



Report and recommendations of the Environmental Protection Authority



Mt Keith Satellite Project

BHP Billiton Nickel West Pty Ltd

Report 1625

November 2018

Environmental impact assessment process timelines

Date	Progress stages	Time (weeks)
27/07/2017	EPA decides to assess – level of assessment set	
14/11/2017	EPA approved Environmental Scoping Document	16
27/07/2018	EPA accepted Environmental Review Document	36
5/10/2018	EPA received final information for assessment	8
18/10/2018	EPA completed its assessment	2
14/11/2018	EPA provided report to the Minister for Environment	4
19/11/2018	EPA report published	3 days
03/12/2018	Close of appeals period	2

Timelines for an assessment may vary according to the complexity of the proposal and are usually agreed with the proponent soon after the EPA decides to assess the proposal and records the level of assessment.

In this case, the Environmental Protection Authority met its timeline objective to complete its assessment and provide a report to the Minister.



Dr Tom Hatton
Chairman

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1. Introduction

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for Environment on the outcomes of the EPA's environmental impact assessment of the proposal by BHP Billiton Nickel West Pty Ltd (Nickel West). The Mt Keith Satellite Project is to develop a nickel mine as a satellite operation to the existing Mt Keith Mine and has a mine life of 12 years (the proposal).

The EPA has prepared this report in accordance with section 44 of the *Environmental Protection Act 1986* (EP Act). This section of the EP Act requires the EPA to prepare a report on the outcome of its assessment of a proposal and provide this assessment report to the Minister for Environment. The report must set out:

- what the EPA considers to be the key environmental factors identified during the assessment
- the EPA's recommendations as to whether or not the proposal may be implemented and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may also include any other information, advice and recommendations in the assessment report as it thinks fit.

The proponent referred the proposal to the EPA on 3 April 2017. On 27 July 2018, the EPA decided to assess the proposal and set the level of assessment at Environmental Review – Environmental Review Document (ERD) with no public review period and with the EPA to prepare the Environmental Scoping Document (ESD). The EPA approved the ESD for the proposal on 14 November 2017. The ERD was published on 12 September 2018.

1.1 EPA procedures

The EPA followed the procedures in the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016* (EPA 2016a) and the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual 2018* (EPA 2018a).

2. The proposal

2.1 Proposal summary

The proponent, Nickel West, proposes to develop a nickel mine as a satellite operation to the existing Mt Keith Mine. The proposal is located approximately 20 kilometres (km) south of the Mt Keith Mine and 80 km north of Leinster, and intersects the Shire of Leonora and the Shire of Wiluna (Figure 1).

The proposal involves mining of low-grade nickel sulfides from two open mine pits, including mining below the water table, over a period of 12 years. The proposal includes clearing of up to 878 hectares (ha) of native vegetation (the disturbance footprint) within a 1259 ha development envelope; a Waste Rock Landform (WRL); dewatering to facilitate dry mining conditions; and ancillary infrastructure including two bridge crossings over Jones Creek (Figure 3).

Approximately 9.6 million tonnes per annum of mined ore is proposed for extraction, that would be transported to the existing Mt Keith Mine for processing via a haul road. The existing processing plant and Tailings Storage Facility (TSF) at Mt Keith Mine have previously received conditional approval under Ministerial Statement 415, and therefore do not form part of this proposal.

The key characteristics of the proposal are summarised in Tables 1 and 2 below. A detailed description of the proposal is provided in Section 2 of the ERD (BHP Billiton Nickel West, 2018).

Table 1: Summary of the proposal

Proposal title	Mt Keith Satellite Project
Short description	<p>The proposal is to develop a nickel mine as a satellite operation to the existing Mt Keith Mine. The proposal includes two open pits; a waste rock landform (WRL); and a haul road corridor. Ancillary infrastructure to support the mining operation will also be located at the satellite operation.</p> <p>The mined ore will be processed at the existing Mt Keith Mine, located approximately 20 km north of the satellite operation. The proposal is located 80 km north of Leinster and intersects the Shire of Leonora and Shire of Wiluna.</p>

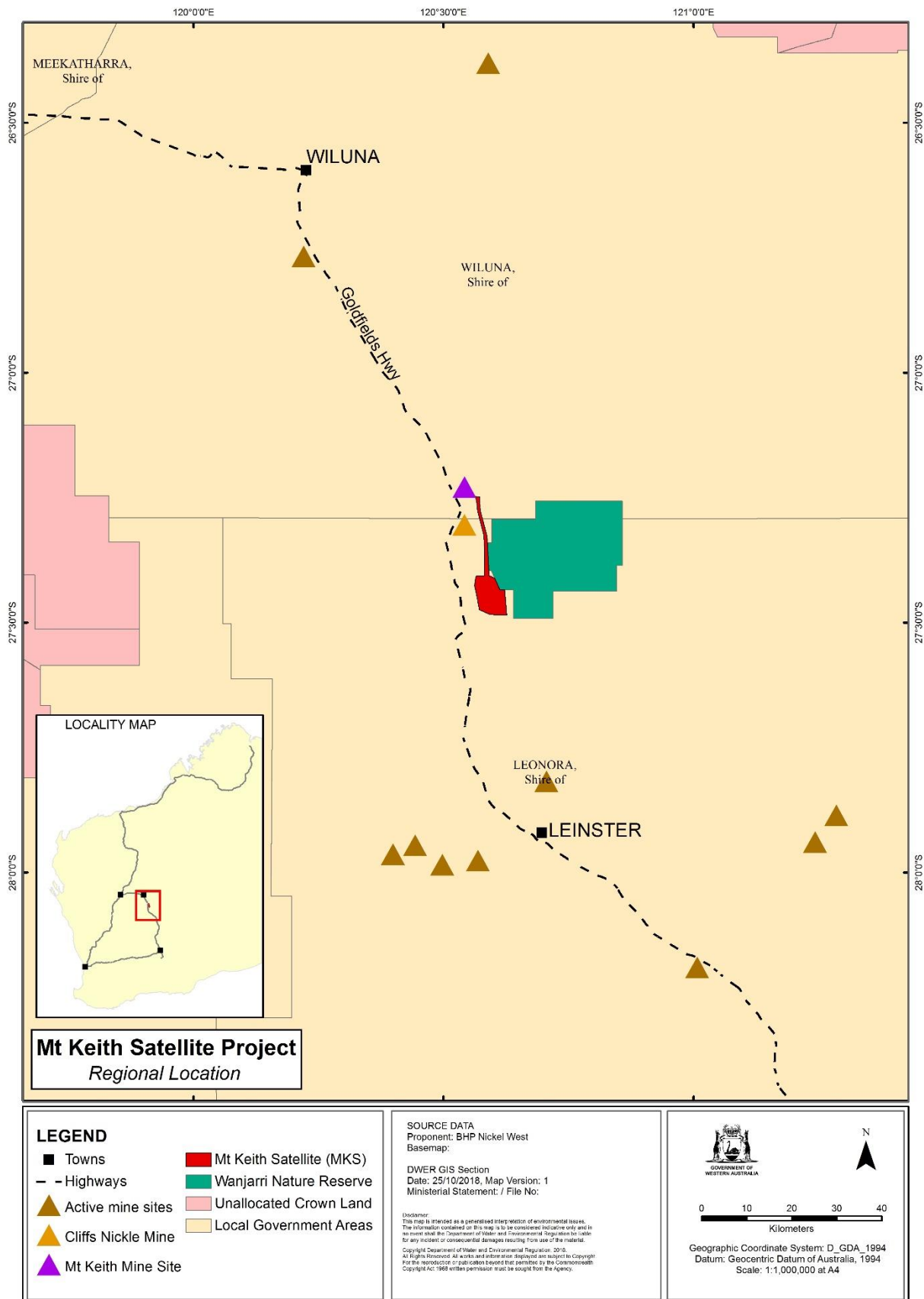
Table 2: Location and proposed extent of physical and operational elements

Element	Location	Proposed extent
<i>Physical elements</i>		
Mine pits	Figure 3	Clearing of up to 212 ha of native vegetation within a development envelope of 1259 ha, mining in three stages within a 12 year timeframe.
Processing and supporting infrastructure, including the waste rock landform, haul road, and other mine site supporting infrastructure.	Figures 2 and 3	Clearing of up to 666 ha of native vegetation within a development envelope of 1259 ha.
<i>Operational elements</i>		
Pit dewatering	NA	Water abstraction of up to 0.4 GL per year. Dewatering via bore/s and pit sumps.
Bore field supply	NA	Up to 1.65 GL per year from existing licensed fields.
Waste rock volume	NA	Up to 800 Mt of waste rock generated over 12 years.

ha – hectare

GL – Gigalitres

Mt - Megatonne



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Figure 1: Regional location

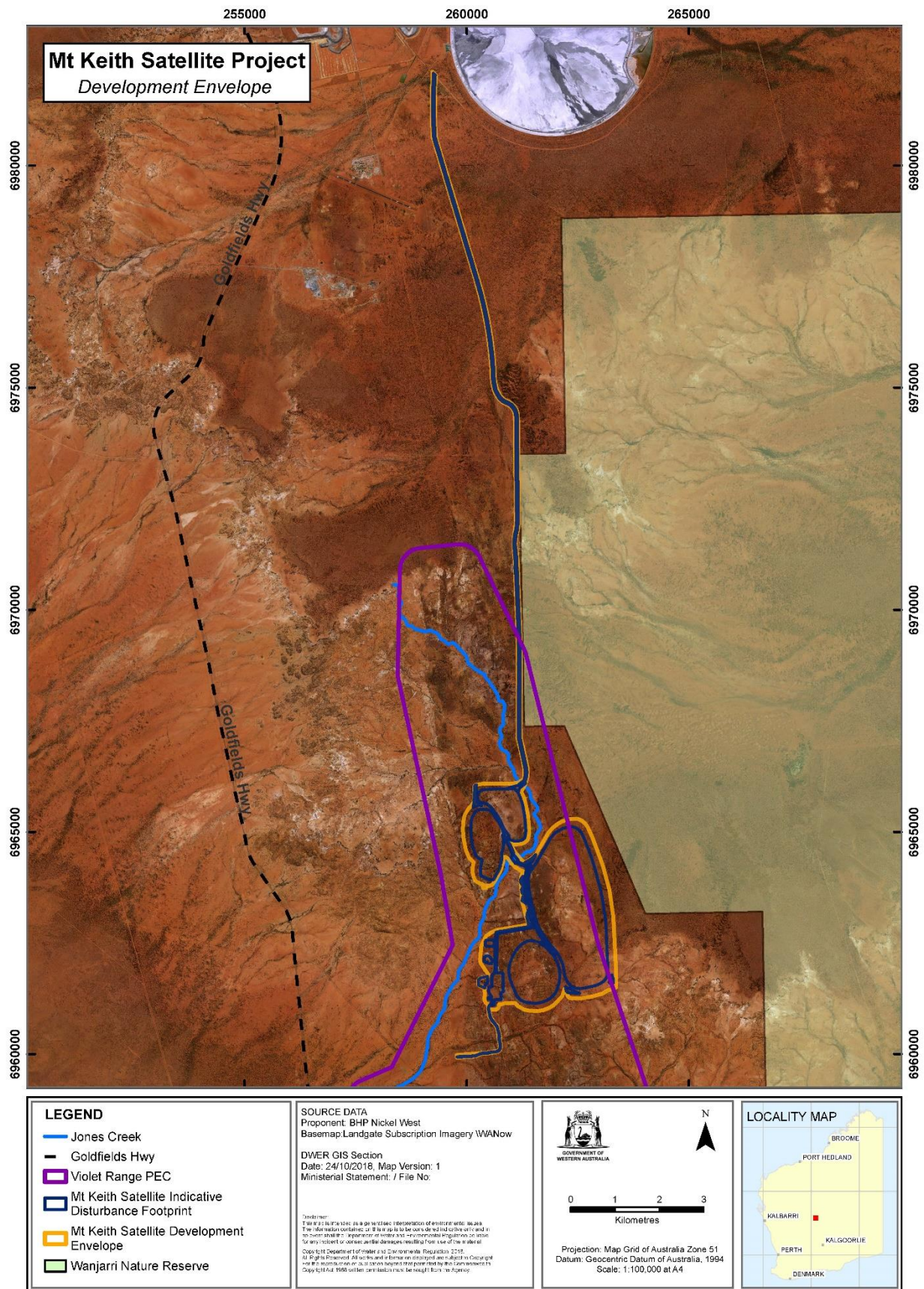


Figure 2: Development envelope

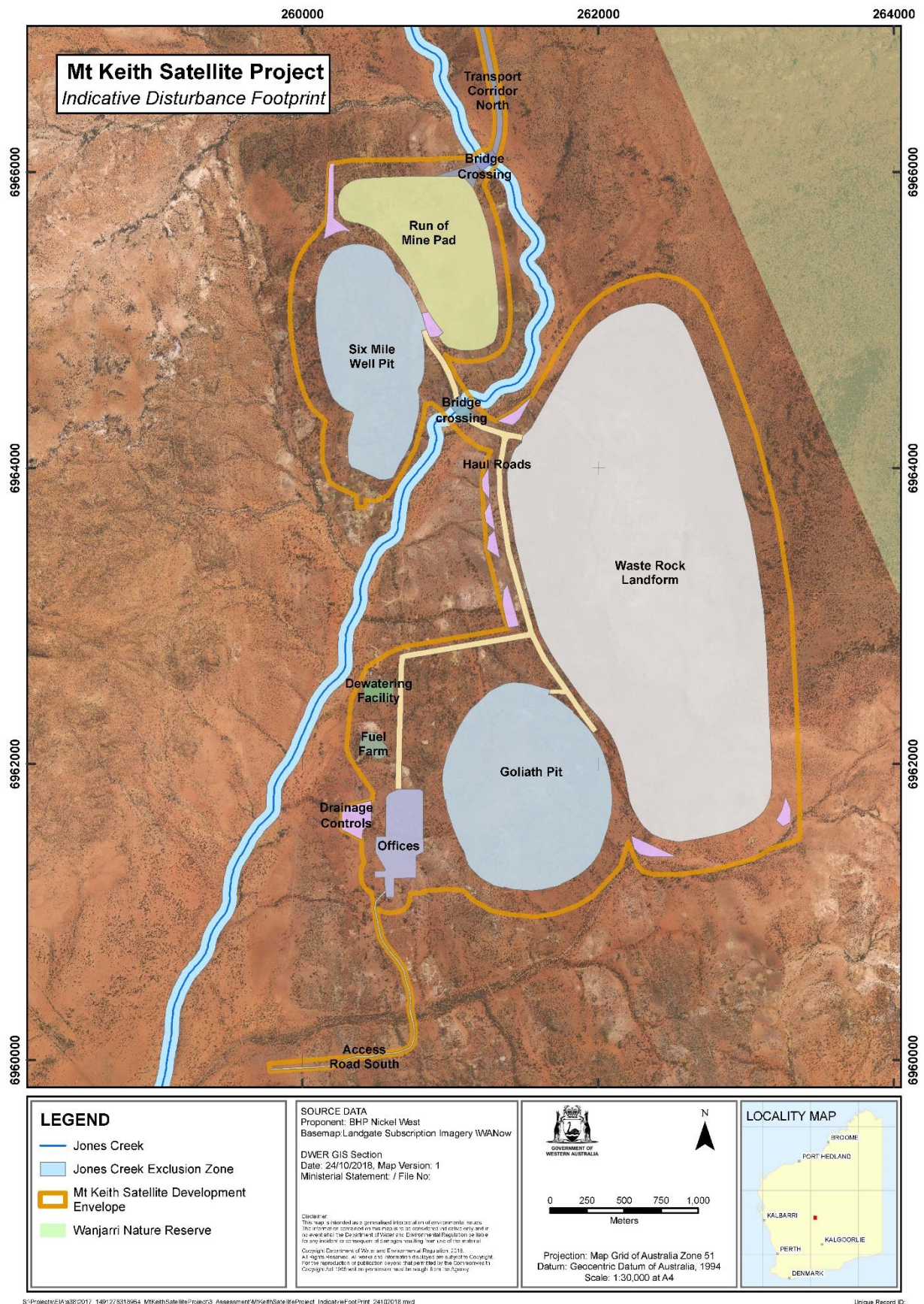


Figure 3: Indicative footprint

2.2 Changes to the proposal during assessment

On 6 October 2017, the proponent requested the EPA consent to change the proposal during the assessment. The change consisted of a minor increase of the development envelope and the disturbance footprint, including realignment of the haul road to avoid conservation significant flora, and an increase of the bore field water supply from existing licensed bore fields. Tables 1 and 2 above include this change.

The Chairman, as a delegate of the EPA, concluded that the changes were unlikely to significantly increase any impact that the proposal may have on the environment and gave consent under section 43A of the EP Act to the change on 6 November 2017.

2.3 Context

The proposal is located within the Murchison bioregion and East Murchison subregion under the Interim Biogeographic Regionalisation of Australia (IBRA) classification system.

The Murchison bioregion has not been extensively cleared, with the predominant land use identified as pastoralism and mining. The East Murchison subregion is characterised by an arid climate, broad plains of red-brown soils, granitic breakaway complexes and red sand plains (CALM 2002).

There are several active mines in the area surrounding the proposal, including Mt Keith Mine Site and Cliffs Nickel Mine, both of which are operated by Nickel West (Figure 1). The Kathleen Valley Gold Mine lies approximately 8 km south of the proposal and, as of 2016, has been placed into care and maintenance.

The proposed development envelope intersects the Mt Keith and Yakabindie Pastoral Leases. Both pastoral leases support cattle grazing and are held by Nickel West.

The proposal is located in the upper catchment of Jones Creek, an ephemeral water course that intersects the proposed development envelope (Figure 2). The proposed haul road runs adjacent to the western boundary of the Wanjarri Nature Reserve (Figure 2).

Yakabindie Nickel Project

In 1990 the EPA assessed a proposal to mine nickel and process a low-grade nickel sulfide orebody in a similar location, within the Yakabindie Pastoral Lease. The 1990 proposal, referred to as the Yakabindie Nickel Project in Ministerial Statement 117, has not been implemented. The proposal is substantially different to the Yakabindie Nickel Project, requiring referral under section 38 and under section 40 of the EP Act. The EPA has provided recommendations regarding Ministerial Statement 117 in 'Other Advice' Section below (Section 6).

3. Consultation

The EPA advertised the referral information for the proposal for public comment in May 2017 and received no submissions.

The proponent consulted with government agencies and key stakeholders during the preparation of the ERD. The agencies and stakeholders consulted, the issues raised and the proponent's response are detailed in Table 7 of the proponent's ERD (BHP 2018).

The proponent's ERD was sent to government agencies for review. The key issues raised by the agencies related to:

- The draft Flora and Vegetation Monitoring and Management Plan.
- The proposed position of the WRL in relation to the proposed downstream bridge crossing and the management of flooding events.
- The acceptability of the proposal and potential impacts to Aboriginal heritage, specifically regarding consultation undertaken by the proponent with the relevant Aboriginal people.

The proponent addressed the issues raised with the relevant agencies.

The EPA considers that the consultation process has been appropriate and that reasonable steps have been taken to inform the key stakeholders about the proposed development. Relevant significant environmental issues identified from this process were taken into account by the EPA during its assessment of the proposal.

4. Key environmental factors

In undertaking its assessment of this proposal and preparing this report, the EPA had regard for the object and principles contained in s4A of the EP Act to the extent relevant to the particular matters that were considered.

The EPA considered the following information during its assessment:

- the proponent's referral information, ERD and appendices
- public comments received on the referral, stakeholder comments received during the preparation of the proponent's documentation and agency comments received on the ERD
- the proponent's response to submissions raised during the targeted review of the ERD
- the EPA's own inquiries
- the EPA's *Statement of Environmental Principles, Factors and Objectives* (EPA 2018b)
- the relevant principles, policy and guidance referred to in the assessment of each key environmental factor in sections 4.1 to 4.4.

Having regard to the above information, the EPA identified the following key environmental factors during the course of its assessment of the proposal:

- **Flora and Vegetation** – direct impacts associated with the clearing of native flora and vegetation, including disturbance of Priority flora, the Violet Range Priority Ecological Community (PEC) and potential indirect impacts from weeds, altered fire regime, and to the adjacent Wanjarri Nature Reserve.
- **Inland Waters** – Hydrological Processes and Inland Waters Environmental Quality were identified as preliminary key environmental factors during the earlier stages of the assessment. These factors are now considered under 'Inland Waters' in the EPA policy framework.
 - **Hydrological Processes** – direct impacts to Jones Creek as a result of the placement, design and operation of two creek crossings. Potential impacts to surface water resources (e.g. Jones Creek) from groundwater drawdown and alterations to surface water flow.
 - **Inland Waters Environmental Quality** – potential impacts to surface and ground water quality through stormwater run-off, sedimentation, oxidation of sulfidic ore, and formation of a pit lake in the Goliath pit post-mining.
- **Social Surroundings (Aboriginal Heritage)** – direct impacts on Aboriginal heritage and cultural associations within the area, including disturbance of archaeological and mythological Aboriginal heritage sites and alteration of Ngulu Wuri Wuri (Jones Creek).
- **Air Quality** – direct emissions of greenhouse gases throughout the life of the mine.

The EPA considered other environmental factors during the course of its assessment of the proposal. These factors, which were not identified as key environmental factors, are discussed in the proponent's ERD (Mt Keith Satellite Project Environmental Review, July 2018). Appendix 3 contains an evaluation of why these other environmental factors were not identified as key environmental factors.

Having regard to the EP Act principles, the EPA considered that the following principles were particularly relevant to its assessment of the proposal:

1. **The precautionary principle** – biological and physical investigations have been carried out by the proponent to provide certainty in its assessment of potential impacts. The proponent has identified suitable mitigation measures, avoiding and minimising impacts where practical.
2. **The principle of intergenerational equity** – the proponent has undertaken measures to avoid, minimise, manage and rehabilitate impacts, including drafting Environmental Management Plans to maintain the environment for the benefit of future generations.
3. **The principle of conservation of biological diversity and ecological integrity** – the proponent has identified management measures, including adaptive management, to mitigate the biodiversity and ecological impacts associated with the proposal.
4. **Principles relating to improved valuation, pricing and incentive mechanisms** – the proponent would bear the cost relating to waste and pollution, including avoidance, containment, decommissioning, rehabilitation and closure.
5. **The principles of waste minimisation** – the proponent has identified that standard waste management measures and application of the waste management hierarchy are applicable to the proposal.

Appendix 2 provides a summary of the principles and how the EPA considered these principles in its assessment.

The EPA's assessment of the proposal's impacts on the key environmental factors is provided in sections 4.1 – 4.4. These sections outline whether or not the EPA considers that the impacts on each factor are manageable. Section 5 provides the EPA's conclusion as to whether or not the proposal as a whole is environmentally acceptable.

4.1 Flora and Vegetation

EPA objective

The EPA's environmental objective for this factor is *to protect flora and vegetation so that biological diversity and ecological integrity are maintained.*

Relevant policy and guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016b)
- *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016c)

The considerations for environmental impact assessment (EIA) for this factor are outlined in *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016b).

In addition to the relevant current policy and guidance above, the EPA gave regard to the *Guidelines for Preparing Mine Closure Plans* (DMP and EPA 2015), to ensure that the proposal is decommissioned and rehabilitated in an appropriate manner.

EPA assessment

The proposal is located within the Murchison bioregion and East Murchison subregion under the IBRA classification system. The proposal involves clearing of 878 ha of native vegetation for development of the Goliath and Six Mile Well mining pits, a waste rock landform (WRL), ancillary infrastructure and the haul road.

The proponent has undertaken appropriate flora and vegetation surveys in accordance with EPA policy and guidance, including desktop analysis, comprehensive field work and seasonal targeted surveys.

Vegetation

There were no Threatened Ecological Communities (TEC) recorded within the development envelope. The Violet Range (Perseverance Greenstone Belt) vegetation complexes (banded ironstone formation) PEC (the Violet Range PEC) occurs within the development envelope (Figure 2). Baseline surveys indicate vegetation within the development envelope ranges from 'pristine' to 'excellent' condition. No declared or environmental weeds were identified.

Flora

Baseline surveys indicate the majority of flora species found within the development envelope are common, widespread in distribution, and highly representative of the East Murchison subregion.

There were no Threatened (Declared Rare) Flora recorded near or within the development envelope. The proponents field surveys confirmed the presence of nine Priority Flora within the development envelope, including two Priority 2 species, five Priority 3 species and two Priority 4 species. Baseline surveys indicate that most of the recorded Priority Flora species have known populations distributed across the East Murchison subregion.

Wanjarri Nature Reserve

The east portion of the development envelope borders the Wanjarri Nature Reserve (Figure 2). The Wanjarri Nature Reserve is the only reserve in the northern part of the eastern Goldfields and contains significant conservation values (CALM 1996).

The proponent considers that vegetation within the Wanjarri Nature Reserve is widespread and prevalent on a regional scale within the north-eastern Goldfields.

The EPA has assessed the potential of indirect impacts on the reserve due its proximity to the proposal.

Potential Impacts

Flora and vegetation would be impacted through direct clearing of 878 ha of native vegetation. Flora and vegetation have the potential to be indirectly impacted through:

- introduction and spread of weeds
- habitat fragmentation
- increased risk for fire resulting in vegetation loss or change
- impacts to adjacent native vegetation, including the Wanjarri Nature Reserve.

No Threatened Flora or Threatened Ecological Communities would be impacted by the proposal. The proposal would directly remove 3.76 per cent of the known Violet Range (Perseverance Greenstone Belt) vegetation complexes (banded ironstone formation) PEC (the Violet Range PEC) (Figure 2). The proponent has indicated that indirect impacts would be restricted to the development envelope, with the potential to impact a further 1.36 per cent of the Violet Range PEC.

The proposal would have a direct impact on Priority flora within the development envelope of up to 15 per cent, with most impacted less than 5 per cent. The proponent has noted that the direct impacts would be unlikely to change the conservation status of the priority flora species and indirect impacts would be managed through a management plan.

Mitigation and management measures

The proponent notes that the development envelope and disturbance footprint has been optimised and reduced so land disturbance is kept to only what is necessary for development, and that vegetation clearing would be limited to the proposed disturbance footprint.

To manage potential direct and indirect impacts on Priority flora, the Violet Range PEC and the Wanjarri Nature Reserve, the proponent has drafted the *Flora and Vegetation Environmental Management Plan* (September 2018) (the Plan). The Plan includes a detailed management program over the life of the proposal, including monitoring programs, actions, triggers and thresholds to minimise indirect impacts from the proposal to Flora and Vegetation.

The Department of Water and Environmental Regulation (DWER) advised that direct impacts (clearing only) to priority species and the Violet Range PEC are unlikely to be significant. The DWER has also advised that the proposed management actions within the *Flora and Vegetation Environmental Management Plan* are appropriate to manage indirect impacts (dust, weeds, etc) on priority flora, vegetation and the Wanjarri Nature Reserve.

The proponent has completed a preliminary Mine Closure Plan (MCP), which was included as part of the ERD and appendices (Nickel West 2018). The MCP was drafted in accordance with the *Guidelines for Preparing Mine Closure Plans* (DMP and EPA 2015). Nickel West proposes to rehabilitate the site with native vegetation and species of local provenance.

The Department of Mines, Industry, Regulation and Safety (DMIRS) advised that rehabilitation and decommissioning of the proposal could be adequately managed under the *Mining Act 1978* (the Mining Act). The EPA has provided further advice regarding implementation of the MCP in the 'Other Advice' section of this report (section 6).

The EPA considers that direct impacts to Priority flora, the Violet Range PEC, and the Wanjarri Nature Reserve are not likely to be significant and indirect impacts can be managed through implementation of a Flora and Vegetation Management Plan (FVMP).

In view of the above, the EPA recommends a condition requiring implementation of the *Flora and Vegetation Environmental Management Plan* (September 2018).

Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Flora and Vegetation*
- flora and vegetation investigations conducted within a local and regional context
- application of the mitigation hierarchy, to avoid direct impacts to the Wanjarri Nature Reserve and minimise impacts to Priority flora.
- DWER advice that direct impacts from the proposal to Priority flora and the Violet Range PEC are unlikely to be significant
- measures proposed by the proponent to minimise indirect impacts to Flora and Vegetation
- development of the *Flora and Vegetation Environmental Management Plan* (September 2018) to manage potential direct and indirect impacts to Priority flora, the Violet Range PEC and Wanjarri Nature Reserve.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Flora and Vegetation, that the impacts to this factor are manageable and would no longer be significant, provided there is:

- control through authorised extent in Schedule 1 of the Recommended Environmental Conditions (Appendix 4)
- implementation of measures to manage indirect impacts to Priority flora, the Violet Range PEC and Wanjarri Nature Reserve through the implementation of an Environmental Management Plan (condition 6)

In addition to the conditions of approval, the EPA notes that the proponent would be required to submit a MCP to the DMIRS under the *Mining Act 1978* and the MCP would need to be reviewed and updated every three years.

4.2 Inland Waters

EPA objective

The EPA's environmental objective for this factor is *to maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.*

Relevant policy and guidance

The EPA considers the current following environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Inland Waters* (EPA 2018c)

The considerations for an EIA for this factor are outlined in *Environmental Factor Guideline – Inland Waters* (EPA 2018c).

In addition to the current relevant policy and guidance above, the EPA gave regard to the *Guidelines for Preparing Mine Closure Plans* (DMP and EPA 2015), to ensure the proposal is decommissioned and rehabilitated in an appropriate manner.

EPA assessment

The proposal is located regionally within the Lake Miranda catchment, and at a local level, the upper reaches of Jones Creek catchment. Jones Creek is an ephemeral water course (Figure 2). Potential impacts from the proposal may occur through mine pit dewatering, groundwater abstraction, changes to natural waters flow and creeks, construction and management of a WRL, oxidation of acid forming geology, and the formation of a pit lake in the Goliath pit post-mining.

Surface water

The proponent has undertaken several hydrological surveys including baseline investigations (Nickel West 2018). Baseline surface water quality sampling was also undertaken in Jones Creek upstream, downstream and within the vicinity of the proposal.

The proponent provided an evaluation of the potential impacts of the proposal on catchment scale volumetrics. The evaluation indicated that flow frequency and duration is not likely to be significantly impacted by the proposal. The proponent notes that the proposed mine pits and WRL were positioned to avoid interactions with the majority of creek flow events. The proponent notes that, due to the depths of groundwater (as discussed below), surface water flows are unlikely to be significantly impacted by groundwater drawdown (Nickel West, 2018).

The proponent has considered potential pathways for sedimentation and waste rock leachate to impact on Jones Creek. The sampling results indicated there is unlikely to be significant sedimentation and release of metals.

Groundwater

The proponent's baseline surveys found groundwater levels within the proposal area occur at a depth of 15 to 35 metres below ground level (mbgl). The proponent sampled a range of new and existing bore sites within the development envelope, and found the majority of samples contained brackish groundwater.

Following closure of the proposal, Six Mile Well pit would be completely backfilled and Goliath pit would be left as a void. The proponent's modelling indicates that the Goliath pit would partially refill to form a pit lake and the water within the pit lake would reflect the chemistry of baseline groundwater (brackish with low levels of trace components and slightly elevated boron). The pit lake would become more saline due to ongoing evaporation losses. The proponent considers the pit lake would not significantly impact the regional groundwater resources, due to the lack of pathway for groundwater or surface water discharge from the pit.

The DWER advised Nickel West's hydrogeological studies for this proposal provide sufficient rigor and accuracy to enable an adequate assessment of impacts on the environment, the aquifer system and other users. The DWER stated it has no objections to the proposal.

Mitigation and management measures

The proponent has designed the proposal to largely avoid impacts to Jones Creek. The proponent has limited the proposal design to two creek crossings; the southern crossing would allow for access between the pits and WRL, and the northern crossing would allow ore to be trucked from the run of mine (ROM) pad to Mt Keith Nickel Mine via the haul road. Excluding the two creek crossings, the proponent has incorporated a 50 m buffer on either side of Jones Creek called the 'Jones Creek Exclusion Zone', where no disturbance is proposed (Figure 3).

The mine layout largely avoids flood zones, with only minor incursions of the 1:1000 year flood zone into the disturbance footprint. The proponent has positioned roads within the proposal at low surface gradients to minimise potential impacts to natural drainage. It also proposes management measures such as rock cladding of erosive materials, diversion drains, and a raised road profile on down-slope areas.

The DMIRS has noted that mine closure would be regulated under the *Mining Act 1978* (Mining Act) and provision of MCPs would be required every three years. The MCP would include provisions for management of the pit lake and could also include requirements regarding the rehabilitation of the Jones Creek crossings. The DMIRS has advised that any potential impacts from acid or metalliferous drainage are not likely to be significant and are manageable.

The EPA notes the proponent's investigations, and advice from government agencies, that the proposal is unlikely to cause significant impacts to water quality (acid or metalliferous drainage) and quantity (regional aquifer and surface water flows). The EPA notes that the pit lake would become brackish over time and have similar water quality to the aquifer and could be regulated through the MCP.

The EPA considers that the proponent has designed the proposal to minimise erosion, maintain natural drainage, and largely avoid impacts to Jones Creek (see Social Surrounds below for further information on cultural impacts).

The EPA notes the rehabilitation of the creek would be managed under the MCP.

Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Inland Waters*
- extensive hydrological and hydrogeological investigations conducted within a local and regional context
- the design of the proposal to minimise changes to natural drainage and erosion
- the application of mitigation hierarchy by the proponent largely avoid impacts to Jones Creek, other than the two proposed creek crossings
- advice from DMIRS, that the potential for acid and metalliferous drainage can be managed, and is not likely to be significant.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Inland Waters, that the impacts to this factor are manageable and would no longer be significant, provided there is:

- control through authorised extent in Schedule 1 of the Recommended Environmental Conditions (Appendix 4)

The EPA notes that there is a requirement for:

- licensing of water abstraction by the DWER under the *Rights in Water and Irrigation Act 1914*
- licensing of emissions and discharges by the DWER under Part V of the EP Act
- management of mine closure and rehabilitation by the DMIRS through the Mining Act.

4.3 Social Surroundings (Aboriginal Heritage)

EPA objective

The EPA's environmental objective for this factor is *to protect social surroundings from significant harm*.

Relevant policy and guidance

The EPA considers the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Social Surroundings* (EPA 2016d)

The considerations for EIA for this factor are outlined in *Environmental Factor Guideline – Social Surroundings* (EPA 2016d).

In addition to the current relevant policy and guidance above, the EPA gave regard to the *Guidance Statement for the Assessment of Aboriginal heritage* (GS 41) (EPA 2004), to assess the potential impacts of the proposal on physical and biological attributes of the environment that are significant to Aboriginal people.

EPA assessment

The EPA has considered potential impacts of the proposal on various aspects of Social Surroundings, and identified that potential impacts to Aboriginal heritage is the main consideration that requires assessment. The remaining Social Surroundings considerations (e.g. noise, dust and amenity) have been evaluated and are discussed further in Appendix 3.

The proposal area and its immediate surrounds have been the subject of up to 46 heritage surveys conducted over the past 30 years. Heritage surveys included large-scale archaeological and ethnographic surveys to identify places of heritage, cultural and scientific significance.

The development envelope contains and intersects 24 Aboriginal heritage sites, 14 of which are registered under the *Aboriginal Heritage Act 1972* (AH Act). The remaining 10 sites are listed as 'Lodged' Aboriginal heritage places.

Through demonstrated consultation with the native title holders, the Tjiwarl people, the proponent identified two key areas of cultural and social significance:

- the Barr-Smith Range (Site 2310) and
- Ngulu Wuri Wuri (Jones Creek) (Site 1252)

The proponent notes that, although the development envelope marginally encroaches on the Barr-Smith Range site boundary (as registered), the proposal would not directly impact the range.

The proposal would directly impact Ngulu Wuri Wuri (Jones Creek) via two proposed creek crossings. The proponent notes no other part of the creek would be directly impacted by the proposal and the creek crossings have been designed to:

- minimise impact on flow through of the creek
- not impact overall catchment drainage
- largely preserve the integrity of the ethnographic values associated with the creek.

The proponent has committed to further consultation with the Tjiwarl to refine the location and design of the creek crossings.

Historical approvals and land use agreement

The Department of Planning, Lands and Heritage (DPLH) advised that Ministerial consent to undertake works within the area of the proposal was provided under section 18 of the AH Act for similar works in 1990, 1997 and 2003. The proponent

(and its related entities) received consent in 2003 to disturb 23 of the known 24 Aboriginal heritage sites under section 18 of the AH Act. Four of the sites (Sites 106, 107, 18604, and 19405) were granted with conditional approval, requiring a further application under section 16 of the AH Act and a qualified archaeologist to conduct further recording, prior to disturbance.

Consent to mine on this site for the Yakabindie Nickel proposal was provided through Ministerial Statement (MS) 117 in 1990, which included conditions to control the diversion of Jones Creek. The Statement was amended in 1991 (MS 142), 1993 (MS 302), 1995 (388), 1996 (MS 430), 2001 (MS 574) and 2003 (MS 623). The approval for the diversion of Jones Creek was not removed during amendment of the statements.

The Tjiwarl are the native title holders of land that covers an area including the development envelope (*Narrier v State of Western Australia* [2016] FCA 1519). The proponent has engaged with the Tjiwarl during the development of the proposal, including on-ground consultation during heritage surveys, and through the preparation of an Indigenous Land Use Agreement (ILUA). The proponent has advised that the final ILUA has not been agreed but would be prior to mining. The EPA notes the proponent's commitment to ongoing consultation with the Tjiwarl and intent to agree and finalise the ILUA prior to mining.

The Tjiwarl has provided the EPA with confirmation that the proponent had undertaken appropriate consultation in relation to the proposal, and negotiations are ongoing regarding a formalised agreement.

Mitigation and management measures

The proponent has designed the proposal to avoid the majority of disturbance to Aboriginal heritage, including consideration of cultural significance and concerns. Direct impacts to the Barr-Smith Range have been avoided, and direct impacts to Ngulu Wuri Wuri (Jones Creek) is limited to two creek crossings.

The proponent has stated it has internal procedures in place to ensure unauthorised clearing or access to identified or unidentified sites does not occur. The proponent notes that in accordance with its internal procedures, all potential ground disturbing activities (e.g. clearing of vegetation and drainage works) must be approved through an Environmental and Heritage Impact Approval (EHIA) process. The EHIA process has been developed through application of the EP Act, AH Act, and heritage specific guidelines published by DPLH.

The proponent has received consent to disturb 23 of the known 24 Aboriginal heritage sites under section 18 of the AH Act. The remaining site, the Mt Falconer Site Complex (*Site 1294*), is registered under the AH Act as an Artefacts/Scatter, Man-Made Structure, Mythological, Repository/Cache, Water Source type. The actual location of the site is restricted, however the boundary (as recorded) is extensive, covering approximately 8450 ha (DPLH 2018). As proposed, the haul road would traverse the Mt Falconer Site Complex (*Site 1294*). Due to the nature of linear infrastructure, the proponent would be able to adjust and change the haul road during its development to minimise impacts to the site. The EPA considers that the proponent would need to undertake further consultation with the Tjiwarl prior to

developing the haul road. The EPA notes that any potential impacts to the site would be regulated through the AH Act and the proponent has been in consultation with the Tjiwarl throughout the design of the proposal.

The proponent notes that some Aboriginal heritage sites within the development envelope would be retained. Access to these sites by Aboriginal groups would be managed through the development of a Cultural Heritage Management Plan (CHMP). Application of the CHMP would minimise potential impacts to the cultural associations of the Tjiwarl and include practical measures such as land access protocols and restrictions during certain mining activities (e.g. blasting).

Where disturbance to Aboriginal heritage sites cannot practically be avoided, and approval under the AH Act has been provided, the proponent proposes to remove and salvage cultural materials in accordance with the AH Act, to ensure that heritage and cultural value is preserved as far as practicable. The proponent notes that, under guidance of the Tjiwarl, salvaged cultural materials would be relocated on country or moved to a suitable cultural repository, until it could be returned to country.

The proponent has committed to application of the EHIA process throughout the life of the proposal, including consideration and consultation with the Tjiwarl during preparation of the final mine closure plans.

The EPA considers that the proponent has identified and assessed the potential impacts of the proposal for Social Surroundings, particularly to Aboriginal Heritage. The EPA notes that the proponent has considered EPA policy and guidance through utilisation of the *Environmental Factor Guideline – Social Surroundings* (EPA 2016d) and GS 41 (EPA 2004).

The EPA recognises the environmental and cultural significance of Aboriginal heritage sites associated with the proposal, and that the proponent's commitments and procedures need to be formalised through a condition. The EPA considers that appropriate consultation with the Tjiwarl has occurred and should continue to ensure that impacts to Social Surroundings (Aboriginal Heritage), including impacts on Ngulu Wuri Wuri (Jones Creek), are minimised and appropriate.

In view of the above, the EPA recommends a condition that requires the proponent undertake appropriate consultation with the Tjiwarl prior to the commencement of ground-disturbing activities and ensure compliance with its obligations under the *Aboriginal Heritage Act 1972*.

Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Social Surroundings*
- extensive archaeological and ethnographic studies conducted over the development envelope

- consent provided under section 18 of the AH Act to disturb 23 of the known 24 sites that are contained within, or intersect the proposed development envelope
- avoidance measures of the proponent to avoid direct impacts to the Barr-Smith Range, and minimise direct impacts to Ngulu Wuri Wuri (Jones Creek) via two creek crossings
- proponent's continued engagement and consultation with the Tjiwarl
- proponent's ability, to avoid and minimise impacts to the registered and lodged heritage sites.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Social Surroundings (Aboriginal Heritage) that the impacts to this factor are manageable, provided there is:

- appropriate consultation with the Tjiwarl to avoid and minimise impacts to Aboriginal heritage (condition 7).

The EPA notes that, in accordance the *Native Title Act 1993*, a formalised ILUA would act as a voluntary agreement between the Tjiwarl and the proponent, and is an important instrument for continued consultation and agreement on mining in this area.

4.4 Air Quality

EPA objective

The EPA's environmental objective for this factor is *to maintain air quality and minimise emissions so that environmental values are protected*.

Relevant policy and guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Air Quality* (EPA 2016e)

The considerations for EIA for this factor are outlined in *Environmental Factor Guideline – Air Quality* (EPA 2016e).

EPA assessment

The ore from the proposal would be processed at the Mt Keith Mine site but would produce some dust emissions during operations. The proponent would manage these emissions during operations and they are unlikely to represent a human health risk.

Climate change has the potential to cause impacts across Western Australia particularly to the south-west of Western Australia. The proposal would result in greenhouse gas emissions that would contribute to the global emissions of carbon dioxide. The proponent has estimated a maximum of 170 000 tonnes of carbon dioxide will be produced each year once operations reach full capacity. This is

equivalent to 0.20 per cent of the total greenhouse gas emissions reported in Western Australia for 2016 (DEE 2018).

The EPA is of the view that estimated greenhouse gas emissions generated from the proposal are unlikely to significantly impact human health or amenity in isolation. The EPA considers that the plant would be a minor contributor to the State's greenhouse gas emissions. The EPA nevertheless requires the proponent to report annually on greenhouse gas emissions (condition 8) to help maintain a robust dataset on the State's greenhouse gas emissions.

Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Air Quality*
- potential cumulative impacts from greenhouse gas emission generated over the life of the proposal

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Air Quality that the impacts to this factor are manageable, provided there is:

- a condition requiring the annual reporting of greenhouse gas emissions to DWER (condition 8).

The EPA notes that air quality can also be regulated through:

- licensing by the DWER under Part V of the EP Act.

5. Conclusion

The EPA has considered the proponent's proposal to develop the Mt Keith Satellite Project, to mine low-grade nickel as a satellite operation to the existing Mt Keith Mine, located 80 km north of Leinster in the Shire of Leonora.

Application of mitigation hierarchy

Consistent with relevant policies and guidance, the proponent has addressed the mitigation hierarchy by identifying measures to avoid, minimise and rehabilitate environmental impacts including:

- the design of the proposal to avoid direct impacts to the Wanjarri Nature Reserve, and the Barr-Smith Range
- realignment of the proposed haul road to avoid and minimise impacts to priority flora species
- optimisation and reduction of the Six Mile Well pit to avoid the need to divert Ngulu Wuri Wuri (Jones Creek)
- direct impacts to Ngulu Wuri Wuri (Jones Creek) are minimised to two creek crossings
- design of the proposal to maintain natural water flows and minimize erosion
- avoidance and minimisation of impacts to Aboriginal heritage sites

Conclusion

The EPA has taken the following into account in its assessment of the proposal as a whole, including the:

- impacts to all the key environmental factors
- EPA's confidence in the proponent's proposed mitigation measures
- relevant EP Act principles and the EPA's objectives for the key environmental factors
- EPA's view that the impacts to the key environmental factors are manageable, provided the recommended conditions are imposed.

Given the above, the EPA has concluded the proposal is environmentally acceptable and therefore recommends that the proposal may be implemented subject to the conditions recommended in Appendix 4.

6. Other advice

Ministerial Statement 117

The EPA notes that MS 117 holds approval and conditions for implementation of the Yakabindie Nickel Project, which would be geographically located in a similar area as the Mt Keith Satellite Project. To date, MS 117 has not been implemented but has undergone several time limit extensions since being granted approval in 1990. The most recent change to conditions included an extension of the time limit to implement the proposal, granted under section 46 of the EP Act in 2003 (MS 623).

The Time Limit on Approval condition provided in MS 623 (condition 11) states that 'if the proponent has not substantially commenced the project by 21 October 2007, then the approval to implement the proposal as granted in the statement published on 4 December 1990 (MS 117) shall lapse and void'.

The EPA considers that the EP Act does not contain provisions to remove a valid Ministerial Statement; however, MS 117 would need to be inquired into under section 46 (time limit review) of the EP Act prior to implementation. The EPA considers that the review would need to consider this Mt Keith Satellite proposal and any potential cumulative impacts from implementation of the two proposals, prior to a further time limit extension.

Hydrology Management Plan

The EPA notes that the proponent prepared a Hydrological Processes Management Plan (HPMP) to manage potential impacts to Inland Waters and Subterranean Fauna. The HPMP was included as part of the ERD and appendices (Nickel West 2018).

The EPA notes that the HPMP was reviewed as part of the assessment process. The EPA considered the impacts to Inland Waters and Subterranean Fauna as part of its assessment, and is of the view that potential impacts to these factors are not so significant that a formal condition of the HPMP is required.

Mine Closure Plan

The EPA notes there is a requirement for management of rehabilitation and decommissioning by the DMIRS through the Mining Act, by way of a MCP. The proposed final land use for the Mt Keith Satellite Project is to return the area to pastoral activities.

The proponent notes that grazing would be discouraged through implementation of perimeter fencing in rehabilitated areas to reduce potential for grazing impacts to undermine core stability and revegetation/biodiversity outcomes.

The DWER advised that management actions should be implemented through the MCP to avoid increased cattle grazing within the Violet Range PEC, post closure. The EPA advises that management actions to avoid cattle grazing in rehabilitated areas, and the Violet Range PEC should be considered as part of the MCP. Further, the EPA recognises that rehabilitation should be undertaken in consultation with the

Tjiwarl to ensure that the land can be returned to the Traditional Owners in an appropriate condition.

7. Recommendations

The EPA recommends that the Minister for Environment notes:

1. The proposal assessed is for the development of the Mt Keith Satellite Project, a low-grade nickel mine as a satellite operation to the existing Mt Keith Mine, located 80 km north of Leinster in the Shire of Leonora.
2. The key environmental factors identified by the EPA in the course of its assessment are Flora and Vegetation, Inland Waters, Social Surroundings (Aboriginal Heritage), and Air Quality set out in Section 4.
3. The EPA has concluded that the proposal may be implemented, provided the implementation of the proposal is carried out in accordance with the recommended conditions and procedures set out in Appendix 4. Matters addresses in the conditions include the following:
 - a) Implementation of a flora and vegetation management plans to minimise impacts to Flora and Vegetation (condition 6)
 - b) Appropriate consultation with the Tjiwarl to minimise impacts to Social Surroundings (Aboriginal Heritage) (condition 7)
 - c) Reporting of greenhouse gas emissions (condition 8)
4. Other information, advice and recommendations provided by the EPA, set out in Section 6.

Appendix 1: References

Australian and New Zealand Environment and Conservation Council 2000, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, ANZECC, Canberra, ACT.

BHP Billiton Nickel West Pty Ltd 2018, *Mt Keith Project Environmental Review Document*, Nickel West, Perth, WA.

Commonwealth of Australia, Department of the Environment and Energy 2018, *State and Territory Greenhouse Gas Inventories 2016*, DEE, Canberra, ACT.

Department of Conservation and Land Management 1996, *Wanjarri Nature Reserve Management Plan*, CALM, Perth, WA.

Department of Conservation and Land Management 2002, Murchison 1 (MUR – East Murchison subregion), *A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002*, CALM, Perth, WA.

Department of Mines and Petroleum and Environmental Protection Authority 2015, *Guidelines for Preparing Mine Closure Plans*, DMP and EPA, Perth WA.

Department of Planning, Lands and Heritage 2018, *Aboriginal Heritage Inquiry System*, <https://maps.daa.wa.gov.au/AHIS/>, accessed 5 October 2018, DPLH, Perth, WA.

Environmental Protection Authority 2004, *Guidance Statement 41 – Assessment of Aboriginal heritage*, EPA, Perth, WA.

Environmental Protection Authority 2016a, *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016*, EPA, Perth, WA.

Environmental Protection Authority 2016b, *Environmental Factor Guideline: Flora and Vegetation*, EPA, Perth WA.

Environmental Protection Authority 2016c, *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment*, EPA, Perth WA.

Environmental Protection Authority 2016d, *Environmental Factor Guideline – Social Surroundings*, EPA, Perth, WA.

Environmental Protection Authority 2016e, *Environmental Factor Guideline – Air Quality*, EPA, Perth, WA.

Environmental Protection Authority 2016f, *Environmental Factor Guideline – Terrestrial Fauna*, EPA, Perth, WA.

Environmental Protection Authority 2016g, *Environmental Factor Guideline – Subterranean Fauna*, EPA, Perth, WA

Environmental Protection Authority 2018b, *Statement of Environmental Principles, Factors and Objectives*, EPA, Perth, WA.

Environmental Protection Authority 2018c, *Environmental Factor Guideline – Inland Waters*, EPA, Perth, WA.

Federal Court of Australia 2016, *Narrier v State of Western Australia* [2016] FCA 1519, FCA, Perth, WA.

Government of Western Australia 2011, *WA Environmental Offsets Policy*, Perth WA.

Government of Western Australia 2014, *WA Environmental Offsets Guidelines*, Perth, WA.

Western Botanical 2017, *Flora and Vegetation Assessment of the Mt Keith Satellite Proposal Study Area*, prepared for BHP Billiton Nickel West, Western Botanical, unpublished, Mt Helena, WA.

Appendix 2: Consideration of principles

EP Act Principle	Consideration
<p>1. The precautionary principle</p> <p><i>Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In application of this precautionary principle, decisions should be guided by –</i></p> <p><i>a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and</i></p> <p><i>b) an assessment of the risk-weighted consequences of various options.</i></p>	<p>In considering this principle, the EPA notes Flora and Vegetation, Inland Waters, and Social Surroundings (Aboriginal Heritage) could be significantly impacted by the proposal. The assessment of these impacts is provided in this report.</p> <p>The EPA notes that the proponent has identified measures to avoid or minimise impacts. The EPA has considered these measures during its assessment.</p> <p>Investigations into the biological and physical environment that have been undertaken by the proponent have provided sufficient certainty to assess risks and identify measures to avoid or minimise impacts. The EPA has recommended conditions (including preparation and implementation of management plans) to ensure relevant measures are undertaken by the proponent</p>
<p>2. The principle of intergenerational equity</p> <p><i>The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.</i></p>	<p>In considering this principle, the EPA notes the proponent has taken measures to avoid, minimise and rehabilitate impacts in accordance with the mitigation hierarchy in the <i>WA Environmental Offsets Guidelines</i> (Government of Western Australia 2014). In assessing this proposal, the EPA has recommended adaptive management mechanisms (through conditions requiring environmental management plans) be implemented to maintain ecological processes.</p> <p>From its assessment of this proposal, the EPA has concluded the health, diversity and productivity of the environment can be maintained and enhanced for the benefit of future generations.</p>
<p>3. The principle of the conservation of biological diversity and ecological integrity</p>	<p>This principle is a relevant consideration for the EPA when assessing and considering the impacts of the proposal on the environmental factors of Flora and Vegetation, and Inland Waters.</p>

EP Act Principle	Consideration
<p><i>Conservation of biological diversity and ecological integrity should be a fundamental consideration.</i></p>	<p>In assessing the proposal, the EPA has considered these impacts and has taken into account measures proposed by the proponent to minimise impacts to the affected species. The EPA has concluded that the proposal would not compromise biological diversity or ecological integrity.</p> <p>Through this assessment, the EPA has demonstrated that the conservation of biological diversity and ecological integrity was a fundamental consideration.</p>
<p>4. Principles relating to improved valuation, pricing and incentive mechanisms</p> <p>(1) <i>Environmental factors should be included in the valuation of assets and services.</i></p> <p>(2) <i>The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.</i></p> <p>(3) <i>The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.</i></p> <p>(4) <i>Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or minimize costs to develop their own solution and responses to environmental problems.</i></p>	<p>In considering this principle, the EPA notes that the proponent would bear the cost relating to waste and pollution, including avoidance, containment, decommissioning, rehabilitation and closure.</p> <p>The EPA has had regard to this principle during the assessment of the proposal.</p>
<p>5. The principle of waste minimisation</p> <p><i>All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.</i></p>	<p>In considering this principle, the EPA notes that waste products created as a result of implementation of the proposal would be disposed of according to relevant regulations and legislation.</p> <p>The EPA has demonstrated due regard to this principle during the assessment of this proposal.</p>

Appendix 3: Evaluation of other environmental factors

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency comments	Evaluation of why the factor is not a key environmental factor
PEOPLE			
Social Surroundings (Amenity, Dust and Noise, Heritage)	<ul style="list-style-type: none"> The proponent considered indirect impacts of the proposal on amenity values of the Wanjarri Nature Reserve, including dust, noise, vibration, and light emissions. Implementation of the proposal would require construction of a new public access road to the Wanjarri Nature Reserve. The proposal is isolated and remote to any noise sensitive premises. the nearest noise sensitive receiver is 7 km away, within the Wanjarri Nature Reserve. 	<p>Agency comments – DBCA</p> <ul style="list-style-type: none"> The impact of light-spill on the amenity values of Wanjarri Nature Reserve should be appropriately addressed. Appropriate consultation has been undertaken with DBCA to identify an alternative access route to the Wanjarri Nature Reserve to avoid interactions between reserve managers and visitors and mining operations. The proponent has committed to fund access realignment, track upgrades and signage once a route has been finalised. <p>Agency comments – DWER</p> <ul style="list-style-type: none"> Noise and vibration generated from the proposal can be managed to comply with the Environmental Protection (Noise) Regulations 1997. Dust modelling and management appear to have been adequately addressed. A dust management plan should be implemented that includes good practice techniques and a commitment to continuous improvement. 	<p>Social Surroundings (Amenity, Dust and Noise) was identified as a preliminary key environmental factor when the EPA decided to assess the proposal.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> The proponents amenity, noise and dust investigations. comments on the proposal from DBCA and DWER, that considerations of potential impacts to amenity, dust and noise are likely to be low. <i>Environmental Factor Guideline – Social Surroundings</i> (EPA 2016d) the significance considerations in the <i>Statement of Environmental Principles, Factors and Objectives</i>, <p>the EPA considers it is unlikely that the proposal would have a significant impact on Social Surroundings (Amenity, Dust and Noise) and that the impacts to this factor are manageable.</p> <p>Accordingly, the EPA did consider Social Surroundings (Heritage, Amenity, Dust and Noise) to be a key</p>

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency comments	Evaluation of why the factor is not a key environmental factor
			<p>environmental factor at the conclusion of its assessment but only for Aboriginal heritage. Potential impacts to Aboriginal heritage are considered further in Section 4.3.</p> <p>The EPA notes that amenity, dust and noise would also be regulated through a works approval and licence under Part V of the EP Act.</p>
LAND			
Terrestrial Fauna	<ul style="list-style-type: none"> The proposal includes clearing of native vegetation that is also terrestrial fauna habitat, including Short-Range Endemic (SRE) invertebrates. The area has been extensively studied, and no fauna habitats are restricted to the development envelope. Conservation significant species have been recorded in the vicinity of the proposal, however recent surveys did not 	<p>Agency comments – DWER</p> <ul style="list-style-type: none"> The proponent has appropriately identified and quantified the potential direct and indirect impacts to terrestrial fauna, including SRE invertebrates. Relevant management measures have been proposed to minimise potential impacts. No significant vertebrate fauna species were identified, and all SRE species were also recorded outside of the development envelope. Impacts to terrestrial fauna, including SRE invertebrates, are likely to be low. 	<p>Terrestrial Fauna was identified as a preliminary key environmental factor when the EPA decided to assess the proposal.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> The proponent's investigations, including survey efforts for terrestrial fauna and SRE invertebrates comments on the proposal from DWER, that species are not restricted to the development envelope, and that impacts to terrestrial fauna, including SRE invertebrates from the proposal are likely to be low <i>Environmental Factor Guideline – Terrestrial Fauna</i> (EPA 2016f)

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency comments	Evaluation of why the factor is not a key environmental factor
	<p>record any of the species within the development envelope.</p>		<ul style="list-style-type: none"> the significance considerations in the <i>Statement of Environmental Principles, Factors and Objectives</i>, the EPA considers it is unlikely that the proposal would have a significant impact on Terrestrial Fauna and that the impacts to this factor are manageable. <p>Accordingly, the EPA did not consider Terrestrial Fauna to be a key environmental factor at the conclusion of its assessment.</p>
Subterranean Fauna	<ul style="list-style-type: none"> The proposal includes the dewatering of an aquifer within the Six Mile Well pit, and minor water bodies within Goliath pit. Surveys found 25 stygofauna species from the development envelope. A Hydrological Processes Management Plan was developed by the proponent to manage potential impacts to Subterranean Fauna. 	<p>Agency comments – DWER</p> <ul style="list-style-type: none"> The proponent has appropriately identified and assessed the potential impacts to stygofauna from groundwater drawdown. Species recorded within the development envelope have widespread distributions outside of the area of drawdown associated with mine pit dewatering. The predicted impacts to stygofauna from the proposal are likely to be low. 	<p>Subterranean Fauna was identified as a preliminary key environmental factor when the EPA decided to assess the proposal.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> The proponent's investigations, including surveys and sampling of Subterranean Fauna comments on the proposal from DWER, that 25 species found within the development envelope are widespread, and impacts to stygofauna from the proposal are likely to be low <i>Environmental Factor Guideline – Subterranean Fauna</i> (EPA 2016g)

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency comments	Evaluation of why the factor is not a key environmental factor
			<ul style="list-style-type: none">the significance considerations in the <i>Statement of Environmental Principles, Factors and Objectives</i>, the EPA considers it is unlikely that the proposal would have a significant impact on Subterranean Fauna and that the impacts to this factor are manageable. <p>Accordingly, the EPA did not consider Subterranean Fauna to be a key environmental factor at the conclusion of its assessment.</p>

Appendix 4: Identified Decision-Making Authorities and Recommended Environmental Conditions

Identified Decision-making Authorities

Section 44(2) of EP Act specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with decision-making authorities (DMAs), and if possible, agree on whether or not the proposal may be implemented, and if so, to what conditions and procedures, if any, that implementation should be subject.

The following decision-making authorities have been identified:

Decision-making Authority	Legislation (and Approval)
1. Minister for Environment	<i>Wildlife Conservation Act 1950</i>
2. Minister for Water	<i>Rights in Water and Irrigation Act 1914</i>
3. Minister for Aboriginal Affairs	<i>Aboriginal Heritage Act 1972</i>
4. CEO, Department of Environment Regulation	<i>Environmental Protection Act 1986</i>
5. Department of Mines and Petroleum Director, Environment Division	<i>Mining Act 1978</i>
State Mining Engineer	<i>Mines Safety and Inspection Act 1994</i>
Chief Dangerous Goods Officer	<i>Dangerous Goods Safety Act 2004</i>

Note: In this instance, agreement is only required with DMA 1, 2 and 3 since these DMAs are Ministers.

Statement No. xxx

RECOMMENDED ENVIRONMENTAL CONDITIONS

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (*Environmental Protection Act 1986*)

MT KEITH SATELLITE PROJECT

Proposal: The proposal is to develop a nickel mine as a satellite operation to the existing Mt Keith Mine. The proposal includes two open pits, a waste rock landform and a haul road corridor. Ancillary infrastructure that supports mining will also be located at the satellite operation.

The mined ore will be processed at the existing Mt Keith Mine located approximately 20 km north of the satellite operation. The proposal is located 80 km north of Leinster and intersects the Shire of Leonora and Shire of Wiluna.

Proponent: BHP Billiton Nickel West Pty Ltd
Australian Company Number 004 184 598

Proponent Address: 125 St Georges Terrace
PERTH WA 6000

Assessment Number: 2122

Report of the Environmental Protection Authority: XXXX

Pursuant to section 45 of the *Environmental Protection Act 1986* it has been agreed that the proposal described and documented in Tables 1 and 2 of Schedule 1 may be implemented and that the implementation of the proposal is subject to the following implementation conditions and procedures:

1 Proposal Implementation

- 1-1 When implementing the proposal, the proponent shall not exceed the authorised extent of the proposal as defined in Table 2 in Schedule 1, unless amendments to the proposal and the authorised extent of the proposal have been approved under the EP Act.

2 Contact Details

- 2-1 The proponent shall notify the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty eight (28) days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

3 Time Limit for Proposal Implementation

- 3-1 The proponent shall not commence implementation of the proposal after five (5) years from the date on this Statement, and any commencement, prior to this date, must be substantial.
- 3-2 Any commencement of implementation of the proposal, on or before five (5) years from the date of this Statement, must be demonstrated as substantial by providing the CEO with written evidence, on or before the expiration of five (5) years from the date of this Statement.

4 Compliance Reporting

- 4-1 The proponent shall prepare, and maintain a Compliance Assessment Plan which is submitted to the CEO at least six (6) months prior to the first Compliance Assessment Report required by condition 4-6, or prior to implementation of the proposal, whichever is sooner.
- 4-2 The Compliance Assessment Plan shall indicate:
 - (1) the frequency of compliance reporting;
 - (2) the approach and timing of compliance assessments;
 - (3) the retention of compliance assessments;
 - (4) the method of reporting of potential non-compliances and corrective actions taken;
 - (5) the table of contents of Compliance Assessment Reports; and
 - (6) public availability of Compliance Assessment Reports.
- 4-3 After receiving notice in writing from the CEO that the Compliance Assessment Plan satisfies the requirements of condition 4-2 the proponent shall assess compliance with conditions in accordance with the Compliance Assessment Plan required by condition 4-1.
- 4-4 The proponent shall retain reports of all compliance assessments described in the Compliance Assessment Plan required by condition 4-1 and shall make those reports available when requested by the CEO.
- 4-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of that non-compliance being known.
- 4-6 The proponent shall submit to the CEO the first Compliance Assessment Report fifteen (15) months from the date of issue of this Statement addressing the twelve (12) month period from the date of issue of this Statement and then

annually from the date of submission of the first Compliance Assessment Report, or as otherwise agreed in writing by the CEO.

The Compliance Assessment Report shall:

- (1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf;
- (2) include a statement as to whether the proponent has complied with the conditions;
- (3) identify all potential non-compliances and describe corrective and preventative actions taken;
- (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and
- (5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1.

5 Public Availability of Data

5-1 Subject to condition 5-2, within a reasonable time period approved by the CEO of the issue of this Statement and for the remainder of the life of the proposal the proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)) management plans and reports relevant to the assessment of this proposal and implementation of this Statement.

5-2 If any data referred to in condition 5-1 contains particulars of:

- (1) a secret formula or process; or
- (2) confidential commercially sensitive information;

the proponent may submit a request for approval from the CEO to not make these data publicly available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publicly available.

6 Flora and Vegetation Management Plan

6-1 The proponent shall implement the proposal to meet the following environmental objective:

- (1) Avoid, where possible, and minimise indirect impacts as far as practicable to Priority flora, the Violet Range PEC and the Wanjarri Nature Reserve.

- 6-2 In order to meet the requirements of condition 6-1, the proponent shall implement the *Flora and Vegetation Environmental Management Plan* (Version 0, September 2018).
- 6-3 The proponent shall implement the most recent version of the Flora and Vegetation Environmental Management Plan which the CEO has confirmed by notice in writing, addresses the requirements of condition 6-1.
- 6-4 The proponent shall continue to implement the *Flora and Vegetation Environmental Management Plan* (Version 0, September 2018), or any subsequent revisions as approved by the CEO in condition 6-3, until the CEO has confirmed by notice in writing that the plan meets the objective specified in condition 6-1.

7 Aboriginal Heritage

- 7-1 Prior to the commencement of ground disturbing activities, the proponent shall consult with the Tjiwarl Native Title Claim Group and ensure that the proponent has complied with its obligations under the *Aboriginal Heritage Act 1972*.

8 Greenhouse Gas Reporting

- 8-1 The proponent shall publicly report the greenhouse gas emissions from the proposal on an annual basis, in a manner approved by the CEO.

Schedule 1**Table 1: Summary of the proposal**

Proposal title	Mt Keith Satellite Project
Short description	<p>The proposal is to develop a nickel mine as a satellite operation to the existing Mt Keith Mine. The proposal includes two open pits, a waste rock landform and a haul road corridor. Ancillary infrastructure that supports mining will also be located at the satellite operation.</p> <p>The mined ore will be processed at the existing Mt Keith Mine located approximately 20 km north of the satellite operation. The proposal is located 80 km north of Leinster and intersects the Shire of Leonora and Shire of Wiluna.</p>

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

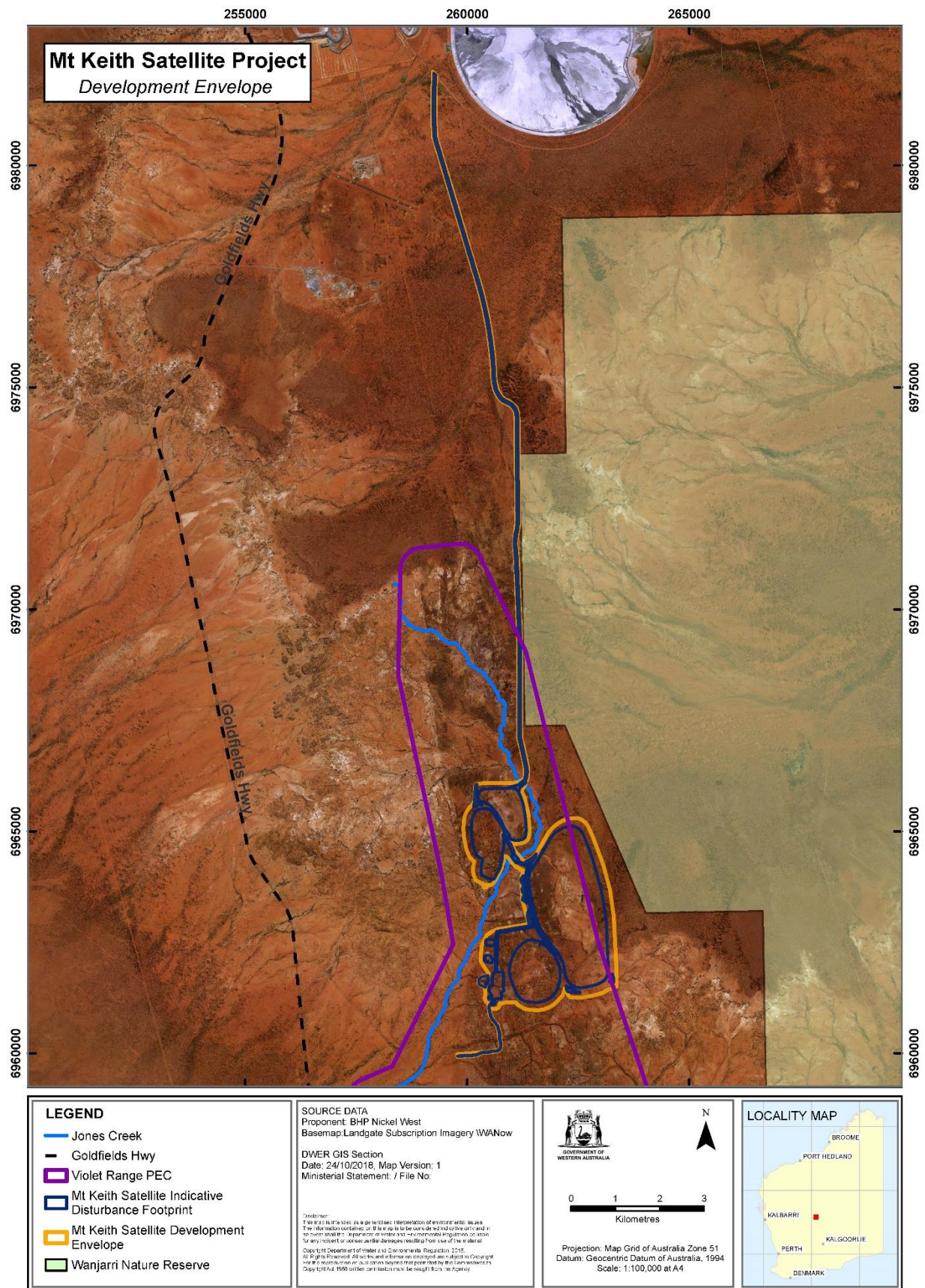
Column 1	Column 2	Column 3
Element	Location	Proposed extent
Physical elements		
Native vegetation clearing	Figure 1	Clearing of up to 878 ha of native vegetation within a development envelope of 1259 ha.
Operational elements		
Pit dewatering	NA	Water abstraction of up to 0.4 GL per year. Dewatering via bore/s and put sumps.

Table 3: Abbreviations and Definitions

Acronym or Abbreviation	Definition or Term
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the <i>Environmental Protection Act 1986</i> , or his delegate.
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986</i>
GL	Gigalitre
ha	Hectare
km	kilometre

Figures (attached)

Figure 1 Mt Keith Satellite Project development envelope (This map is a representation of the co-ordinates shown in Schedule 2)



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Figure 1: Development envelope

Schedule 2

Coordinates defining the development envelope are held by the Department of Water and Environmental Regulation, Document Reference Number 2018-1532071097268.