Australian Government
Department of the Environment and Energy

Title of Proposal - Clearing for Mt Keith Satellite Project

Section 1 - Summary of your proposed action

Provide a summary of your proposed action, including any consultations undertaken.

1.1 Project Industry Type

Mining

1.2 Provide a detailed description of the proposed action, including all proposed activities.

The Action is the clearing of 842 ha of native vegetation within a Development Envelope of 1251 ha, to allow for mining and transport of ore to existing processing facilities at the Mt Keith Operations. Clearing would be undertaken using mechanised earthmoving equipment such as bulldozers. The Action would be implemented over the life of mining operations including during the rehabilitation phase of the Project.

BHP Billiton Nickel West Pty Ltd (BHPN) proposes to develop the Mt Keith Satellite Project (the Project), approximately 100 km south of the township of Wiluna, in both the Shire of Leonora and Shire of Wiluna. The Action is located within Mining Act 1978 (Mining Act) tenure which is held by either BHPN (the Proponent) or its wholly owned subsidiary BHP Billiton Yakabindie Nickel Pty Ltd (BHPYN). The Project is located within the Yakabindie Pastoral Lease, which is held by BHPYN.

The following figures are attached:
- Regional Overview
- Tenure Context
- Conceptual Detailed Proposal

1.3 What is the extent and location of your proposed action? Use the polygon tool on the map below to mark the location of your proposed action.

Area	Point	Latitude	Longitude
General Location	1	-27.259129513107	120.56264410294
General Location	2	-27.260191579844	120.56383885941
General Location	3	-27.260191579844	120.56443623765
General Location	4	-27.260722609409	120.57339699506
General Location	5	-27.326520489647	120.59130467973
General Location	6	-27.387505620556	120.59548636931
General Location	7	-27.43520914798	120.61638098708

Area	Point	Latitude	Longitude
General Location	8	-27.434148757781	120.62175743314
General Location	9	-27.485011898745	120.6271338373
General Location	10	-27.485011898745	120.58712990521
General Location	11	-27.476532248259	120.57100744019
General Location	12	-27.400759336053	120.56264410294
General Location	13	-27.399168250758	120.58354559387
General Location	14	-27.326520489647	120.5793639462
General Location	15	-27.259129513107	120.56264410294

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland).

The Action is located in both the Shire of Leonora and Shire of Wiluna approximately 100 km south of the township of Wiluna, within Mining Act tenure M36/422, M36/399, M36/288, M36/286, M36/285, M36/246, M36/185, M36/184, M36/183, M36/677, L36/206, M36/658, M53/217 and M53/218, which is all held by either BHPN or its wholly owned subsidiary BHPYN. The Project is located within the Yakabindie Pastoral Lease, which is held by BHPYN.

1.6 What is the size of the development footprint or work area?

842 Ha of Clearing within a 1251 Ha Development Envelope

1.7 Is the proposed action a street address or lot?

Street Address

via Goldfields Highway
Leonora WA 6438
Australia

1.8 Primary Jurisdiction.

Western Australia

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

No

1.10 Is the proposed action subject to local government planning approval?

No

1.11 Provide an estimated start and estimated end date for the proposed action.

Start date 07/2018

End date 12/2035

1.12 Provide details of the context, planning framework and State and/or Local government requirements.

The Project has been referred to the Western Australian Environmental Protection Authority (EPA) and is currently being assessed under Part IV of the *Environmental Protection Act 1986 (WA)* (EP ACT).

The *Mining Act 1978 (WA)* and EP Act principally regulate mining and associated activities in the State of Western Australia.

No local government planning frameworks apply to the Action.

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders.

BHPN aims to consult with identified stakeholders throughout and beyond the approvals process. The objectives for this consultation is;

- to engage appropriately with stakeholders to ensure that stakeholders understand the potential aspects and benefits of the Action and the approvals required,

- ensure that stakeholders understand that the approvals being sought are for the development of a satellite deposit to sustain the existing Mt Keith operation, and

- communicate with stakeholders in a clear and timely manner, and consider the interests of and impacts on our stakeholders.

A Communications and Consultation plan has been developed to enable BHPN to meet these objectives and outline the appropriate stakeholder engagements.

The Project has been referred to the EPA and is currently being assessed under Part IV of the EP Act. Prior to the Part IV referral submission, discussions were undertaken with State Government departments including the Department of Water and Environmental Regulation, Department of Mines, Industry, Resources and Safety, and Department of Biodiversity Conservation and Attractions regarding the Proposal scope and the Projects key environmental factors.

An initial engagement was held (July 2017) with the Traditional Owners (Tjiwarl) to provide a Project overview and identify an appropriate frequency for further consultation on the detailed aspects of the Project. BHPN intends to work with the Tjiwarl towards an agreement Project development.

Ongoing consultation will be undertaken with Government, community and other relevant stakeholders throughout the planning, design and approval stages of the Project.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project.

The Project, titled Mt Keith Satellite Project, was referred to the EPA under Part IV of the EP Act on 13 April 2017. A decision to assess the proposal was made by the Chairman of the EPA on 19 July 2017 by way of Environmental Review (s.40(2)(b)).

The Action is not subject to planning and development approvals. The Action is subject to the provisions of the Mining Act. Subsequent to EP Act Part IV approval being granted, BHPN will prepare and submit a Mining Proposal to the Western Australian Department of Mines, Industry, Resources and Safety.

1.15 Is this action part of a staged development (or a component of a larger project)?

No

1.16 Is the proposed action related to other actions or proposals in the region?

No

Section 2 - Matters of National Environmental Significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The interactive map tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest. Consideration of likely impacts should include both direct and indirect impacts.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The following resources can assist you in your assessment of likely impacts:

• Profiles of relevant species/communities (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;

• Significant Impact Guidelines 1.1 – Matters of National Environmental Significance;

• Significant Impact Guideline 1.2 – Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies.

2.1 Is the proposed action likely to impact on the values of any World Heritage properties?

No

2.2 Is the proposed action likely to impact on the values of any National Heritage places?

No

2.3 Is the proposed action likely to impact on the ecological character of a Ramsar wetland?

No

2.4 Is the proposed action likely to impact on the members of any listed threatened species (except a conservation dependent species) or any threatened ecological community, or their habitat?

Yes

2.4.1 Impact table

Species	Impact
Night Parrot (Pezoporus occidentalis)	Risk to both roosting/nesting habitat and

Species	Impact
	foraging habitat was assessed as low due to the small percentage area of potential habitat to be impacted by the Project and its marginal suitability for Night Parrot. No significant impacts to Night Parrot will occur as a result of the Action. Biota Environmental Sciences (Biota) was commissioned to conduct a habitat description and targeted survey for the Night Parrot and to use this information to assess the Project's potential risk to the Night Parrot. The study focused effort within the most prospective Night Parrot habitat available within and adjacent to the Development Envelope. This area has previously been the subject of vegetation mapping and vertebrate fauna habitat mapping facilitating site selection. Potential roosting/nesting and foraging habitat was delineated and mapped. The potential roosting/nesting habitat comprised spinifex-dominated vegetation units and the foraging habitat included various shrubs, grasses and chenopods. A total of 32.2 ha of potential roosting/nesting spinifex habitat was mapped inside the Development Envelope. The spinifex within the Development Envelope was ground-truthed by an ornithologist and while areas of unburnt ring-forming spinifex were found they were assessed as unsuitable for Night Parrot roosting/nesting. This was because the hummocks were considered structurally too small for nesting (30 – 50 cm) and occurred in small patches, often with a shrubland or woodland overstorey, which was thought to reduce suitability for Night Parrot. A total of 490 ha of potential foraging habitat was mapped inside the Development Envelope. A field survey targeting Night Parrot was conducted, consisting of 56 nights of automatic sound recording across nine sites within potential roosting/nesting habitat, together with 9.7 hours of targeted listening surveys. No evidence of Night Parrot was recorded. The field survey was conducted under ideal conditions, with confidence that the best potential habitat for roosting/nesting was surveyed and using appropriate methods recommended by the

Species	Impact
	Department of Biodiversity Conservation and Attractions (May 2017). Risk to both roosting/nesting habitat and foraging habitat was assessed as low due to the small percentage of potential habitat to be impacted by the Project and its marginal suitability for Night Parrot. Assessing the Project against the EPBC Act Significant Impact Guidelines, it was concluded that none of the significant impact criteria would be triggered, and the adverse effects on potential core (roosting/nesting) habitat are localised and minor in scale. The Night Parrot survey report is attached.
Malleefowl (Leipoa ocellata)	No evidence of the Malleefowl was found during surveys. It is considered the Action presents a low risk to Malleefowl and no significant impacts to Malleefowl will occur as a result of the Action. The Development Envelope is situated at the northern extreme of the Malleefowl distribution. Vegetation units comprising sandplains supporting Acacia species were mapped as potential core (nest building) habitat for nesting of the species. The potential habitat within the Development Envelope is 14.9 ha. Resulting risk to the species from the Action is assessed as Low due to the low likelihood of occurrence.
Black-footed Rock-wallaby (Petrogale lateralis lateralis)	It is considered the Action presents a low risk to Black-footed Rock-wallaby and no significant impacts will occur to Rock-wallaby as a result of the Action. An extension of the breakaway landform of the Barr Smith Range intersects the Development Envelope. Biota was commissioned to conduct a habitat description and targeted survey for the Black-footed Rock-wallaby and to use this information to assess the Projects potential risk to the sub-species. Regionally, Hall and Milewski (1994) described breakaways as common throughout the Sandstone-Sir Samuel area, comprising weathered granite faces punctuated by shallow caves and overhangs. The linear extent of mapped breakaway landform is approximately 65 km in length and represents a combined area of approximately 3000 ha. Not all of this habitat is suitable for rock-wallabies. Only those sections with caves or sufficiently deep and

Species	Impact
	protected overhangs are likely to represent core habitat. The Development Envelope contains 4.1 ha of potential habitat that is considered moderately prospective for the species.

2.4.2 Do you consider this impact to be significant?

No

2.5 Is the proposed action likely to impact on the members of any listed migratory species, or their habitat?

No

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

No

2.7 Is the proposed action likely to impact on any part of the environment in the Commonwealth land?

No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

No

2.9 Will there be any impact on a water resource related to coal / gas / mining?

No

2.10 Is the proposed action a nuclear action?

No

2.11 Is the proposed action to be taken by the Commonwealth agency?

No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage Place Overseas?

No

2.13 Is the proposed action likely to impact on any part of the environment in the Commonwealth marine area?

No

Section 3 - Description of the project area

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed in Section 2).

3.1 Describe the flora and fauna relevant to the project area.

Extensive botanical survey effort has been applied to the broader region (5,310 ha) in and around the Project since 1990. This area is known for 393 flora species (and putative hybrids) from 140 genera and 51 families of endemic flora have been recorded. Of these, the majority are common, widespread in distribution and are highly representative of the flora of eastern Murchison and western Great Victoria Desert biogeographic regions. Dominant genera were Acacia (53 species inclusive of 31 species and numerous putative hybrids of Mulga species); Eremophila (37 species), Maireana (18 species) Senna (14 species), Sida (11 species) and Eragrostis (7 species). Six weed species were also recorded, all in small scattered populations of low numbers (Western Botanical 2017).

No Threatened Flora as listed under the EPBC Act 1999 will be impacted by the Action.

Extensive vertebrate fauna and habitat surveys have been completed at the local and regional level since 1990. These assessments have provided a detailed picture of vertebrate fauna populations and available habitat within the region. To date, nine separate vertebrate fauna surveys, conducted between Mount Keith and Leinster, have been completed. Of these, five vertebrate fauna assessments were specific to the Project area. A significant number of trapping sites were established within the region. Four surveys were conducted between 2006 and 2008, establishing 65 systematic trapping sites. Thirty additional sites were established as part of the Mount Keith study by the University of Western Australia, and ATA Environmental established 16 more sites both within, and adjacent to, the Project area in 2005.

In total, this survey effort (5,310 ha) has recorded 215 vertebrate fauna species, comprising 36 mammal species, 106 bird species, 67 reptile species and six frog species. A fauna review conducted by Biota (2017) concluded that the broad habitats identified are not confined to the Project area and are unlikely to support any highly restricted terrestrial fauna species.

Two Short Range Endemic (SRE) invertebrate fauna surveys and a targeted survey have been undertaken. The following invertebrate groups prone to short-range endemism were targeted during this assessment: mygalomorph spiders, araneomorph spiders (selenopids), scorpions, pseudoscorpions, millipedes, slaters and terrestrial snails. The survey yielded a total of 1682 invertebrate specimens from 49 species. The habitat considered to have a moderate potential to support SRE are all well represented outside the Development Envelope. The Development Envelope is therefore unlikely to support any highly restricted terrestrial fauna species.

3.2 Describe the hydrology relevant to the project area (including water flows).

The majority of the Development Envelope occurs within the Jones Creek Upper Catchment. During large flood events water is rapidly shed from the upper part of the catchment into the creek. An evaluation of the water resources in the area determined that creek flow is highly intermittent and water quality can be highly variable (MWES 2016). Sedimentation of Jones Creek is particularly sensitive to catchment conditions between rainfall events and largely unrelated to the proposed mining operation (MWES 2016).

The aquifers are of limited lateral and vertical extent and surrounding rocks exhibit very low permeability (MWES 2016). Most of the bedrock lithologies have practically no primary or secondary porosity and drilling across a majority of the area generates no groundwater yield. The oxide zone over the dunite ultramafic pod at Six Mile Well pit is the main aquifer, where high permeability and porosity occurs in the oxide silica-carbonate zone which extends to about 50 m below ground level (MWES 2016).

Depth to the water table varies from a minimum of about 15 m in the south west, to 16 to 17 m in the vicinity of Jones Creek, and 25 to 35 m outside the creek beds. The groundwater extends down to approximately 50 m (MWES 2016).

Groundwater salinity in the aquifer at Six Mile Well pit is brackish (3000 to 8000 mg/L TDS) and neutral pH. Groundwater in the isolated country rock fractured zone in surrounding areas is also brackish but of lower salinity (700-5400 mg/L TDS) (MWES 2016).

3.3 Describe the soil and vegetation characteristics relevant to the project area.

The Land Systems of the area are generally well represented in the broader northeastern Goldfields region. Those Land Systems with the greatest representation are the Archaean granite breakaways and associated foot slopes of the Sherwood Land System; low ironstone (limonitic duricrust) hills of the Bevon Land System; and the extensive orange sandplains of the Bullimore Land System.

The gravelly hardpan plains of the Tiger Land System; the hardpan plains with ironstone gravel mantles of the Jundee Land System and the gently undulating stony plains and low rises with quartz mantles on granite of the Windarra Land System occupy relatively large areas.

Nine Land Systems are represented by smaller areas, being the major creeklines of the Wilson Land System to the gently undulating gravelly plains on greenstone, laterite and hardpan of the Violet Land System.

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area.

The Action is located within the 19 256 ha Violet Ranges (Perseverance Greenstone Belt) vegetation complexes (banded ironstone formation) Priority 1 Priority Ecological Community

(PEC). The majority of the geology within the Violet Ranges PEC is basalt, gabbro and granite with only minor Banded Ironstone Formation (BIF), chert and quartz outcrops with associated laterite capping.

The Development Envelope occupies approximately 8% of the Violet Ranges PEC.

Additional adjacent areas of similar basalt geology and associated vegetation types lie within the Mt Keith Perseverance-greenstone belt / fault line but outside the current PEC boundaries. These areas extend in a discontinuous fashion both northward (north of BHPNs Mt Keith operations) and southward (to BHPNs Leinster operations) for an overall inclusive length of approximately 82 km. The Violet Ranges PEC represents around 40% of this overall range (Western Botanical 2017).

The Development Envelope sits directly next to the Wanjarri Nature Reserve. The vegetation within the Wanjarri Nature Reserve is contiguous with the eastern margin of the Study Area. The vegetation is reflective of underlying granitoid landscapes with extensive Aeolian sandplains, extensive Archaean granite breakaways and associated saline footslopes and hardpan plains being present. These landscape units are widespread and are well represented both within and outside Wanjarri Nature Reserve. Components of the Violet Ranges PEC are not represented within the Wanjarri Nature Reserve (Western Botanical 2017).

3.5 Describe the status of native vegetation relevant to the project area.

Twenty six Vegetation Associations and three Vegetation Association Complexes have been recognised. The Vegetation Associations have been grouped according to the dominating underlying geology / regolith which strongly influence the vegetation association species composition (Western Botanical 2017). The majority of Vegetation Associations within the Development Envelope are well represented outside the Development Envelope.

Vegetation Associations on Sandplains and Colluvial and Alluvial Landforms are widely distributed in the Murchison Biogeographic region. Vegetation Associations of the Limonitic Landforms and Basalt geology of the Perseverance fault line, and some of the colluvial slopes associated with these, are less widely distributed but still well represented between Mount Keith and Leinster. Based on regional surveys conducted the disturbance of vegetation and flora is not expected to be significant at a regional scale (Western Botanical 2017).

3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The topography within the Development Envelope consists of low rises and plains (both granite and ironstone) with breakaways. The area within the northern part of the Project is characterised by breakaways and sandplains. A number of ephemeral drainage lines exist in the wider landscape, which carry rainfall runoff to open claypan areas. Of particular note is the

Jones Creek, an ephemeral Eucalyptus camaldulensis lined creek system that flows from the northeast of the Project through to claypans to the west of the Goldfields Highway.

3.7 Describe the current condition of the environment relevant to the project area.

The relevant tenements have been extensively explored in the past and post exploration rehabilitation was found to have been largely effective. Vegetation condition outside the existing exploration areas and access tracks is generally of Excellent or Pristine condition with little evidence of pastoral activities. Areas having been disturbed in previous exploration works are regarded as being in Excellent condition while completely cleared areas were recorded as Completely Degraded (Western Botanical 2017).

The Development Envelope lies within the Yakabindie Pastoral Lease and grazing of cattle has historically been the main pastoral activity in the past 20 years (D. Brownlie pers. comm., 2016). While there is evidence of traffic by cattle, this is mostly on the margins and within the sandy bed of Jones Creek. Little evidence of grazing pressure on vegetation is apparent. Specifically, the Mulga and associated vegetation shows little evidence of grazing by cattle and the canopies of most vegetation is intact and reflects normal seasonal conditions in all the surveys that have been conducted to date by Western Botanical and Landcare Services since 1996.

Weed populations were found in small, isolated populations with low numbers of individuals present. Three species, Rumex vesicarius (Ruby Dock), Cenchrus ciliaris (Buffel Grass), Cenchrus setiger (Birdwood Grass) have the potential to be highly invasive. A further three species, Bidens bipinnata (Tick Weed), Lysimachia arvensis (Pimpernel) and Mesembryanthemum nodiflorum (Slender Iceplant) pose a lesser environmental risk.

3.8 Describe any Commonwealth Heritage Places or other places recognised as having heritage values relevant to the project area.

No Commonwealth Heritage Places are relevant to the Action. Other places recognised as having heritage values are discussed in Section 3.9.

3.9 Describe any Indigenous heritage values relevant to the project area.

BHPN and previous tenement holders have worked with Traditional Owner Groups to develop a detailed understanding of the heritage values of the Project, with the aim of understanding how the Project's impact on heritage sites can be minimised.

The Traditional Owner Groups that have participated in heritage surveys include the Ngalia, Wutha, Wunmulla, Sir Samuel and Koara. In 2012 the Tjiwarl native title claim was registered,

and in April 2017 the Tjiwarl were granted native title over lands which include the Development Envelope. The Tjiwarl are made up of individuals from the above groups.

Over the development history of the Project, 46 different heritage (archaeological or ethnographic) surveys have been conducted over land that forms part of the Project and its surrounds. Through this engagement, Jones Creek and the Barr Smith Range have been identified as being the places of most importance to Traditional Owners.

In seeking to reduce the impacts to cultural heritage values, BHPN has undertaken the following mitigating actions;

- BHPN has completed the Wanjarri Land swap which enabled the relocation of the waste rock dump to the eastern side of the pits, thereby avoiding impact to the Barr Smith Range;

- The size of the Six Mile Well pit, forming part of the Project, is such that diversion of Jones Creek is not required.

Despite these measures a small number of identified heritage sites are unable to be avoided and will be impacted by implementation of the Project. In accordance with the requirements of the Aboriginal Heritage Act 1972, BHPN and BHPYN hold the necessary s18 approvals which allows for disturbance of the land on which these sites are located.

BHPN and BHPYN will undertake this authorised disturbance of impacted heritage sites in accordance with the conditions of the granted section 18s. Those sites that are outside of the Development Envelope will be protected from impact via BHPN's existing land disturbance authorisation process.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area.

BHPN and BHPYN hold all tenure required for the project to be implemented.

Mining tenure M36/ 399, M36/206, M36/246, L36/677, M36/658, M53/217 and M53/218 are held by BHPN.

M36/288, M36/286, M36/285, M36/185, M36/184, M36/183 and M36/422 are held by BHPYN, a wholly owned subsidiary of BHPN.

This tenure occupies an area of 6977 ha.

3.11 Describe any existing or any proposed uses relevant to the project area.

The Project is located within the Yakabindie Pastoral Lease, which is held by BHPYN. Portions of that Pastoral Lease are sublet to a third party for the conduct of pastoral activities.

The Project would adjoin BHPNs existing Mt Keith operations, which are located 20 km north of the Project orebody.

Section 4 - Measures to avoid or reduce impacts

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action.

The disturbance footprint of the Project has been reduced to the minimum acheivable disturbance that is required to allow site access, mining and transport of ore. Where ever possible the infrastructure of BHPNs existing Mt Keith operations are being utilised. This removes the need for additional infrastructure, and therefore additional disturbance footprint, that would otherwise be required to produce nickel concentrate at the mine. Given tenure constraints and the location of the ore body, no further reduction or relocation of infrastructure can be undertaken.

Prior to clearing being undertaken, potential Night Parrot breeding / roosting habitat will be inspected by a competent person to ensure no nesting Night Parrots will be impacted by the Action. Should Night Parrot be identified, BHPN would liaise with the relevant agencies on the appropriate steps to be taken.

Weed control and cat trapping are routinely undertaken for the exisiting BHPN Mt Keith operations and these programs would be expanded to the additional operational areas introduced by implementing the Action.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved.

BHPN has sought to a achieve a negligible impact to fauna of national environmental significance. BHPN believe this has been achieved and can be maintained.

Section 5 – Conclusion on the likelihood of significant impacts

A checkbox tick identifies each of the matters of National Environmental Significance you identified in section 2 of this application as likely to be a significant impact.

Review the matters you have identified below. If a matter ticked below has been incorrectly identified you will need to return to Section 2 to edit.

5.1.1 World Heritage Properties

No

5.1.2 National Heritage Places

No

5.1.3 Wetlands of International Importance (declared Ramsar Wetlands)

No

5.1.4 Listed threatened species or any threatened ecological community

No

5.1.5 Listed migratory species

No

5.1.6 Commonwealth marine environment

No

5.1.7 Protection of the environment from actions involving Commonwealth land

No

5.1.8 Great Barrier Reef Marine Park

No

5.1.9 A water resource, in relation to coal/gas/mining

No

5.1.10 Protection of the environment from nuclear actions

No

5.1.11 Protection of the environment from Commonwealth actions

No

5.1.12 Commonwealth Heritage places overseas

No

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action.

The Action is not likely to have a significant impact on EPBC Act listed species. This has been determined following extensive survey and knowledge accumulation of the environmental values of the area. Risk assessment has been undertaken considerate of the DEEs Significant Impact Criteria stated within the EPBC Act Significant Impact Guidelines (Department of the Environment 2013).

Potential habitat loss has been quantified and is minor with respect to remaining available habitat for the EPBC Act listed species discussed here. Large areas of intact and superior quality habitat exist immediately outside the Development Envelope and more regionally. No EPBC Act listed fauna have been identified as occupying the potential habitats which are the subject of the Action, nor have they been identified in the broader area of study (5,310 ha). It is not expected that any population fragmentation or disruption would result from the Action and fauna are expected to be able to continue to move freely around the Project.

Undertaking the Action would not:

- lead to a long-term decrease in the size of a population

- reduce the area of occupancy of the species

- fragment an existing population into two or more populations

- adversely affect habitat critical to the survival of a species

- disrupt the breeding cycle of a population

- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

- result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat

- introduce disease that may cause the species to decline, or

- interfere with the recovery of the species.

The following summarises the descriptions and assessments prepared by Biota (2017), which are available in full in the attached Fauna Report and which include a list of references.

For context, for this Section 5.2:

The Development Envelope: refers to a 1251 ha area within which the Action will be undertaken.

The Study Area: refers to a 5,310 ha area that was the focus of detailed assessments.

The Wider Area: refers to a broader area around the Study Area for which broad scale vegetation mapping exists and from which regional habitat availability has been quantified for Night Parrot.

Night Parrot

The Night Parrot is a small ground-dwelling Parrot endemic to Australia and occurring in arid to semi-arid regions where it requires dense, low vegetation, under or in which they hide during the day. Historical records indicate that the Night Parrot was once widespread and relatively common in the arid zone until late in the 19th Century (Murphy et al. 2017) but then a hiatus in records of almost 100 years followed, despite considerable search effort. Then in 1990 and 2006, two specimens were collected in southwest Queensland with the first photographic evidence presented in 2013 (Dooley 2013). In March this year (2017) there was a confirmed record from the Murchison (Jones 2017). A published article also details a number of sightings in the Lorna Glen and Millrose Station area, which straddles the Murchison/Gascoyne bioregions (Hamilton et al. 2017).

The current descriptions of the species' habitat preferences are broad, reflecting the wide variety of habitats the species was historically known from. The (former) Department of Parks and Wildlife (2017) guideline details old-growth spinifex (*Triodia* spp.) as habitat for roosting and nesting as has been recorded in western Queensland (Murphy et al. 2017). Foraging habitats are broadly described as grasses and herbs that may or may not contain shrubs or low trees. Johnstone and Storr (1998) mention sparsely-wooded *Triodia* spp. near water as the habitat preferred by this species, while Pizzey and Knight (2007) list the following additional habitats: seeding spinifex on stony rises, breakaway country, sandy lowlands, shrubby glasswort, chenopods, succulents on flats around salt lakes, flooded claypans, saltbush, bluebush and bassia associations.

There is little information available on the Night Parrot, making it difficult to quantify the direct cause of decline in this species. The following potential threats have been suggested: predation by feral cats and foxes, degradation of habitat due to fire, grazing or rabbits, reduction in the availability of water due to consumption by feral camels and reduced maintenance of waterholes (Department of the Environment 2016).

Habitat Assessment (Roosting/Nesting): Areas of ring-forming long-unburnt spinifex were found within the Development Envelope that were 30 – 40 cm in height, which Biota estimate to be functionally too small for nesting by extrapolating from the available information on Night Parrot nest characteristics. The study of Murphy et. al. (2017) describes three nests each consisting of a hollow chamber ranging in size from 20 – 28 cm in a spinifex hummock with each chamber leading to the outside via a tunnel of length 20 – 33 cm. The size of the hummocks was not stated but we infer that they much have been least 40 - 50 cm in size. We assume, based on this information, that the structural elements of a chamber and tunnel are required for nest success and although perhaps the tunnel and chamber size may be tailored somewhat to the size of hummock, a minimum size of hummocks of 40 – 50 cm seems reasonable. Very little spinifex of this size was found within the Development Envelope or Study Area, although it is possible that the *T. basedowii* present would grow to a sufficient size in time.

The potential roosting/nesting habitat within the Development Envelope is part of a continuous extent of the same habitat both with the Study Area and the Wider Area for which vegetation mapping was available. Examples of better potential roosting/nesting habitat were found outside the Study Area as detailed in the targeted survey for Night Parrot (Biota 2017); in Wanjarri Nature Reserve and where listening surveys sites were located; which included a large and relatively open area of low-medium dense spinifex grassland.

Using the broadest definition of potential roosting/nesting habitat as that containing spinifex, the Wider Area supports 55,430.7 ha, the Study Area supports 351.9 ha, and the Development Envelope intersects a much smaller subset of this (32.2 ha). This represents 0.06% of the occurrence of this habitat type in the Wider Area.

Habitat Assessment (Foraging): Spinifex would represent potential foraging habitat at times of seeding and may represent an important food source during times of breeding. Breeding has been found to occur opportunistically following large rainfall events in the best studied Night Parrot population in western Queensland (Murphy et al. 2017) and large rainfall events also give rise to mass seeding events in *Triodia*. Many Triodia species including the *T. basedowii* of the Study Area (Western Botanical 2017) form seed banks within the hummock and soil (Westoby et al. 1988) which may represent an ongoing food source in this habitat for the breeding birds. Therefore, the areas of potential roosting/nesting habitat have also been included in calculations of available foraging habitat.

Potential foraging habitat within the Study Area was defined using those vegetation units comprising areas of Wanderrie Bank grassy shrublands, spinifex shrublands, bluebush shrublands and chenopod plains (see Figure 3.2 for vegetation unit descriptions). The Wider Area supports 70,075 ha of these vegetation units. These vegetation units occur broadly across the Study Area including within the Development Envelope. The Study Area was mapped as containing 981.2 ha of potential foraging habitat of which 490 ha is intersected by the Development Envelope, which represents 0.7% of its occurrence in the Wider Area.

Likelihood of Occurrence: Targeted surveying for the species was undertaken using DBCA Guidance (May 2017) and comprised 56 nights of automatic sound recording across nine sites (six within the Study Area and three in the Wider Area) in potential roosting/nesting habitat together with 9.7 hours of targeted listening surveys. No evidence of the Night Parrot was

recorded.

The roosting/nesting habitat within the Study Area was considered to be marginally suitable for Night Parrot, and unlikely to support a resident population. Some potential feeding habitat is present in the Study Area, but it is widespread in the region and there are much better potential foraging locations elsewhere.

Consequently the likelihood of occurrence of Night parrot was considered to be very low.

Risk Assessment: Risk to both roosting/nesting habitat and foraging habitat was assessed as low due to the small percentage area of habitat to be impacted by the Action and its marginal suitability for Night Parrot. Assessing the Action against the EPBC Act Significant Impact Guidelines (Department of the Environment 2013), it was concluded that none of the significant impact criteria would be met, and the adverse effects on potential core (roosting/nesting) habitat are localised and minor in scale. As a result, the likely impacts to the Night Parrot arising from the Action do not appear to be significant.

Malleefowl

The Malleefowl was once broadly distributed across the southern half of the Australian continent, but has undergone significant range reduction over the past several decades. It is now restricted to the Southwest of Western Australia, and to southern areas of South Australia and New South Wales (Burbidge 2004, Garnett et al. 2011). Populations are scattered throughout the southern portion of mainland Australia with the largest section of contiguous habitat occurring east of the Wheatbelt in Western Australia. A large portion of suitable habitat in this region has been cleared for agriculture (Burbidge 2004). Malleefowl are mainly found in the semi-arid and arid zones of Australia in mallee dominated shrublands or low woodlands (Benshemesh 2007). They feed on the seeds, flowers and fruits of shrubs as well as tubers, fungi and invertebrates (Garnett et al. 2011).

For breeding, they require a sandy substrate and abundant source of leaf litter to build a mound used to incubate their eggs (Benshemesh 2007). Malleefowl begin laying eggs at the start of September and continue to lay every 5–7 days until summer (Benshemesh 2007). Clutch size can be highly variable but on average, 15–20 eggs are laid (Garnett et al. 2011). This variation is thought to be related to food supply and the onset of hot weather conditions, which alters the length of the egg-laying season (Benshemesh 2007). Rainfall also influences the fecundity and survival of Malleefowl (Garnett et al. 2011). The chicks usually hatch between November and January and receive no parental care. They reach sexual maturity after 3–4 years and are able to breed for a period of 15 years (Benshemesh 2007).

Habitat assessment: Vegetation units comprising sandplains supporting Acacia species were mapped as potential core (nest building) habitat for nest the species. The distribution of potential habitat within the Study Area represents 197.2 ha in total while the area within the Development Envelope is 14.9 ha.

Likelihood of Occurrence: The Study Area occurs at the northern extreme of the Malleefowl distribution and records are sporadic. Records from both the Department of Biodiversity,

Conservation and Attractions and WA Museum confirm the presence of this species at Mt Keith and in the nearby Wanjarri Nature Reserve. Moriarty (1972) notes old mounds and tracks of this species in Wanjarri Nature Reserve, Roy Teale (Biota) recorded tracks in the reserve in 1997, and Kylie McKay (BHPN) recorded tracks in the reserve earlier in 2017. The species is also known from Yeelirrie (BCE 2015).

No records of the Malleefowl were found within the Study Area during the botanical mapping conducted by Western Botanical (Geoff Cockerton pers. comm. June 2017).

Risk Assessment: The risk the Action presents to the species is assessed as low, primarily based on the low likelihood of occurrence.

Black Footed Rock Wallaby

The Black-footed Rock-wallaby is known from a series of isolated, patchily distributed populations in Western Australia and the Northern Territory (Pearson 2013, Woinarski et al. 2014). The species' occurrence 13.5 km west of the Study Area is significant as it appears to represent one of the only records from the Murchison bioregion.

The species is susceptible to predation by foxes and cats and habitat degradation by introduced herbivores.

This nocturnal species requires shelter in the form of caves, cliffs and boulder screes during the day. Habitat critical to survival requires sufficient cave and crevice development to provide shelter from extremes of temperature and predators (Pearson 2013). Free water is usually not required unless the animals are occupying sub-optimal habitat that has inferior thermal refuges (Pearson 2013).

Habitat Assessment: Biota completed a desktop habitat mapping exercise over the broader locality surrounding the Development Envelope. This exercise mapped approximately 65 km of breakaway landform representing 30 square km's. An extension of the breakaway landform of the Barr Smith Range was found to intersect the Project transport corridor.

This potential habitat was further assessed for suitability and occurrence of the species during a targeted field assessment. This assessment found that the breakaway habitat at the 2006 sighting location is characterised by substantial cliffs, shelves and caves to a height of 10 m. It was observed that habitat within and immediately east of the Study Area may be suitable for use by rock-wallaby due to the presence of limited suitably sized caves, cliffs and overhanging structures. However these areas do not contain habitat similar to that from the sighting location and the quality of the habitat within the Project transport corridor is unlikely to represent core critical habitat. The breakaway habitat immediately west of the Study Area is very shallow and considered unsuitable for the rock-wallaby.

The Development Envelope contains 4.1 ha of moderately prospective habitat representing approximately 1.4% of the occurrence of breakaway landform that was mapped.

Likelihood of Occurrence: The Black-footed Rock-wallaby is known from a 2006 sighting 13.5

km west of the northern end of the transport corridor. Following the 2006 sighting, collection and analysis of scats confirmed they were from Black-footed Rock-wallaby (Bamford 2015). During the recent targeted survey, scats consistent with rock-wallaby were again collected from the known locality, though these were few in number and aged, with no fresh scats identified. No additional rock-wallaby scats were found despite extensive searching of the breakaway landform. Numerous latrines are generally evident in the refuge areas of rock-wallabies (Jarman and Caprararo 1997).

Five camera traps were placed in areas of prospective habitat found within the range, including a camera at the location of the 2006 sighting and a camera within the Proposal transport corridor. Rock-wallaby was not recorded by any of the five cameras.

The Black-footed Rock-wallaby is assessed as having a low likelihood of occurrence within the Study Area for the following reasons: (i) the lack of fresh evidence of rock-wallaby presence anywhere searched on the Barr Smith Range even from where the species was previously recorded, (ii) no records on the camera traps anywhere on the range even in areas of most prospective habitat, (ii) availability of higher quality habitat outside the Study Area than within.

Risk Assessment: the recent targeted survey indicated that the rock-wallaby does not occur within the Study Area or directly east or west of the Study Area, and the proposed transport corridor would therefore not represent a barrier to animal movement or result in potential vehicle collision. A small amount of potential non-core habitat will be disturbed by the proposal (4.1 ha).

As a result of the low likelihood of occurrence and minor habitat impact, the risk to Black-footed Rock-wallaby is assessed as Low.

Section 6 – Environmental record of the person proposing to take the action

Provide details of any proceedings under Commonwealth, State or Territory law against the person proposing to take the action that pertain to the protection of the environment or the conservation and sustainable use of natural resources.

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Please explain in further detail.

BHPN was formed from the nickel mining and processing assets of WMC Resources Ltd, which was aquired by BHP Billiton (BHP) in 2005. BHPN is an integrated mine to market business comprising mines, concentrators, a smelter and a refinery.

The BHP document *Our Charter* (the Charter) describes values of BHP. The Charter is a guiding resource for maintaining an emphasis on health, safety, environment and community (HSEC) and clarifying a broader commitment to aspects of sustainability. To interpret and support the Charter, BHP has developed a series of Group Level Documents (GLDs). The GLDs, such as *Environment and Climate Change: Our Requirements*, define performance requirements for all BHP operations.

BHPN has not been prosecuted under state or commonwealth environmental law.

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application.

No past or present proceedings exist against BHPN under a Commonwealth, State or Territory law for the protection of the environment or conservation and sustainable use of natural resources.

6.3 Will the action be taken in accordance with the corporation's environmental policy and planning framework?

Yes

6.3.1 If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework.

The Charter states BHP values with respect to sustainability, which includes being environmental responsible. The Group Level Document: *Environment and Climate Change: Our Requirements* details environmental obligations for managing environmental resources and the environmental management requirements of the BHP group.

BHPN approaches environmental management through the identification, assessment and control of risks across all phases of operations from exploration to closure. BHPN avoids or minimises and rehabilitates unavoidable environmental impacts. BHPN achieves this through the application of an Environmental Management System (EMS). The EMS provides the framework for compliance to legislative requirements, internal operating procedures and corporate standards, as appropriate to the nature and scale of BHPNs operations. BHPNs Environmental Management Plan (EMP) describes the EMS employed at the BHPN asset, including an overview of the EMS and its key elements. It provides the context, purpose and scope of the system together with the documents which combine to define the system. The EMP has been structured to meet BHP Group Level Documents (GLD), applicable legal requirements, relevant standards (AS:NZS ISO14001:2015) and stakeholder expectations.

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

No

Section 7 – Information sources

You are required to provide the references used in preparing the referral including the reliability of the source.

7.1 List references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

Reference Source	Reliability	Uncertainties
Fauna Assessment Review	Excellent	Limitations as detailed in the report
Targeted Night Parrot Survey Report	Excellent	Limitations as detailed in the report

Section 8 – Proposed alternatives

You are required to complete this section if you have any feasible alternatives to taking the proposed action (including not taking the action) that were considered but not proposed.

8.0 Provide a description of the feasible alternative?

No alternatives are considered or presented in this submission.

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

No

Section 9 – Contacts, signatures and declarations

Where applicable, you must provide the contact details of each of the following entities: Person Proposing the Action; Proposed Designated Proponent and; Person Preparing the Referral. You will also be required to provide signed declarations from each of the identified entities.

9.0 Is the person proposing to take the action an Organisation or an Individual?

Organisation

9.2 Organisation

9.2.1 Job Title

Manager - HSE

9.2.2 First Name

Adrian

9.2.3 Last Name

Lee

9.2.4 E-mail

Adrian.S.Lee@BHPBilliton.com

9.2.5 Postal Address

PO Box 8301
PERTH BUSINESS CENTRE WA 6849
Australia

9.2.6 ABN/ACN

ABN

76004184598 - BHP BILLITON NICKEL WEST PTY LTD

9.2.7 Organisation Telephone

08 6321 3854

Australian Government
Department of the Environment and Energy

9.2.8 Organisation E-mail

Adrian.S.Lee@BHPBilliton.com

9.2.9 I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

Not applicable

Small Business Declaration

I have read the Department of the Environment and Energy's guidance in the online form concerning the definition of a small a business entity and confirm that I qualify for a small business exemption.

Signature:.....NA..... Date: .....

9.2.9.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations

No

9.2.9.3 Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made

Person proposing the action - Declaration

I, Adrian Stanley Lee, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature:..... Date: 03-08-2017

I, Adrian Stanley Lee, the person proposing the action, consent to the designation of BHP Billiton Nickel West Pty Ltd as the proponent of the purposes of the action describe in this EPBC Act Referral.

Signature:..... Date: 03-08-2017

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

Manager - HSE

9.5.2 First Name

Adrian

9.5.3 Last Name

Lee

9.5.4 E-mail

Adrian.S.Lee@BHPBilliton.com

9.5.5 Postal Address

PO Box 8301
PERTH BUSINESS CENTRE WA 6849
Australia

9.5.6 ABN/ACN

ABN

76004184598 - BHP BILLITON NICKEL WEST PTY LTD

9.5.7 Organisation Telephone

08 6321 3854

9.5.8 Organisation E-mail

Adrian.S.Lee@BHPBilliton.com

Proposed designated proponent - Declaration

I, ——— NA ———————, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Australian Government
Department of the Environment and Energy

Signature:..... NA ..... Date:.....

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Manager - HSE

9.8.2 First Name

Adrian

9.8.3 Last Name

Lee

9.8.4 E-mail

Adrian.S.Lee@BHPBilliton.com

9.8.5 Postal Address

PO Box 8301
PERTH BUSINESS CENTRE WA 6849
Australia

9.8.6 ABN/ACN

ABN

76004184598 - BHP BILLITON NICKEL WEST PTY LTD

9.8.7 Organisation Telephone

08 6321 3854

9.8.8 Organisation E-mail

Adrian.S.Lee@BHPBilliton.com

Referring Party - Declaration

Australian Government
Department of the Environment and Energy

I, Adrian Stanley Lee, I declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature:..... Date: 3 - Aug - 2017

Appendix A - Attachments

The following attachments have been supplied with this EPBC Act Referral:

1. conceptual_detailed_proposal.pdf
2. fauna_review_part1.pdf
3. fauna_review_part2.pdf
4. fauna_review_part3.pdf
5. mks_development_envelope.shp
6. ourcharter.pdf
7. regional_overview.pdf
8. targeted_night_parrot_assessment.pdf
9. tenure_context.pdf