of the Marillana Creek surface water resource during operations and post-closure by construction of permanent diversions and training bunds;
   - Minimise the diversion of Marillana Creek and utilise other natural drainage lines where practicable;
   - Design diverted sections of Marillana Creek to function as a fluvial system in a similar manner to the existing creek system (i.e. similar hydrology and hydraulics);
   - Discharge of Iowa Creek, Herberts Creek and other northern tributaries of Marillana Creek to the mine voids following closure to ensure direct recharge of the palaeochannel aquifer with surface water flows from these creeks and tributaries; and
   - Discharge of the majority of the southern tributaries of Marillana Creek to the original Marillana Creek channel or to the diversions.

   Groundwater Resources

   - Maintain the through-flow of groundwater along the mine path through areas of overburden infill and pit lakes;
   - Maintain groundwater through-flow at the eastern boundary of mining lease 270SA; and
   - Maintain the suitability of groundwater quality in the pit lakes and within the in-filled mine path for the determined beneficial uses.

Surface and Groundwater Interaction

- Construct permanent overflow structures from Marillana Creek to the mine path, upstream of the Creek diversions, in order to allow surface water flow events of 1:100 year or greater to discharge to the mine voids; and
- Retain the existing groundwater recharge interaction between Marillana Creek and the palaeochannel at crossover points.

Landforms, Revegetation and Land Use

- Minimise the number and size of out-of-pit overburden storage areas and diversions of Marillana Creek;
- Retain the residual mine voids as run-of-mine where geotechnically stable, and profile to achieve long-term closure objectives;
- Use at least 90 per cent of the overburden/waste material to partially fill the mine voids and profile to maintain groundwater through-flow conditions and minimise salinity build up;
- Within the constraints imposed by the physical nature of the materials, design the final landform to be similar to the existing regional landforms;
- Design diverted sections of Marillana Creek to function as a fluvial system in a similar manner to the existing creek system (i.e. similar geomorphology and ecological processes);
- Revegetate the mine landforms to establish local native vegetation appropriate for the area;
- Use Ecological Function Analysis or an equivalent long-term systems-based monitoring approach to track the course of the rehabilitated areas towards self-sustaining status; and
- Determine the end land use for the project area in consultation with stakeholders, and agreed with the administering government authority/ies.

4. Management strategies and/or contingency measures in the event that operational experience and/or monitoring indicate that a guiding closure principle is unlikely to be achieved or any other significant environmental impact arises.

5-2 The proponent shall implement the Decommissioning and Final Rehabilitation Plan required by condition 5-1.

5-3 The proponent shall review and revise the Decommissioning and Final Rehabilitation Plan required by condition 5-1, at intervals not exceeding five years, or when significant changes occur at the mine, taking into account the rehabilitation monitoring and management required by condition 6.

5-4 The proponent shall make the Decommissioning and Final Rehabilitation Plan required by condition 5-1 publicly available.

6 Progressive Rehabilitation

6-1 Within 12 months following the formal authority issued to the decision-making authorities under section 45(7) of the *Environmental Protection Act 1986*, the proponent shall prepare a Progressive Rehabilitation Management Plan to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority and the Department of Conservation and Land Management.

The objectives of this Plan are to:

- establish rehabilitation completion criteria;
- carry out successful rehabilitation works; and
- establish a monitoring programme to demonstrate whether the criteria are being achieved.

This Plan shall include:

1. Progressive rehabilitation works (i.e. new areas) and rehabilitation management activities (i.e. maintenance of existing areas);

2. A description of how the planned works and activities have been developed with consideration and incorporation (where practicable, and having regard for site conditions) of:
   - the characteristics of the pre-mining ecosystems within the mining leases (through research and/or baseline surveys);
   - the performance of previously rehabilitated areas within the mining lease;
   - the performance of rehabilitation areas at the proponent's other operations in the Pilbara; and
   - best practice rehabilitation techniques used elsewhere in the mining industry.

3. A description of the process and timing for developing rehabilitation performance objectives, parameters and completion criteria;

4. Rehabilitation performance objectives, parameters and completion criteria once they have been developed;

5. Rehabilitation monitoring (i.e. Ecosystem Function Analysis or an equivalent long-term systems-based monitoring programme) which will be used to assess the performance of all rehabilitated areas against the completion criteria; and

6. Reporting of rehabilitation and monitoring results.

6-2 The proponent shall implement the Progressive Rehabilitation Management Plan required by condition 6-1.

6-3 The proponent shall review and revise the Progressive Rehabilitation Management Plan required by condition 6-1 at intervals not exceeding five years.

6-4 The proponent shall make the Progressive Rehabilitation Management Plan required by condition 6-1 publicly available.

7 Marillana Creek Diversion

7-1 At least 12 months prior to diversion construction of any section of Marillana Creek, the proponent shall prepare a Marillana Creek Diversion Management Plan to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority, the Department of Conservation and Land Management and the Department of Industry and Resources.

The objective of this Plan is to ensure that diverted sections of Marillana Creek function as a fluvial system in a similar manner to the existing creek system.

This Plan shall include:

1. design details and specifications of the planned diversion and associated diversion cut-off levee, high flow by-pass spill-out channel(s);

2. design details for creating appropriate transitional gradients to minimise the potential for scouring at the confluence of tributaries and the creek diversion;

3. design options for the section of Marillana Creek to be diverted. Independent technical peer review will be required:
   - to compare the various design options;
   - to ensure that the option selected is the most suitable and practicable, consistent with current best practice; and
   - to ensure that at each diversion there is continuous improvement, based on adaptive management and benchmarking against similar projects in Australia and internationally;

4. the construction programme for the creek diversion, including how the work is to be staged and progressively integrated with the mining operations and mine void overburden infill programme;

5. baseline information on water flow, water quality, geomorphology, fauna, vegetation and flora on the section of Marillana Creek to be diverted;

6. revegetation for the diversion channel using suitable riparian species and alluvial sediment sourced from the diverted section of Marillana Creek;

7. management of Aboriginal heritage matters within the planned disturbance area and vicinity of the planned diversion;

8. weed management within the planned disturbance area and vicinity of the planned diversion;

9. performance criteria for water flow, water quality, vegetation, flora, fauna, ecology and geomorphology for the creek diversion;

10. monitoring of water flow, water quality, vegetation, flora, fauna and ecological and geomorphologic integrity of the creek diversion and downstream of the creek diversion during operations and post-closure;

11. inspection and maintenance of the creek diversion and revegetation works during operations and until the objective is met;

12. findings of hydrological and hydraulic modelling, groundwater modelling, research programmes, and monitoring results to show whether the planned diversion satisfies the relevant guiding closure principles of the Decommissioning and Final Rehabilitation Plan required by condition 5-1;

13. water quality management of Marillana Creek which is consistent with the State Water Quality Management Strategy; and

14. reporting procedures and schedule.

7-2 The proponent shall implement the Marillana Creek Diversion Management Plan required by condition 7-1, employing the most suitable design option referred to in item 3, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

7-3 The proponent shall make the Marillana Creek Diversion Management Plan required by condition 7-1 publicly available.

8 Surface Water and Groundwater

8-1 Within 12 months following the formal authority issued to the decision-making authorities under section 45(7) of the *Environmental Protection Act 1986*, the proponent shall prepare a Surface Water and Groundwater Management Plan, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

The objectives of this Plan are to:

- monitor the impact of the proposal on key water parameters; and
- maintain the quantity and quality of water so that existing and potential environmental values, including ecosystem maintenance, are protected.

This Plan shall include:

1. baseline data on groundwater levels and quality within the channel iron deposit aquifer;

2. baseline data on surface water quality and flow for Marillana Creek;

3. groundwater quantity and quality performance criteria;

4. monitoring of the rate of through-flow and quality of groundwater at the downstream boundary of Mining Lease 270SA, at appropriate locations along the channel iron deposit aquifer and in the pit lakes within the project area;

5. monitoring of the effects of drawdown/dewatering on phreatophytic vegetation communities within the project area, and implementation of remedial measures if impacts are detected;

6. management measures to minimise potential impacts on riparian vegetation associated with dewatering and at the discharge point;

7. evaluation of alternative discharge locations and methodologies;

8. management measures to minimise impacts on surface water and groundwater;

9. water quality management which is consistent with the State Water Quality Management Strategy; and

10. reporting of management actions and monitoring results.

8-2 The proponent shall prepare and implement the Surface Water and Groundwater Management Plan required by condition 8-1 to be consistent with current best practice (where practicable, and having regard for site conditions) and subject to independent peer review every five years, to ensure that there is continuous improvement, based on adaptive management and benchmarking against similar projects in Australia and internationally.

8-3 The proponent shall review and revise the Surface Water and Groundwater Management Plan required by condition 8-1 at intervals not exceeding five years.

8-4 The proponent shall implement the Surface Water and Groundwater Management Plan required by condition 8-1.

8-5 The proponent shall make the Surface Water and Groundwater Management Plan required by condition 8-1 publicly available.

9 Pit Lake Salinity

9-1 At all times up to the relinquishment of the leases by the proponent, the proponent shall not cause or allow the Total Dissolved Solids concentration in any pit lake to exceed the "critical" level of 8,000 milligrams per litre on one or more occasion in each of three consecutive years.

9-2 In the event that groundwater monitoring shows the concentration of Total Dissolved Solids to be in excess of the "target" level of 6,500 milligrams per litre on one or more occasion in each of two consecutive years, the proponent shall prepare a Pit Lake Salinity Contingency Plan which incorporates corrective management measures including the time to be taken, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

The objectives of this Plan are to:

- reduce the Total Dissolved Solids concentration in the pit lake to below the "target" level; and
- maintain this reduced level for at least three years thereafter.

The abovementioned management measures shall be one or more of the following:

1. backfilling of the pit lake to above the water table;

2. diversion of surface water flow into the pit lake; or

3. any other appropriate remedial measures.

9-3 In the event that groundwater monitoring shows the concentration of Total Dissolved Solids to be in excess of the "target" level of 6,500 milligrams per litre on one or more occasion in the next year following the two consecutive years referred to in condition 9-2, the proponent shall immediately implement the Pit Lake Salinity Contingency Plan required by condition 9-2.

9-4 The proponent shall make the Pit Lake Salinity Contingency Plan required by condition 9-2 publicly available.

9-5 In the event that the proponent implements option 2 of condition 9-2, and surface waters are diverted into a pit lake and hypersaline water is allowed to flow out of the pit lake into adjoining water courses, the proponent shall prepare a Hypersaline Waters Diversion Management Plan, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

This Plan shall address potential impacts on Marillana Creek and include the following:

1. monitoring;

2. management; and

3. reporting on the impacts.

9-6 The proponent shall implement the Hypersaline Waters Diversion Management Plan required by condition 9-5.

9-7 The proponent shall make the Hypersaline Waters Diversion Management Plan required by condition 9-5 publicly available.

10 Stygofauna

10-1 Within 12 months following the formal authority issued to the decision-making authorities under section 45(7) of the *Environmental Protection Act 1986*, the proponent shall prepare a Stygofauna Investigation Plan to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority and the Department of Conservation and Land Management.

The objective of this Plan is to maintain the abundance, diversity, geographic distribution and productivity of stygofauna at species and ecosystem levels through the avoidance or management of adverse impacts and through improvements in knowledge.

This Plan shall include:

1. Subterranean fauna surveys in areas affected by mining operations to assist in establishing the conservation significance of any species within the affected areas;

2. Subterranean fauna surveys in areas with similar habitats outside the areas to be affected by mining operations to assist in establishing the conservation significance of fauna within the areas to be affected;

3. Recording and preserving of biological information on any species collected in the project area;

4. A Stygofauna Management Plan where surveys indicate that species and/or communities of conservation significance exist within the impact areas.

   This Plan shall include:

   - a monitoring programme for species and/or communities of conservation significance; and
   - details of management measures to be implemented to ensure persistence of those species and/or communities.

5. Reporting procedures and schedule.

10-2 The proponent shall implement the Stygofauna Investigation Plan required by condition 10-1.

10-3 The proponent shall make the Stygofauna Investigation Plan required by condition 10-1 publicly available.

11 Conservation of Significant Flora and Fauna

11-1 Prior to any ground-disturbing activity following the formal authority issued to the decision-making authorities under section 45(7) of the *Environmental Protection Act 1986*, the proponent shall prepare a Significant Species Management Programme to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority and the Department of Conservation and Land Management.

The objective of this Programme is to maintain the abundance, diversity, geographic distribution, conservation status and productivity of flora and fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.

This Programme shall include:

1. surveys, prior to ground-disturbing activities, where baseline surveys have identified the likelihood of significant impact (see note) on flora and fauna species, vegetation associations and habitat areas for species of conservation significance;

2. a description of the identified flora and fauna species, vegetation associations and habitat areas for species of conservation significance;

3. modification of land clearing plans and evaluation of alternative mine plans or creek diversion designs, where practicable, to minimise or avoid impacts on identified flora and fauna species, vegetation associations and habitat areas for species of conservation significance;

4. appropriate demarcation of identified populations and/or individuals of species of conservation significance or habitat areas suitable for fauna species of conservation significance in the vicinity of the disturbance areas;

5. species-specific management plans where mining or creek diversion activities are likely to impact on known locations of significant flora and fauna species, vegetation associations and habitat areas of conservation significance;

6. records of impacted flora and fauna species, vegetation associations and habitat areas of conservation significance and consultation with regulators where potential impacts on conservation significant species are identified;

7. allowance for the staging of mining operations; and

8. reporting procedures and schedule.

Note: 'Significant impact' will be determined by the Minister for the Environment acting on advice of the Environmental Protection Authority and the Department of Conservation and Land Management.

11-2 The proponent shall review and revise the Significant Species Management Programme required by condition 11-1 at intervals not exceeding five years.

11-3 The proponent shall implement the Significant Species Management Programme required by condition 11-1.

11-4 The proponent shall make the Significant Species Management Programme required by condition 11-1 publicly available.

12 Weeds

12-1 Within 12 months following the formal authority issued to the decision-making authorities under section 45(7) of the *Environmental Protection Act 1986*, the proponent shall prepare a Weed Management Plan to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority and the Department of Conservation and Land Management.

The objective of this Plan is to minimise the spread of weed species.

This Plan shall include:

1. the location, approximate number and type of each weed species which has been recorded during previous vegetation surveys;

2. weed control and eradication measures and monitoring activities to manage weeds;

3. weed species which have not been recorded within the project area, but which have the potential to occur;

4. weed control measures and/or monitoring activities to be used to minimise the potential for weed species which have not been previously recorded in the project area from entering; and

5. reporting procedures and schedule.

12-2 The proponent shall review and revise the Weed Management Plan required by condition 12-1 at intervals not exceeding five years.

12-3 The proponent shall implement the Weed Management Plan required by condition 12-1.

12-4 The proponent shall make the Weed Management Plan required by condition 12-1 publicly available.

Procedures

1. Where a condition states "to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority", the Environmental Protection Authority will provide that advice to the Department of Environment for the preparation of written notice to the proponent.

2. The Environmental Protection Authority may seek advice from other agencies or organisations, as required, in order to provide its advice to the Department of Environment.

3. Where a condition lists advisory bodies, it is expected that the proponent will obtain the advice of those listed as part of its compliance reporting to the Department of Environment.

Notes

1. The Minister for the Environment will determine any dispute between the proponent and the Environmental Protection Authority or the Department of Environment over the fulfilment of the requirements of the conditions.

2. The proponent is required to apply for a Works Approval and Licence for this project under the provisions of Part V of the *Environmental Protection Act 1986*.

3. Compliance and performance reporting will endeavour to be in accord with the timing requirements of reporting under the *Iron Ore (Marillana Creek) Agreement Act 1991*.

Dr Judy Edwards MLA
MINISTER FOR THE ENVIRONMENT; SCIENCE

Schedule 1

The Proposal (Assessment No. 1555)

The project is located approximately 90 kilometres north-west of Newman, in the Hamersley Ranges of the Pilbara Region (Figure 1).

The proposal is to mine the entire Yandi orebody within Mining Leases 270SA and 47/292, and subsequently rehabilitate all the disturbed areas. The Yandi orebody occurs within an ancient channel iron deposit, which is subdivided into a series of mine areas known as the central mesa pits (C1 to C5), eastern mesa pits (E1 to E8) and the western mesa pits (W1 to W6). As individual pits are mined, the voids will be partially filled with overburden materials from other pits within the leases.

Previous environmental approvals for the mining operation on Mining Leases 270SA and 47/292 were granted to mine E2, C1/C2, C4, C5 and W4 at a rate of 45 million tonnes per annum.

The project comprises:

- open-cut mining of overburden and ore from the channel iron deposit;
- dewatering of the orebody during mining operations;
- placement of overburden in mine voids and out-of-pit storage areas;
- processing, loading and transportation of ore;
- possible mining of the lower channel iron deposit;
- supply and distribution of power and raw materials; and
- provision of existing service infrastructure (e.g. main access roads, workshops, administration areas, accommodation village and airstrip).

Significant features of the proposal are:

- progressive mining and rehabilitation of the site;
- permanent diversion of sections of Marillana Creek; and
- permanent changes to the final landforms, including hill-like features of the out-of-pit overburden storage areas and pit lakes created in the final voids.

The key proposal characteristics are shown in Table 1.

Figure 2 shows the site layout, illustrating the outline of the iron ore resource; the location of planned mine areas; the location of mine infrastructure; and the conceptual location of the planned Marillana Creek diversions. The final location of the creek diversions will be developed and documented in the Marillana Creek Diversion Management Plan.

Table 1 – Key Proposal Characteristics (Assessment No. 1555)

Characteristic	Quantities / Description
Project life	Approximately 30 years.
Total resources	Approximately 1,420 million wet tonnes.
Overall ore production rate	Approximately 45 Megatonnes per year.
Mining method	Conventional open-cut methods (hydraulic shovels, loaders and haul trucks).
Marillana Creek diversion	Diversion of sections of Marillana Creek in order to maximise resource use in the W5 mine area and the E1 to E6 mine area will be designed and constructed in accordance with the Marillana Creek Diversion Management Plan.
Overburden	Approximately 820 Megatonnes.
Overburden stripping ratio	0.35 : 1
Pit depth	Typically 60 metres (ranges from 55 to 80 metres).
Mining disturbance area - Previously approved pits - Proposed additional pits Infrastructure disturbance area to date Proposed additional disturbance associated with diverting Marillana Creek Total area disturbed	 Approximately 1,580 hectares Approximately 1,020 hectares Approximately 270 hectares Approximately 230 hectares Approximately 3,100 hectares (within Mining Leases 270SA and 47/292).
Water use	Up to 400 cubic metres per day of groundwater for dust suppression, ore processing and potable purposes.
Ore processing	Crushing and screening.
Ore transportation from site	Ore loaded in one of two rail loading stockpiles/loops and railed from site to Port Hedland for shipping.
Power supply	On-site diesel generators. (Future power demand expected to be met by the Newman gas-fired station via connecting overhead transmission line).
Workforce	Approximately 350.

Figures (attached)

Figure 1 – Site location.
Figure 2 – Site layout.

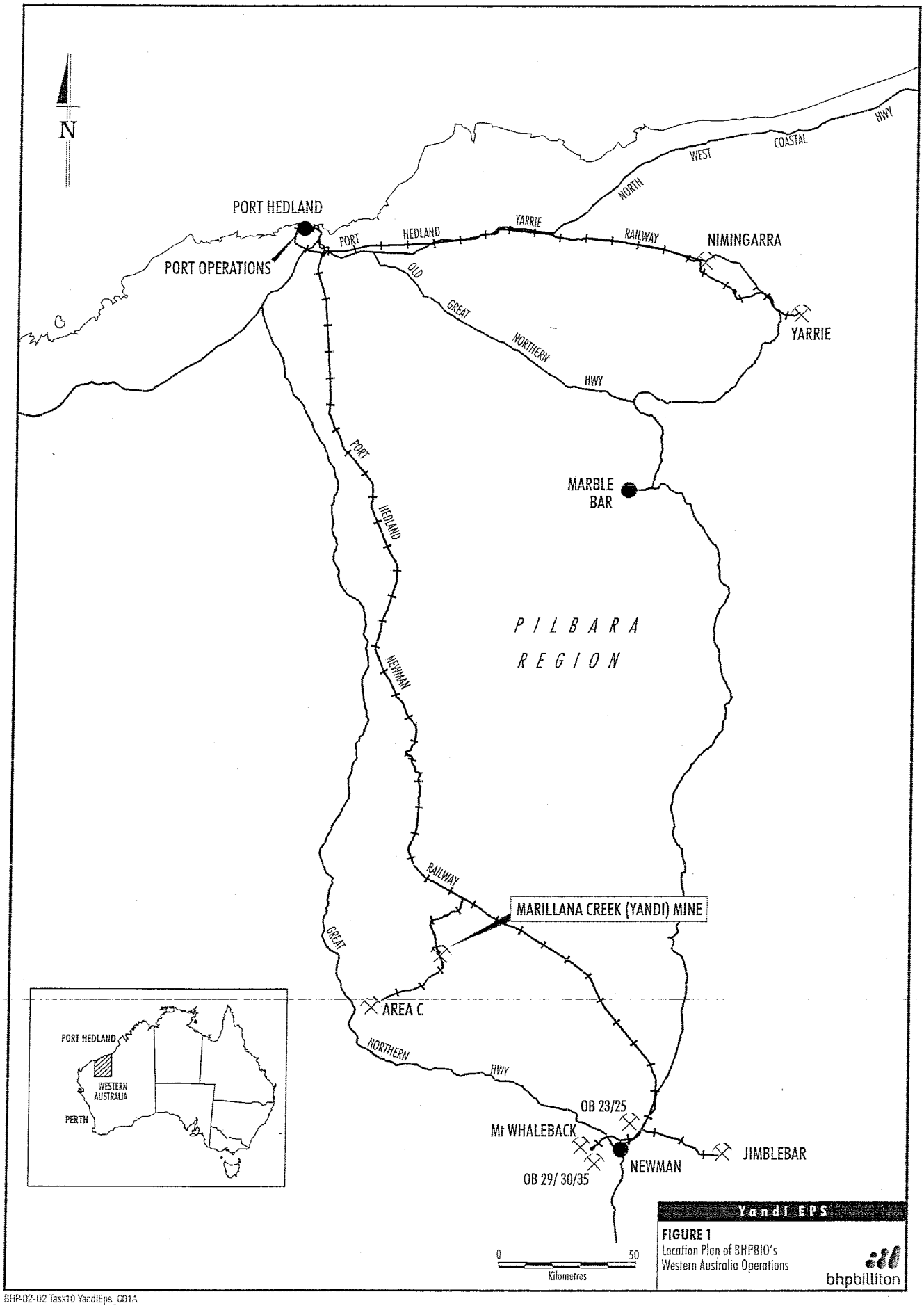


Figure 1: Site location

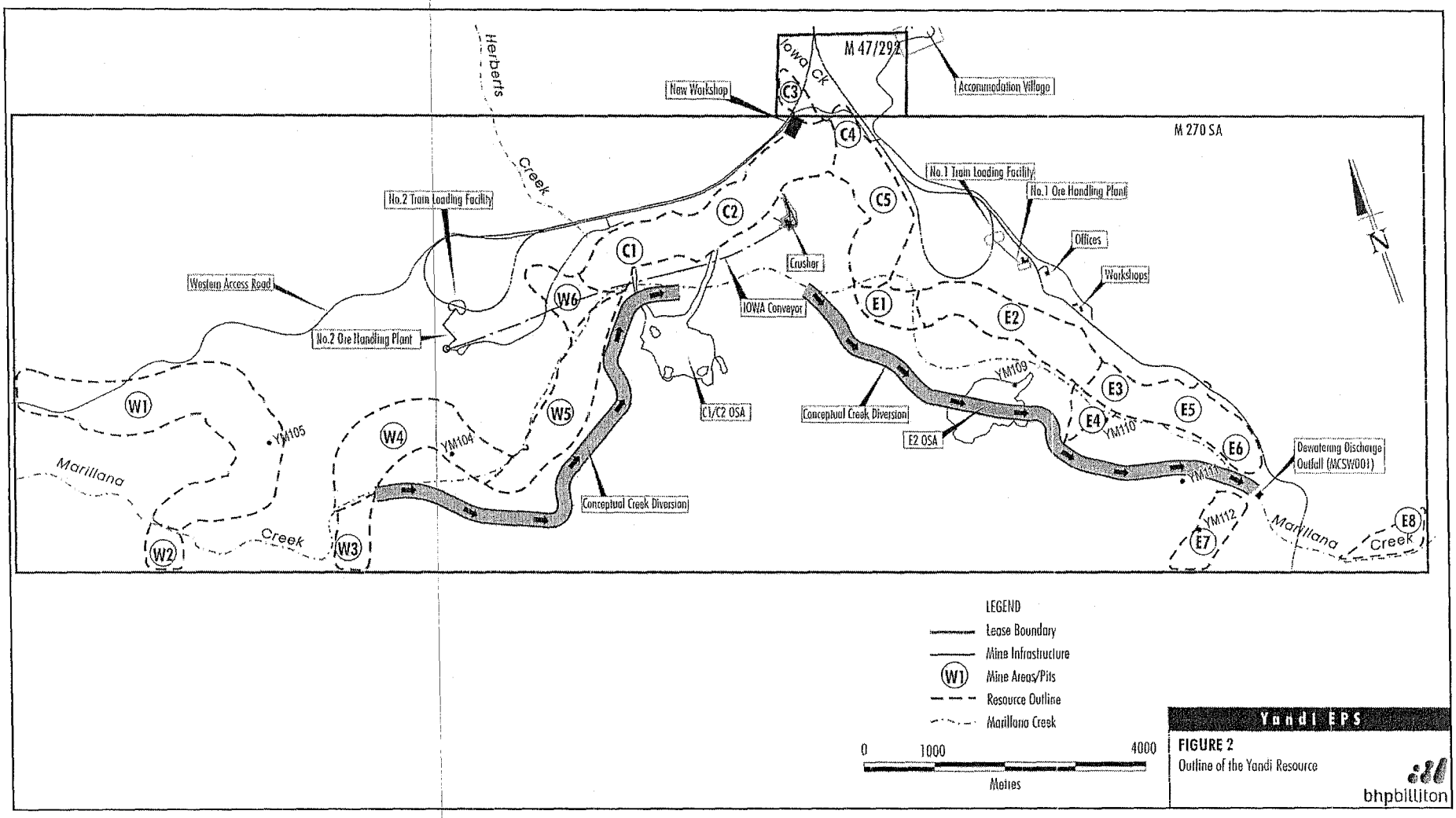


Figure 2: Site layout

Attachment 1 to Statement 679

Change to Description of Proposal

Proposal: Marillana Creek (Yandi) Life-Of-Mine Proposal Mining Leases 270SA & 47/292, 90 km North-west of Newman Shire of East Pilbara

Proponent: BHP Billiton Iron Ore Pty Ltd

Change: to the description in the Consultative Environmental Review for Statement 679.

From:

Element	Quantities/Description
Access Road	Unsealed road approximately 26km in length within the BHPB's State Agreement Lease ML 270SA and Mining Lease M 47/292.

To:

Element	Quantities/Description
Access Road	Sealed road approximately 26km in length with minor deviations, new floodway crossing at Iowa Creek, and other improvements

Approval Date: 19/5/06

Attachment 2 to Statement 679

Change to Proposal

Proposal: Marillana Creek (Yandi) Life of Mine Proposal, Mining Lease 270SA & 47/292, 90km North-West of Newman, Shire of East Pilbara

Proponent: BHP Billiton Iron Ore Pty Ltd

Change: Increase production at the Yandi mine from 45 million tonnes per annum (Mt/a) to approximately 65Mt/a

Amendment of Schedule 1 – Key Proposal Characteristics and other descriptors of Proposal

Features of previously approved Proposal as implemented:

Element	**Quantities/Description**
Project Life	Approximately 30 years
Overall ore production rate	Approximately 45 Megatonnes per year
Mining Method	Conventional open cut methods (hydraulic shovels, loaders and haul trucks)
Water use	Up to 400 cubic metres per day of groundwater for dust suppression, ore processing and potable purposes
Ore processing	Crushing and screening
Workforce	Approximately 350

Features of changed Proposal:

Element	Quantities/Description
Project Life	Approximately 20 years
Overall ore production rate	Approximately 65 million tonnes per year
Mining Method	Utilise continuous miners in addition to conventional mining equipment
Water use	Up to 6000 cubic metres of groundwater per day recovered from dewatering for dust suppression, ore processing and potable purposes
Ore processing	Mobile crushing and screening plants will be utilised in addition to existing ore processing facilities
Workforce	Approximately 750

Approved under delegation
from Minister for the Environment:

Approval Date: 17.12.07

Attachment 3 to Statement 679

Change to Proposal

Proposal: **Marillana Creek (Yandi) Life of Mine Proposal, Mining Leases 270SA and 47/292, 90km northwest of Newman**

Proponent: **BHP Billiton Iron Ore Pty Ltd**

Change: Increase production rate at the Yandi mine from 45 Million tonnes per annum to 87 Million tonnes per annum

Components of original Proposal as implemented:

Characteristic	**Quantities / Description**
Project life	Approximately 30 years
Overall ore production rate	Approximately 45 Megatonnes per year
Mining disturbance area	
- Previously approved pits	Approximately 1,580 hectares
- Proposed additional pits	Approximately 1,020 hectares
Infrastructure disturbance area to date	Approximately 270 hectares
Proposed additional disturbance associated with diverting Marillana Creek	Approximately 230 hectares
Disturbance associated with additional infrastructure	Not part of original proposal
Total area disturbed	Approximately 3,100 hectares (within Mining Leases 270SA and 47/292)
Water use	Up to 400 cubic metres per day of groundwater for dust suppression, ore processing and potable purposes
Workforce	Approximately 350

Note: Water use of 400 cubic metres per day identified in Statement 679 is a typographical error, and should read 4000 cubic metres per day.

Components of changed Proposal:

Characteristic	Quantities / Description
Project life	Approximately 17 years
Overall ore production rate	Approximately 87 Megatonnes per year
Mining disturbance area	
- Previously approved pits	No change
- Proposed additional pits	No change
Infrastructure disturbance area to date	No change
Proposed additional disturbance associated with diverting Marillana Creek	No change
Disturbance associated with additional infrastructure	Approximately 350 hectares
Total area disturbed	Approximately 3,450 hectares (within Mining Leases 270SA and 47/292)
Water use	Up to 10,200 cubic metres per day of groundwater for dust suppression, ore processing and potable purposes
Workforce	Approximately 1,100

Figure 3: Additional infrastructure

Approved under delegation
from Minister for the Environment:
Delegation under section 18 of
the Environmental Protection Act
Dated 24 November 2004

S45C Approval Date: 16.9.08

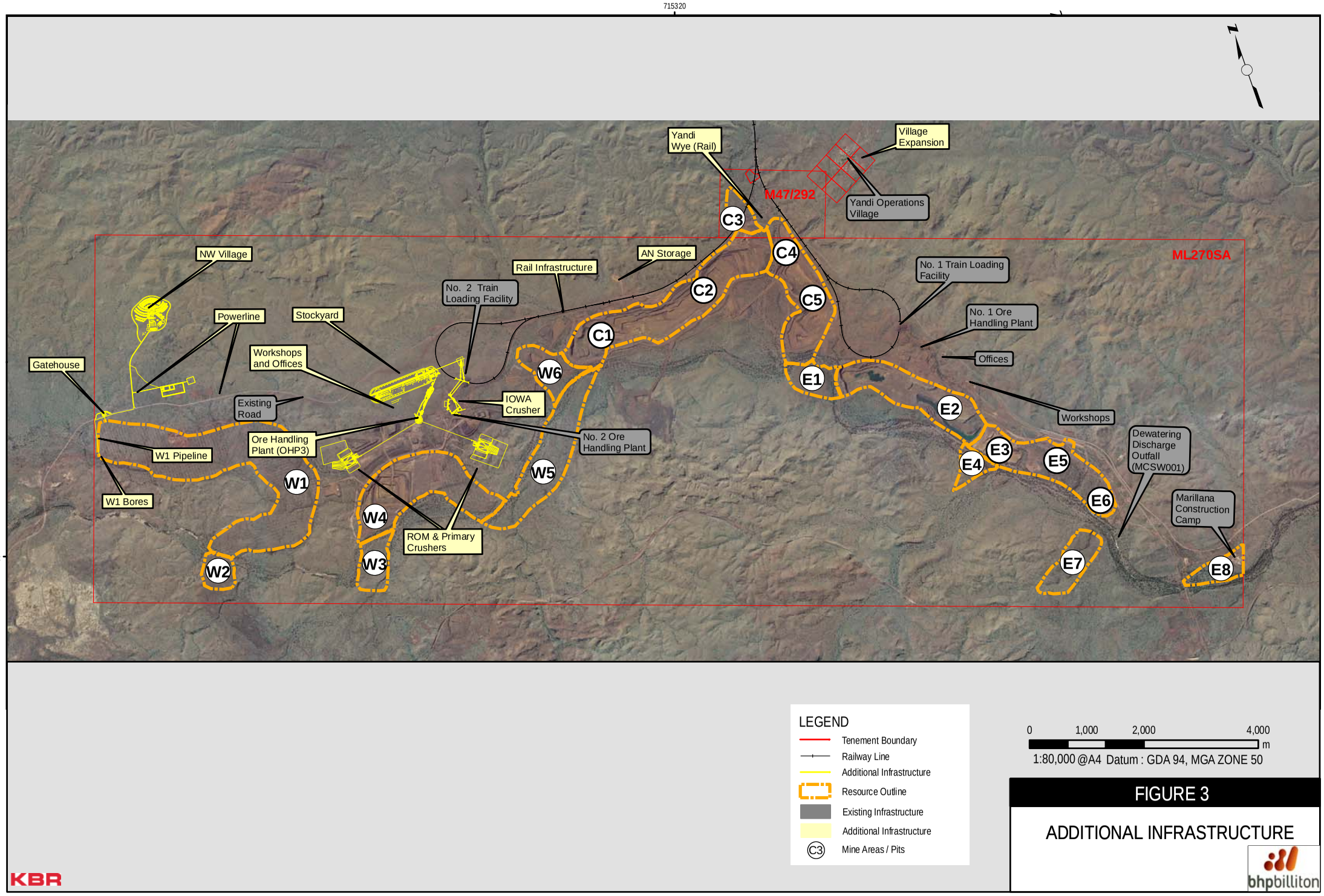


FIGURE 3

ADDITIONAL INFRASTRUCTURE

KBR

bhpbilliton

Attachment 4 to Ministerial Statement 679

Change to proposal under s45C of the *Environmental Protection Act 1986*

This Attachment replaces Schedule 1, and all previous Attachments in Ministerial Statement 679

Proposal: Marillana Creek (Yandi) Life of Mine Proposal, Mining Leases 270SA and 47/292, 90km northwest of Newman

Proponent: BHP Billiton Iron Ore Pty Ltd

The Proposal (Assessment No. 1555)

The project is located approximately 90 kilometres north-west of Newman, in the Hamersley Ranges of the Pilbara Region (Figure 1).

The proposal is to mine the entire Yandi orebody within Mining Leases 270SA and 47/292, and subsequently rehabilitate all the disturbed areas. The Yandi orebody occurs within an ancient channel iron deposit, which is subdivided into a series of mine areas known as the central mesa pits (C1 to C5), eastern mesa pits (E1 to E8) and the western mesa pits (W1 to W6). As individual pits are mined, the voids will be partially filled with overburden materials from other pits within the leases.

The Project comprises:

- Open cut mining of overburden and ore from the channel iron deposit;
- Dewatering of the orebody during mining operations;
- Placement of overburden in mine voids and out-of-pit storage areas;
- Processing, loading and transportation of ore;
- Possible mining of the lower channel iron deposit;
- Supply and distribution of power and raw materials; and
- Provision of existing service infrastructure (e.g. main access roads, workshops, administration areas, accommodation village and airstrip).

Significant features of the proposal are:

- progressive mining and rehabilitation of the site;
- permanent diversion of sections of Marillana Creek. The final location of creek diversions will be developed and documented in the Marillana Creek Diversion Management Plan; and
- permanent changes to the final landforms, including hill-like features of the out-of-pit overburden storage areas and pit lakes created in the final voids.

Change:

- Increase to “Mining disturbance area”;
- Removal of: ‘Total resources’, ‘Mining Method’, ‘Overburden’, ‘Overburden stripping ratio’, ‘Water use’, ‘Ore processing’, ‘Ore transportation from site’, ‘Power supply’, and ‘Workforce’.

Key Characteristics Table:

Characteristic	**Description of proposal**	**Description of approved change to proposal**
Project life	Approximately 17 years	Approximately 17 years
Total resources	1,420 million wet tonnes	**Removed as not a Key Characteristic relevant to the environment**
Overall ore production rate	Approximately 87 Megatonnes per year	Approximately 87 Megatonnes per year
Mining Method	Conventional open-cut methods, hydraulic shovels, loaders and haul trucks	**Removed as not a Key Characteristic relevant to the environment**
Marillana Creek diversion	Diversion of sections of Marillana Creek in order to maximize resource use in W5 mine area and the E1 to E6 mine area will be designed and constructed in accordance with the Marillana Creek Diversion Management Plan.	Diversion of sections of Marillana Creek in order to maximize resource use in W5 mine area and the E1 to E6 mine area will be designed and constructed in accordance with the Marillana Creek Diversion Management Plan.
Overburden	Approximately 820 Megatonnes	**Removed as managed under ‘Mining disturbance area’ and Condition 5 (Decommissioning and Final Rehabilitation), and Condition 6 (Progressive Rehabilitation)**
Overburden stripping ratio	0.35:1	**Removed as not a Key Characteristic relevant to the environment**
Pit depth	Typically 60 metres (ranges from 55 to 80 metres)	Typically 60 metres (ranges from 55 to 80 metres)
Mining disturbance area - Previously approved pits - Proposed additional pits Infrastructure disturbance area to date Proposed additional disturbance associated with diverting Marillana Creek Disturbance associated with additional infrastructure Total area disturbed	 Approximately 1,580 hectares Approximately 1,020 hectares Approximately 270 hectares Approximately 230 hectares Approximately 350 hectares Approximately 3,450 hectares (within Mining Leases 270SA and 47/292)	 **Pits and Overburden Storage Areas: 3,320 hectares** **Infrastructure: 500 hectares** 230 hectares **Total Disturbance: 4,050 hectares (within Mining Leases 270SA and 47/292)**

Characteristic	Description of proposal	Description of approved change to proposal
Water use	Up to 10,200 cubic metres per day of groundwater for dust suppression, ore processing and potable purposes	**Removed as managed by other regulatory authorities**
Ore processing	Crushing and screening	**Removed as managed by other regulatory authorities**
Ore transportation from site	Ore loaded in one of two rail loading stockpiles/loops and railed from site to Port Hedland for shipping	**Removed as not a significant Key Characteristic**
Power supply	On-site diesel generators (Future power demand expected to be met by the Newman gas-fired station via connecting overhead transmission line).	**Removed as not a significant Key Characteristic**
Workforce	Approximately 1100	**Removed as not a significant Key Characteristic. Wastewater impacts managed by other regulatory authorities**

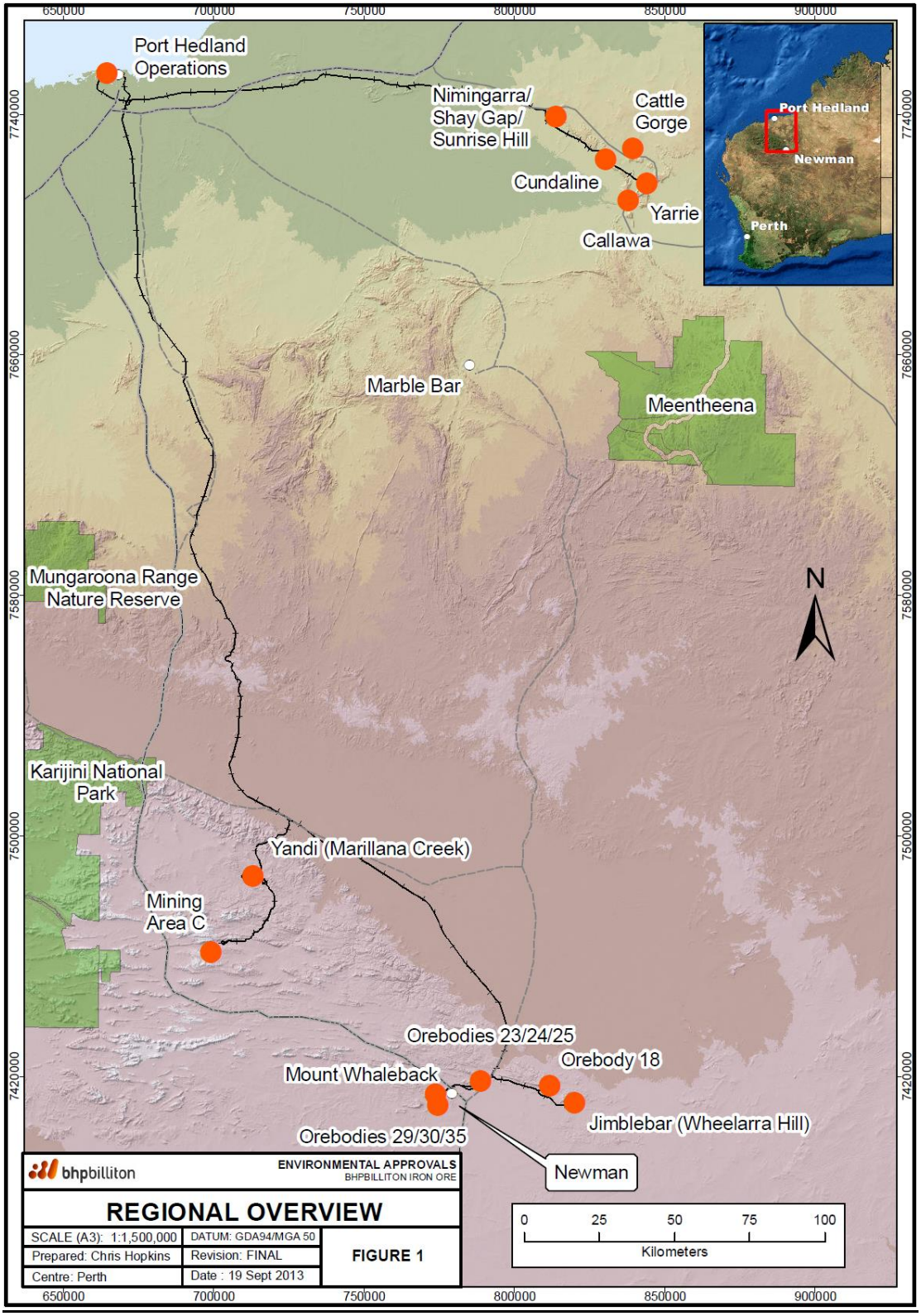
Note: Text in **bold** in the Key Characteristics Table, indicates change/s to the proposal.

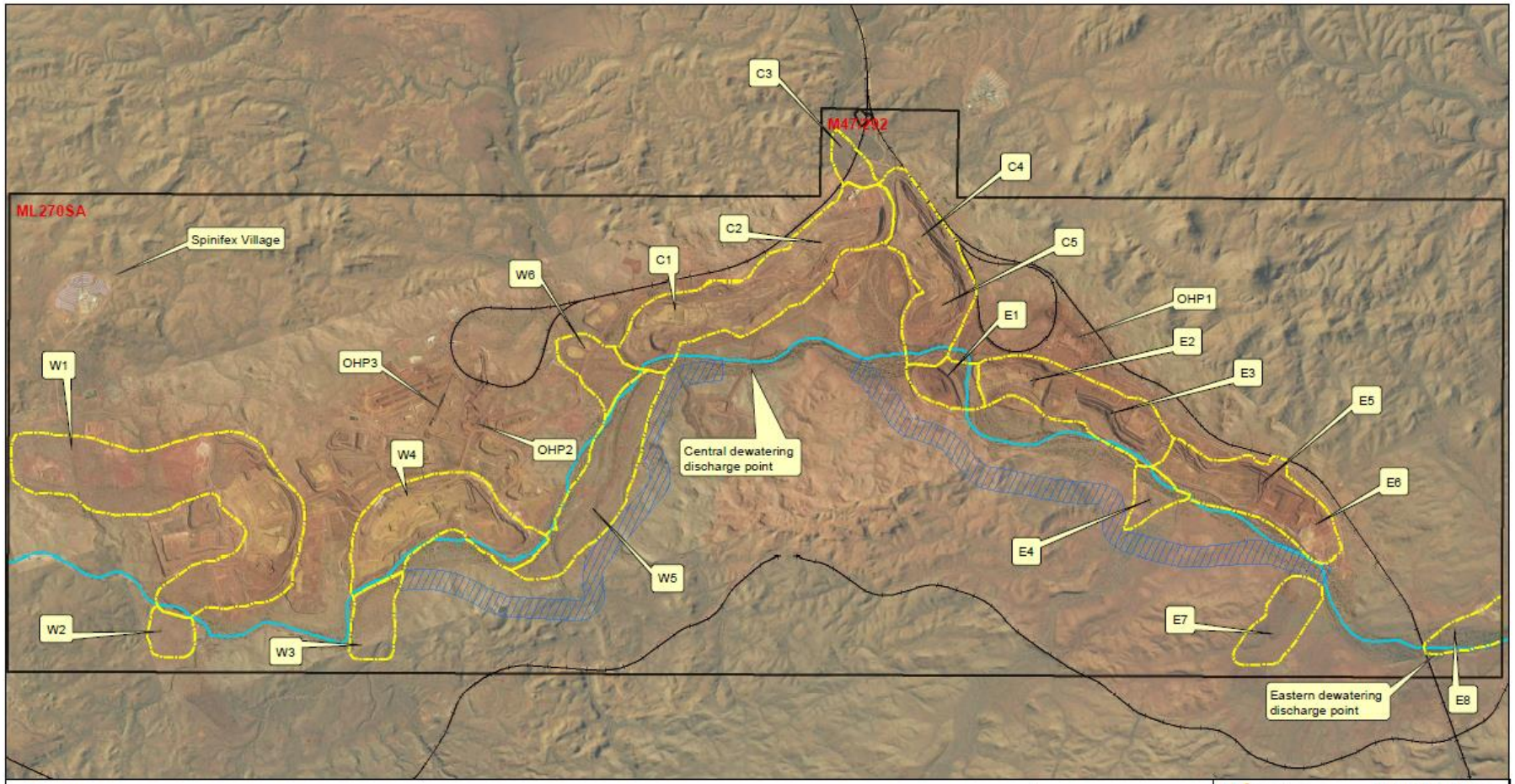
List of Figures and Schedules

Figure 1 Regional Overview
Figure 2 Yandi Mining Operations Indicative General Arrangement

[Signed 10 December 2013]

Dr Paul Vogel
CHAIRMAN
Environmental Protection Authority
under delegated authority


650000
700000
750000
800000
850000
900000
7740000
7660000
7580000
7500000
7420000
Port Hedland Operations
Nimingarra/ Shay Gap/ Sunrise Hill
Cattle Gorge
Cundaline
Yarrie
Callawa
Marble Bar
Meentheena
Mungaroona Range Nature Reserve
Karijini National Park
Yandi (Marillana Creek)
Mining Area C
Orebodies 23/24/25
Orebody 18
Mount Whaleback
Jimblebar (Wheelarra Hill)
Orebodies 29/30/35
Newman
Port Hedland
Newman
Perth
N
0
25
50
75
100
Kilometers
bhpbilliton
ENVIRONMENTAL APPROVALS
BHPBILLITON IRON ORE
REGIONAL OVERVIEW
SCALE (A3): 1:1,500,000
DATUM: GDA94/MGA 50
Prepared: Chris Hopkins
Revision: FINAL
Centre: Perth
Date : 19 Sept 2013
FIGURE 1


C3
M47202
C4
ML270SA
Spinifex Village
C2
C5
C1
W6
OHP1
E1
E2
W1
OHP3
E3
E5
W4
OHP2
Central dewatering discharge point
E6
E4
W5
W2
E7
W3
Eastern dewatering discharge point
E8
Legend
MS 679 Maximum Disturbance Boundary
Railway
Yandi Resource Outlines
Marillana Creek
Conceptual Creek Diversion
NORTH
0 0.5 1 2 3 4
Kilometers
bhpbilliton
BHP Billiton Iron Ore
Yandi Mining Operations
Indicative General Arrangement
Scale: 1:50,000 @ A3
Plotted: N O'Brien & C Hopkins
FIGURE 2
Datum: GDA 1994
Date: 19 Sep 2013
Grid: MGA 1994 Zone 50
Dwg: STYND_001EIA_002_RevA_3

Attachment 5 to Ministerial Statement 679

Change to proposal approved under s45C of the
Environmental Protection Act 1986

This Attachment replaces Schedule 1 and Attachment 4 of Ministerial Statement 679

Proposal: Marillana Creek (Yandi) Life of Mine Proposal, Mining Leases 270SA and 47/292, 90km northwest of Newman

Proponent: BHP Billiton Iron Ore Pty Ltd

The Proposal (Assessment No. 1555)

The project is located approximately 90 kilometres north-west of Newman, in the Hamersley Ranges of the Pilbara Region (Figure 1).

The proposal is to mine the entire Yandi orebody within Mining Leases 270SA and 47/292, and subsequently rehabilitate all the disturbed areas. The Yandi orebody occurs within an ancient channel iron deposit, which is subdivided into a series of mine areas known as the central mesa pits (C1 to C5), eastern mesa pits (E1 to E8) and the western mesa pits (W1 to W6). As individual pits are mined, the voids will be partially filled with overburden materials from other pits within the leases.

The Project comprises:

- Open cut mining of overburden and ore from the channel iron deposit;
- Dewatering of the orebody during mining operations;
- Placement of overburden in mine voids and out-of-pit storage areas;
- Processing, loading and transportation of ore;
- Possible mining of the lower channel iron deposit;
- Supply and distribution of power and raw materials; and
- Provision of existing service infrastructure (e.g. main access roads, workshops, administration areas, accommodation village and airstrip).

Significant features of the proposal are:

- progressive mining and rehabilitation of the site;
- permanent diversion of sections of Marillana Creek. The final location of creek diversions will be developed and documented in the Marillana Creek Diversion Management Plan; and
- permanent changes to the final landforms, including hill-like features of the out-of-pit overburden storage areas and pit lakes created in the final voids.

Changes:

- Reallocation of 82 hectares from the 'Pits and Overburden Storage Areas' disturbance figure to the 'Infrastructure' disturbance figure;
- Formalising the disturbance allocation by allocating 18 hectares of riparian vegetation to a new element 'Marillana Creek Crossings';
- Update Figures and include a table of coordinates defining Development Areas (Table 2).

Table 1: Key Characteristics Table

Characteristic	**Description of proposal**	**Description of approved change to proposal**
Project life	Approximately 17 years	Approximately 17 years
Overall ore production rate	Approximately 87 Megatonnes per year	Approximately 87 Megatonnes per year
Marillana Creek diversion	Diversion of sections of Marillana Creek in order to maximize resource use in W5 mine area and the E1 to E6 mine area will be designed and constructed in accordance with the Marillana Creek Diversion Management Plan.	Diversion of sections of Marillana Creek in order to maximize resource use in W5 mine area and the E1 to E6 mine area will be designed and constructed in accordance with the Marillana Creek Diversion Management Plan.
Pit depth	Typically 60 metres (ranges from 55 to 80 metres)	Typically 60 metres (ranges from 55 to 80 metres)
Mining disturbance area - Previously approved pits - Proposed additional pits	Pits and Overburden Storage Areas:3,320 hectares	Pits and Overburden Storage Areas: **3,220 hectares**
Infrastructure disturbance area to date	500 hectares	**582 hectares**
Proposed additional disturbance associated with diverting Marillana Creek	230 hectares	230 hectares
Marillana Creek Crossings:		**18 hectares**
Total area disturbed	4,050 hectares (within Mining Leases 270SA and 47/292)	4,050 hectares (within Mining Leases 270SA and 47/292)

Note: Text in **bold** in the Key Characteristics Table, indicates change/s to the proposal.

List of Replacement Figures - Figures 1 and 2 are replaced by the following:

Figure 1 Development Areas
Table 2 Development Areas – Map Grid of Australia (MGA) Zone 50 coordinates

[Signed 1st April 2015]

Dr Paul Vogel
CHAIRMAN
Environmental Protection Authority
under delegated authority

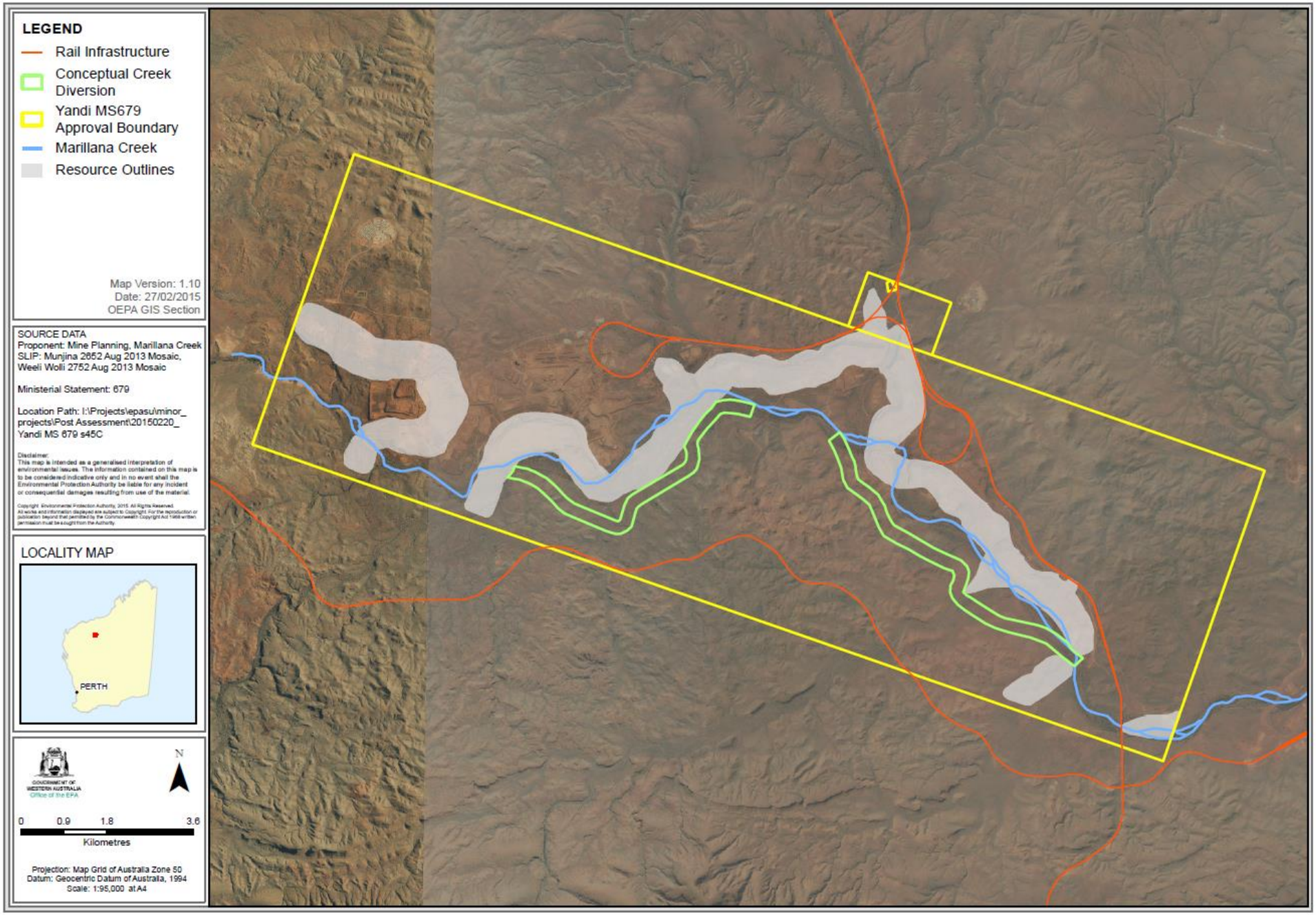


Figure 1 Development Areas

Table 2 – Development Areas – Map Grid of Australia (MGA) Zone 50 Co-ordinates

Coordinate Number	Easting (MGA50)	Northing (MGA50)
1	704482	7490542
2	714785	7486945
3	716532	7486335
4	721581	7484573
5	723469	7483914
6	723381	7483660
7	723336	7483534
8	721348	7477838
9	702360	7484467
10	703923	7488942
11	704482	7490542
12	714785	7486945
13	715199	7488071
14	715376	7488006
15	715666	7487900
16	715589	7487850
17	715618	7487667
18	715803	7487712
19	715801	7487777
20	715737	7487796
21	715684	7487893
22	716701	7487519
23	716935	7487433
24	716806	7487080
25	716532	7486335
26	714785	7486945

Attachment 6 to Ministerial Statement 679

Change to proposal approved under section 45C of the
Environmental Protection Act 1986

This Attachment replaces Schedule 1 and Attachments 1 to 5 of Ministerial Statement 679

Changes:

- Increase the total mining and infrastructure disturbance area by 345 ha;
- Increase the disturbance area associated with diverting Marillana Creek by 163 ha;
- Amalgamate the 'pits and overburden storage disturbance area' and the 'infrastructure disturbance area'; and
- Remove references to mining leases from the key characteristics table.

Table 1: Summary of the Proposal

Proposal Title	Marillana Creek (Yandi) Life of Mine Proposal, Mining Leases 270SA and 47/292, 90 km North-West of Newman, Shire of East Pilbara
Proponent	BHP Billiton Iron Ore Pty Ltd
Short Description	The project is located approximately 90 kilometres north-west of Newman, in the Hamersley Ranges of the Pilbara Region (Figure 1). The proposal is to mine the entire Yandi orebody within Mining Leases 270SA and 47/292, and subsequently rehabilitate all the disturbed areas. The Yandi orebody occurs within an ancient channel iron deposit, which is subdivided into a series of mine areas known as the central mesa pits (C1 to C5), eastern mesa pits (E1 to E8) and the western mesa pits (W1 to W6). As individual pits are mined, the voids will be partially filled with overburden materials from other pits within the leases. The Project comprises: • Open cut mining of overburden and ore from the channel iron deposit; • Dewatering of the orebody during mining operations; • Placement of overburden in mine voids and out-of-pit storage areas; • Processing, loading and transportation of ore; • Possible mining of the lower channel iron deposit; • Supply and distribution of power and raw materials; and • Provision of existing service infrastructure (e.g. main access roads, workshops, administration areas, accommodation village and airstrip). Significant features of the proposal are: • progressive mining and rehabilitation of the site; • permanent diversion of sections of Marillana Creek. The final location of creek diversions will be developed and documented in the Marillana Creek Diversion Management Plan; and • permanent changes to the final landforms, including hill-like features of the out-of-pit overburden storage areas and pit lakes created in the final voids.

Table 2: Location and authorised extent of physical and operational elements

Element	Location	Previously Authorised Extent	Authorised Extent
Project life		Approximately 17 years	Approximately 17 years
Overall production rate		Approximately 87 megatonnes per year	Approximately 87 megatonnes per year
Marillana Creek diversion		Diversion of sections of Marillana Creek in order to maximise resource use in W5 mine area and the E1 to E6 mine area will be designed and constructed in accordance with the Marillana Creek Diversion Management Plan.	Diversion of sections of Marillana Creek in order to maximise resource use in W5 mine area and the E1 to E6 mine area will be designed and constructed in accordance with the Marillana Creek Diversion Management Plan.
Pit depth		Typically 60 metres (ranges from 55 to 80 metres)	Typically 60 metres (ranges from 55 to 80 metres)
Pits and Overburden Storage Areas		3,220 hectares	**Clearing of no more than 4,558 hectares of native vegetation within the Development Envelope of 13,158 hectares including:**
Infrastructure disturbance area to date		582 hectares	
Proposed additional disturbance associated with diverting Marillana Creek	**Figure 1**	230 hectares	**No more than 393 hectares for Marillana Creek Diversion; and**
Marillana Creek Crossings		18 hectares	**No more than 18 hectares for Marillana Creek Crossings.**
Total Area Disturbed	**Figure 1 and geographic coordinates in Table 3.**	4,050 hectares (within Mining Leases 270 SA and 47/292)	

Note: Text in **bold** in Table 2 indicates a change to the proposal.

Figures and tables (attached)

Figure 1 Development Envelope; and

Table 3 Coordinates defining the Development Envelope for the Marillana Creek (Yandi) Life of Mine Proposal [Map Grid of Australia MGA 94 Zone 50].

[Signed 4 May 2016]

Dr Tom Hatton
CHAIRMAN
Environmental Protection Authority
under delegated authority

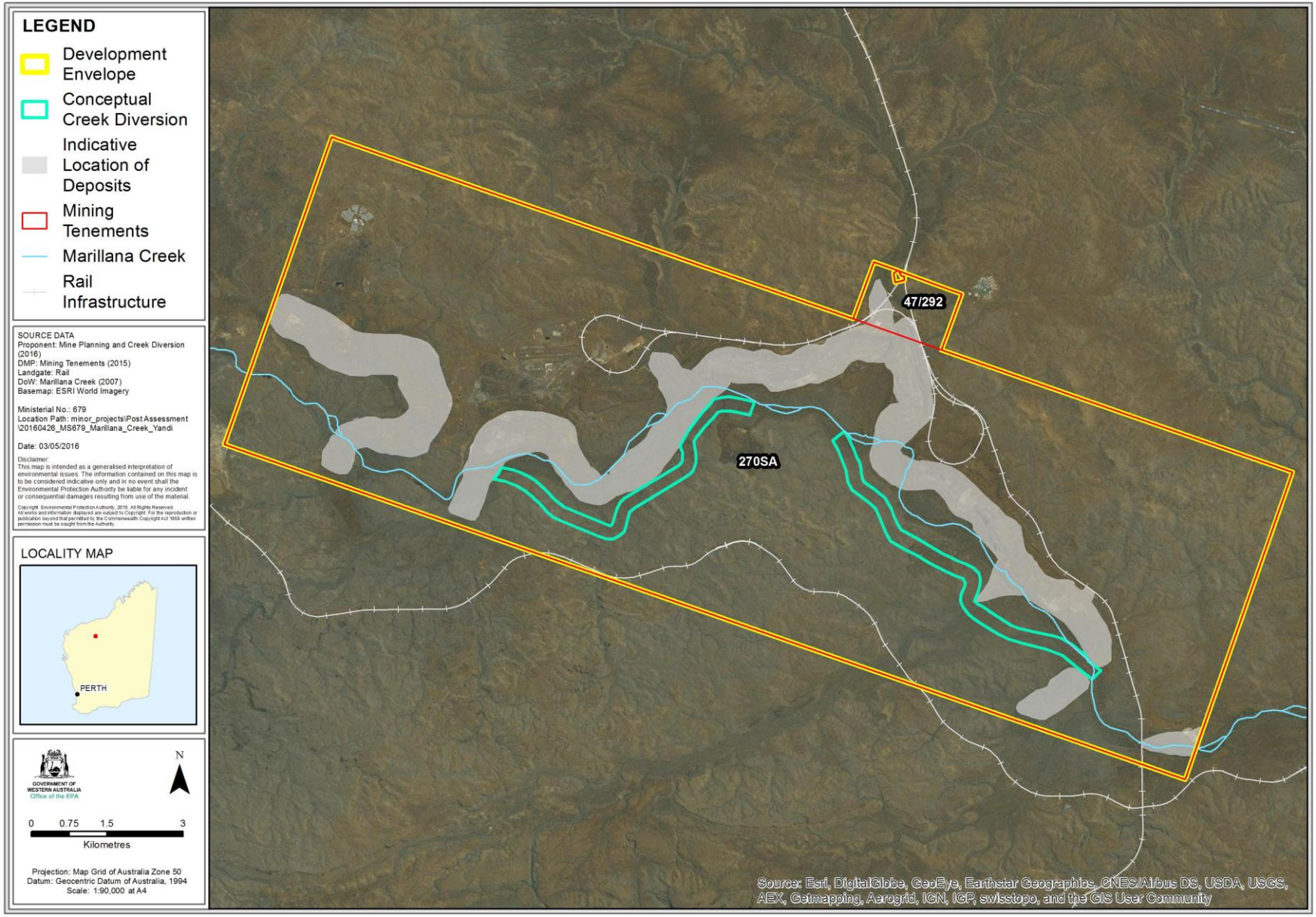


Figure 1 - Development Envelope

Table 3 – Development Envelope Coordinates

Coordinate Number	Easting (MGA50)	Northing (MGA50)
1	704482	7490542
2	714785	7486945
3	716532	7486335
4	721581	7484573
5	723469	7483914
6	723381	7483660
7	723336	7483534
8	721348	7477838
9	702360	7484467
10	703923	7488942
11	704482	7490542
12	714785	7486945
13	715199	7488071
14	715376	7488006
15	715666	7487900
16	715589	7487850
17	715618	7487667
18	715803	7487712
19	715801	7487777
20	715737	7487796
21	715684	7487893
22	716701	7487519
23	716935	7487433
24	716806	7487080
25	716532	7486335
26	714785	7486945

All coordinates are in metres, listed in Map Grid of Australia Zone 50 (MGA Zone 50), datum of Geocentric Datum of Australia 1994 (GDA94).