ATTACHMENT 1

1. The proposal - General comments

Submitter	Summary of submission and/or issue	Proponent response to comment	OEPA advice on proponent response
Wildflower Society of WA	The extremely poor quality of the PER fails to convince the Society that the proponent is capable of adequately protecting the high conservation values of the Koolanooka System. The absence of referencing, high repetition, lack of detail and miscalculations[1] all contribute to the poor quality of the PER. The numbering of the tables in the PER is incorrect. The list of tables at the front of the PER goes to 27 but after page 38 of the PER the numbers of the tables begins again at number 4. The table numbers in the text therefore don't make sense with the actual table numbers. Furthermore there are many instances where the PER is contradictory, leading the Society to believe that Hermitage has tried to downplay the environmental impacts of the exploration through distortion of the facts. Table 1 provides examples of some of the contradictions made in the PER. [1]It is unclear to the Society how Hermitage came to the conclusion that recording 259 flora taxa in the survey area out of 591 taxa flora expected in the region equates 82% representation of expected flora p.5 of the PER.	1. There has been no attempt to downplay the exploration in the TEC; there has been every effort made to avoid any unnecessary clearing and minimize damage. 2. The PER has an extensive reference list. The studies involved merging collected data with relevant regional databases associated with similar areas on or near BIF formations. 3. The reference to the range of flora numbers covers two levels – firstly the flora recorded on the access track, the drill sites for the exploration area and secondly the flora recorded on the wider surveyed area.	

<table>
<tr>
<td>Wildflower Society of WA</td>
<td>The Society has identified a number of contradictions in the PER:
<table>
<tr><th>Statement</th><th>Contradiction</th></tr>
<tr><td>‘None of the proposed drill holes are on the banded iron formation (BIF) ridge’ (page 1)</td><td>‘The proposed activities will be located on the west facing inside slope of the BIF ridge’ (page 4)</td></tr>
<tr><td rowspan="2">‘None of the tracks will encounter BIF and consequently will not temporarily or permanently impact on the soil type, geodiversity values and habitat for BIF specialist species’(page 29)</td><td>‘Six (flora) species of significance were recorded during the flora and vegetation surveys. Two of these species are known from BIF in Perenjori area’ (and could be considered BIF specialist species) (page 40)</td></tr>
<tr><td>‘Two flora species of significance occur in the exploration area’ (page 57)</td></tr>
<tr><td>‘Arterial access for the next six pairs to the south of the power line requires a new track for a distance of 1.2 km, along the valley between the two parallel BIF ridges. No other access is possible because any type of</td><td>Figure 4 shows that the proposed tracks and drill pads have been located in areas that contain Priority flora. There is no evidence that shows Hermitage has used information from the biological surveys to locate the tracks in areas of least</td></tr>
</table></td>
<td>4. There appears to have been some confusion on the terminology associated with the term “BIF” areas by different participants in the process. The BIF landform is made up of a ridge, usually with banded irob formation (BIF the rock and/or outcrops) on its crest with colluvial deposits on either side. This proposal will not require any track or drill pad development on the BIF ridge, it is confined to the colluvial deposits on the west facing inside slope of the BIF landform.

5. Acacia acanthoclada subsp. glaucescens is one of the species from BIF landforms in the Perenjori area that occurs in community S7 and W1 which are open shrubland or woodland. Eremophila ? platycalyx occurs in community S2 on crests and secondary ridges of the BIF ranges that will not be encountered by track development. All proposed raking areas have been already surveyed and assessed by experienced botanists. The tracks and drill sites have been modified to avoid Priority species. An experienced botanist will be on site during raking operations.</td>
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	vehicular movement across either of the two BIF ridges is impossible. This arterial track was located after detailed biological surveys by Mattiske Consulting' (page 23)	environmental sensitivity.	*6.* A experienced botanist will be on site during raking, when further local variations to the tracks and drill sites can be undertaken to maximize the distance between Priority plants and operational activities.. In addition the proposed tracks and drill sites have already been adjusted to avoid particular plant species and fauna values on the advice from specialist consultants. *7.* Tracks have been modified to avoid Mallee Fowl Nest sites and to include more open ground. *8.* Attached is a photographic record of some previous line clearing in BIF landforms. It is clear that blade down clearing does not regrow effectively; blade up clearing provides better opportunities for regrowth. This proposal will use raking which protects the rootstock and soil.	
	'The 3.24 ha of land that may be cleared will be likely to regenerate as other parts of the range have as a result of past clearing' (page 78)	On p. 83 Hermitage states 'No evidence has been found that the rehabilitation process proposed has worked in BIF landforms'. The PER does not provide any evidence (such as photos etc.) of any areas of the BIF that have regenerated as a result of past clearing, It is unknown where the statement on p. 78 has originated from.		
	No evidence has been found that the rehabilitation process proposed has worked in BIF landforms' (p.83). 'According to the agreed significance	'There is **unlikely to be any permanent residual impacts** as a consequence (of the exploration) and no offsets will be required (p.81)'. 'In summary, the actual and residual		

	framework, **residual impact is considered to be significant** because it will depend on sufficient rain falling in the season after drilling is completed' (page 83)	impacts to the landforms will be minimal in the local and regional context' (p. 35). 'In summary, the actual and residual impacts on the flora and vegetation values will be minimal in the local and regional context' (page 61).		
Wildflower Society of WA	It is unclear where mulch will be stored. There are no existing cleared areas near the proposed exploration for storage and it is unclear whether an additional area will need to be cleared for this purpose.		*9.* There are clear areas in the woodland and adjacent farmland if required. However care will be taken to ensure there is no weed introduction by locating the mulch heaps in open woodland near the source of material. Only local mulch will be used to minimize introduction of weeds.	
Wildflower Society of WA	The PER does not discuss impacts to restricted soil types, geodiversity values or habitat for BIF specialist species.		*10.* Section 6.1.3 provides a summary of the soil types in the district. This proposal will avoid ground disturbance wherever possible and minimise the root disturbance. The impacts to the variety of values associated with the BIF landforms will be minimal as the proposed	

		disturbance is restricted in area and as such avoids the main BIF crest and ridge, As indicated in the PER flora and vegetation report the majority of the Priority species (including BIF specialists) have been recorded beyond the proposed impact areas. The wider flora and vegetation investigations were undertaken beyond the disturbed areas and as such have assisted in delineating the values on a wider area and assisted in placing the values on the proposed disturbed areas into context,	
Wildflower Society of WA	The proposed exploration raises the same concerns that would similarly have been applied to the Blue Hills Mungada East Expansion and J5 and Bungalbin East, which have been recommended by the Environmental Protection Authority (EPA) as being environmentally unacceptable.	*11.* This proposal occurs on low undulating hills which have not been cleared for cropping but that have been grazed by the operating farming activities, Consequently the proposed clearing areas have been more subject to disturbances over many decades compared to other BIF areas in Western Australia.	.
Wildflower Society of WA	The proposal should be rejected on the basis that: • there is complete disregard for the environmental and conservation significance of the Perenjori Hills BIF landform; • the poor quality of the PER and the failure of Hermitage to undertake an	*12.* The value of the Perenjori Hills was defined and acknowledged in the PER. *13.* The PER defines the impact (less than 3.24ha) within relatively open woodlands on the slopes of the low hills. The proposed impacts have been minimized by utilizing previously established and cleared tracks that	

	adequate environmental impact assessment; and • the lack of evidence that BIF landforms in Perenjori Hills can be successfully rehabilitated.	are utilized by landowners. *14.* The proposal is for a low impact exploration and this data acquisition has provided the State with a significant extension to its database. *15.* It is disappointing that there are not historically available examples of effective rehabilitation of the BIF landform. However this low impact program will provide an opportunity to investigate and test rehabilitation techniques on these landform types.	
P	The submitter is satisfied that in Section 6.1.1, the proponent has correctly identified that these low hills have a minimal reduction in the temperature and therefore the temperature is unlikely to affect the flora and fauna. The submitter further commends the proponent for the commitment that that any interference to the environment will be transient with an expectation there will be no permanent loss.	*16.* The conditions on low undulating hills are unlikely to influence the relationships between species occurrence and controlling influences temperatures. *17.* Every effort is being made to minimize any permanent loss of values to the environment.	

2. Landforms

Submitter	Submission and/or issue	Proponent response to comment	OEPA advice on proponent response
Parks and Wildlife	The State and regional conservation significance and reservation status of the Koolanooka System (made up of the Koolanooka Hills and the Perenjori Hills) should be accounted for in consideration of this proposal. The BIF ranges of the Yilgarn Craton are isolated and elevated ancient ranges of distinct geology, set in a predominantly flat, semi-arid landscape. Although forming a very small proportion of each bioregion, these unique island-like environments display high levels of species endemism, rare and geographically restricted species and high levels of species turnover among ranges. Each BIF range tends to be biologically distinct, supporting different ecological communities and in several cases, endemic species. The ranges are very distinct features in the regional landscape, with some possessing outstanding landrefscape value, of significant value to the long-term development of nature-based tourism within a few hours' drive of Perth. The Koolanooka System (made up of the Koolanooka Hills and the Perenjori Hills) is	*18.* The extent of the conservation estate was assessed in the PER and the conservation values were recognized through the flora, vegetation and fauna assessments. Every effort will be made to minimize the impacts on the values. *19.* The values on this area were compared through detailed data analysis with regional BIF databases (DPAW data). Extensive field work was undertaken in define the values, with particular attention to flora and fauna values and the vegetation values. *20.* In the review of the Gibson *et al.* (2012) it was noted that the data utilized for this regional review was based on the data collected and used in the analyses for the PER. Therefore, the interpretation was based on the same data collected in the local BIF ranges. The reference of Gibson et al. (2012) is acknowledged. The values of the respective BIF ranges are acknowledged.	

	part of the Karara/Mungada/Koolanooka cluster of BIF ranges, which has been identified as supporting some of the highest level biodiversity and landscape conservation values of the BIF ranges in the Yilgarn Craton. The ranges that make up this cluster support a significant number of plant taxa that only occur on BIF ranges, BIF specialist taxa that only occur on a single range or range system and a number of threatened and Priority listed plant taxa. The remaining Koolanooka Range (including Perenjori Hills) was identified in the 2007 BIF Strategic Review as worthy of full protection (Department of Environment and Conservation and Department of Industry and Resources, 2007). Since the 2007 review was published, a more recent synthesis of scientific data from surveys of BIF ranges in the Yilgarn Craton in Gibson et al. (2012) has confirmed the Karara/Mungada/Koolanooka cluster of ranges as a hotspot for significant conservation values' in the Yilgarn Craton. Specifically, the Koolanooka System includes records of: • 15 Priority flora taxa; • eight BIF specialist taxa, including six taxa that are only known from (endemic to) the Koolanooka system[2]; and	(see…Gibson N, Meissner R, Markey AS, Thompson WA (2012). Patterns of plant diversity in ironstone ranges in arid south western Australia. *Journal of Arid Environments* **77**, pp. 25–31.) *21.* This proposal occurs on low undulating hills which have not been cleared for cropping but that have been grazed by the operating farming activities, Consequently the proposed clearing areas have been more subject to disturbances over many decades compared to other BIF areas in Western Australia.	

	• the 'Plant Assemblages of the Koolanooka System' TEC, with a ranking of vulnerable. The TEC includes both the Koolanooka Hills and the Perenjori Hills BIF ranges[3]. The Koolanooka Hills and Perenjori Hills are located in the Merredin Interim Biogeographic Regionalisation for Australia (IBRA) subregion, are isolated from each other with a separation distance of less than 10km with the majority of native vegetation between and surrounding the two areas having been cleared for Agricultural purposes. There is 20.98% of the pre-European extent of native vegetation remaining in this subregion with 1.38% reserved for conservation (Government Western Australia, 2013). While the scale of exploration activity in this proposal is limited, taking into account the largely intact range, when cumulative impacts and other threatening processes in the area are taken into account, incremental losses and degradation of the conservation values of the Koolanooka System are of high concern. [1] There are two hotspots of the highest biodiversity significant BIF ranges in the Yilgarn Craton. The first is the Mount Manning cluster of BIF ranges in the Goldfields and the second is the Mungada/Karara/Koolanooka cluster of BIF ranges in the Midwest.	*22.* The regional BIF database and recent work on BIF areas was taken into account in the PER. The list is in the references to the PER.	

	[2] These taxa include Priority 1 *Acacia graciliformis*, Priority 1 *Acacia muriculata*, Priority 1 *Caesia* sp. Koolanooka Hills (J.W. Green 1516), Priority 1 Dodonaea scurra, Priority 1 *Drummondita rubroviridis*, Priority 1 *Lepidosperma* sp. Koolanooka (K.R. Newbey 9336) and Priority 1 *Sclerolaena* sp. Koolanooka Hills (R. Meissner and Y. Caruso 437). Of the 24 BIF ranges surveyed, the Koolanooka System contains the greatest number of endemic taxa. [3] Endorsed by the Western Australian Minster for Environment in 2001.	*23.* The expectation is that less than 3.24 ha on an operating farm will be disturbed. This will partly be the result of passing through open woodland which will require no clearing.	
Wildflower Society	The proponent states that none of the proposed drill holes are on the BIF ridge (page 1) and the proposed activities will occur in the valley between the BIF ridges (page 6). It is not just the BIF ridge that is of high conservation significance but the entire BIF landform. The proponent has downplayed the conservation significance of the Perenjori Hills BIF by making the assertion that the highest areas of conservation significance are contained on the BIF ridge. The proponent's assertion does not fully address the EPA's objective to maintain the integrity of landforms. Furthermore, the proponent's view does not consider the significance of the BIF landform in its entirety.	*24.* This proposal consists of a small exploration drilling programme on the western flank of a BIF Landform. No holes are planned near the BIF ridge or BIF rock on the surface. The BIF landform has been discussed in the PER. A significant number of quadrats were recorded on the BIF ridge to adequately define the vegetation. This proposal will not significantly alter the landform as the access routes and proposed impact areas occur on more open areas and with the raking approach disturbances will be minimal tom the soil surface and the landform.	
Wildflower Society	Landforms in the Perenjori Hills area are presently being mined. The PER does not address the cumulative impacts of the	*25.* This proposal is a small exploration programme where damage will be minimised and avoided wherever	

	exploration to the Perenjori Hills and surrounding BIF ranges.	possible. As the proposed activities are limited in area and other sections of the BIF landform will not be disturbed, the proposed activities will not contribute significantly to cumulative impacts on the Perenjori Hills. As the area has been subjected to some grazing activities and the proposed activities avoid disturbance of the BIF ridge and crest that supports the main conservation values the impacts in the regional context remain minimal. *26.* The management of the proposed activities by botanists, the proposed approach where ground disturbance will be minimized and the proposed rehabilitation activities will assist in minimizing the cumulative impacts in the regional context.	

Flora and Vegetation

Submitter	Submission and/or issue	Proponent response to comment	OEPA advice on proponent response
DMP	The proponent should consider post-exploration vegetation monitoring. Establishing quadrats and analysing results in comparison with the Level 2 flora and vegetation survey may assist in demonstrating the temporary and low impact nature of exploration in the Koolanooka Hills Threatened Ecological	*27.* Post exploration monitoring is identified as part of the rehabilitation as explained on p.88 of the PER. *28.* The monitoring has included photographic, descriptive summaries and detailed assessments of plots and releve's. It is intended to	.

	Community (TEC). This may assist in future Programme of Works (PoW) applications in the Feral Prospect.	undertake additional rigorous assessments during the monitoring program of tracks, drill sites and associated analogue sites. The work undertaken to date provides a sound basis for baseline information on flora and vegetation for ongoing monitoring needs as described in Table 16 of the PER.	
Parks and Wildlife	The proponent should be required to address the applicability of best practice exploration techniques for this proposal. In particular, consideration of helicopter based drilling would avoid clearing for tracks which will be difficult to rehabilitate and have a long recovery time and which may also lead to significant indirect impacts on the range by opening up new access. The proposed exploration is identified as infill / resource drilling focused on a magnetite resource. The proposal activities include 23 reserve circulation and 2 diamond drill holes (occurring in a 200m by 40m drilling pattern), 25 associated drill pads (18m by 18m) and access tracks (1.67km by 8m). It appears that the drilling proposal involves conventional exploration drilling approaches. To reduce the impacts, the proponent is proposing to use small track	*29.* This proposal embraces best practice exploration techniques using tracked drill rigs which will allow minimal clearing and compaction of the soil. Helicopter based drilling in this environment would be difficult to manage and on the slopes would require large landing pads. *30.* The proposed extent of the disturbance (<3.24 ha) and the approach proposed will minimize the impacts.	

	mounted drilling equipment and hydraulic jacks on slopes to avoid cut and fill, and targeting areas of existing disturbance (albeit this will require widening of existing tracks). The potential impacts of the exploration program could be further reduced, particularly with regard to access tracks (which are of most concern as access is likely to increase the risk of threatening processes), by employing best practice low impact exploration measures, for example helicopter flown in drill rig/s. The values of this area are such that significant disturbance should be avoided. Despite the comments on page 61 of the PER that impacts on the flora and vegetation values will be minimal and a range of operational approaches and efforts will minimise impacts, it is unclear whether the proponent will be able to achieve satisfactory restoration and closure of access tracks and drill sites in this area. Previous exploration drilling in the 1980s on the Perenjori Hills was reported in 2000 to have had very little regeneration. The proposed tracks would increase access to areas of the Koolanooka System at Perenjori Hills which currently do not have extensive access. The indirect impacts of additional access, particularly as the system is surrounded by actively grazed agricultural land, could be	*31.* As explained in the PER it is intended to close access to the tracks on completion of the exploration programme. In previous programmes this has been achieved by having indirect access and not maintaining straight lines to the drill site. Physical barriers to the track entries are an effective deterrent.	

	significant and are potentially avoidable. If exploration without clearing of new access is not possible, consideration of restricting future access along these tracks by exclusion fencing etc. will be necessary.		
Parks and Wildlife	It is recommended that the impacts on Priority 1 *Lepidosperma* sp. Koolanooka (K.R. Newbey 9336), are avoided by use of best practice low impact exploration technology if this is possible or by amending the proposed program. It is further recommended that if the proposed impacts cannot be significantly reduced, additional information should be provided to support an informed quantitative impact assessment for *Lepidosperma* sp. Koolanooka (KR. Newbey 9336) and improve the level of certainty on the predicted impacts. Additional information required may include data held by the proponent, but not included in the PER, relating to species distribution and the results of additional targeted surveys. An updated quantitative impact assessment for *Lepidosperma* sp. Koolanooka (K.R. Newbey 9336) individuals and populations should be provided to Parks and Wildlife for review and comment. Based on the currently available information, there are four Priority flora species that will be impacted by this	*32.* Lepidosperma sp. Koolanooka (K.R. Newbey 9336) has been identified in the vicinity of four of the 25 drill sites. The proposal includes a botanist on site as raking occurs particularly to avoid damage to priority species. *33.* During the drilling operations it is intended to search and gather more information on the Lepidosperma sp. Koolanooka (K.R. Newbey 9336). *34.* During the operational activities, additional targeted searches will be undertaken to locate and define more populations on the Priority species (including the Lepidosperma sp. Koolanooka (K.R.Newbey 9336). This searching will be undertaken also on areas beyond the previously surveyed areas to place the data as collected to date into context, In addition, the number of plants will be minimized through site oversee by experienced botanists on site during the proposed operations to minimize any impacts to the Lepidosperma species during the initial raking.	

	proposal. Of most significant is the proposed 52.4%[4] impact on the recorded Priority 1 *Lepidosperma* sp. Koolanooka (K.R. Newbey 9336) in the survey area. Based on this information and given that this taxon is a Koolanooka System endemic, a BIF specialist, has a restricted range of 15km east-west and 20km north-south and has low numbers of known individuals recorded, the proposed level of impact on this taxon appears unacceptably high, particularly for exploration activities, at both a local and regional scale. This is especially the case when considered in the context of existing threats posed to other populations by exploration and mining development. Given that *Lepidosperma* sp. Koolanooka (K.R. Newbey 9336) has been recorded in a few locations and over what appears to be a relatively small area, it is unclear why the proponent has not designed the project footprint to avoid individuals of this taxon. The documentation does not include an explanation of why the proposed impacts are unavoidable, or indicate what efforts have been made or measures applied, to minimise the impacts. This information is required and is consistent with the requirements of the EPA's Environmental Scoping Document for this proposal. [4] There are some inconsistencies between the PER		

	and the appended flora and vegetation survey report. The PER indicates that there are 42 *Lepidosperma* sp. Koolanooka individuals, whereas the appended flora and vegetation survey report indicates that there are 34 individuals from five populations. Depending on which number is used, the impact on *Lepidosperma* sp. Koolanooka could be 52 or 65%. Either way this impact is considered significant and avoidance or further information should be required.		

Parks and Wildlife	The Koolanooka System TEC is a restricted ecosystem and is known to contain a number of restricted vegetation units. Potential and current threatening processes affecting the TEC include: • mining including exploration; and • agricultural and pastoral practices including clearing, grazing and weed invasion, which have not been eliminated from the TEC. The identified habitat requirements and distribution of the TEC are based on Beard vegetation mapping and geological mapping of the BIF ranges and their footslopes. The TEC boundary mapping is largely indicative, and with additional investigations and survey work on the floristics of the system, the TEC boundary could be refined, potentially providing the opportunity for improved definition of proposal impacts. The TEC consists of a sequence or catena of associated vegetation units across the hills, for which regional distributions have not been determined. Beard's original vegetation mapping (Beard 1976), indicates that the Koolanooka System includes two units that are not found elsewhere in Western Australia. One of these units is association 693 (Mosaic: Low woodland: *Allocasurina huegeliana* over mallee and *Acacia* scrub *I*	*35.* This proposal occurs on low undulating hills which have not been cleared for cropping but that have been grazed by the operating farming activities, Consequently the proposed clearing areas have been more subject to disturbances over many decades compared to other BIF areas in Western Australia. *36.* Whilst some values still persist due to the nature of the ridge, every effort has been integrated into the PER to avoid and minimise wherever possible by utilising current tracks and access routes. *37.* All calculations on species, communities and systems has been undertaken on currently available information in databases (including the DPAW BIF database) and from information gained through the current assessment. The data analyses outputs have been included in the PER and the data (presence/absence data to align with DPAW data) has been provided to DPAW during the PER submission phase.	.

	Allocasurina campestris thicket), is proposed to be impacted by this proposal. Although only separated by a distance of approximately 10 km, the Perenjori Hills are most floristically similar to the Koolanooka Hills; however there is a significant difference in species composition between the two ranges which is not highlighted in the document(s). An assessment of the impact on the TEC based on overall area and proportion of the TEC affected may underestimate the significance of impacts on the TEC resulting from the loss or diminishment of habitat for restricted flora and plant communities. The more restricted species and communities tend to be associated with particular habitat types on elevated BIF geology and occur within a TEC that is situated within a predominantly cleared surrounding agricultural landscape.		

Parks and Wildlife	Some of the flora and vegetation information presented in the PER should be reviewed or supplemented with additional information and/or discussion. Specifically, Parks and Wildlife has some queries in relation to the following: • There is an apparent absence of a review of the importance of this area in a regional context. While the documents make mention of the survey work undertaken on nearby individual BIF ranges, it omits mentioning that (taking into account the available data, see Gibson et al 2012), the Koolanooka System is located in one of two major hotpots of importance for conservation of flora diversity for BIF specialist taxa. • There is an apparent discrepancy between the numbers of taxa expected from the surveys reported in the documents. In places the documents indicate that an analysis of species accumulation curves showed the 172 taxa recorded represented 82% of the flora expected from the study area (a total flora of 210 taxa would be expected), however elsewhere it is reported that the total expected would be 259 taxa (with this number, 172 taxa would represent 66.4% of the taxa	*38.* The importance of the area in a regional context was not ignored and the databases (including the DPAW BIF database) as available were utilised. *39.* The differences in the number taxa relates to the numbers specific to the drill sites and access tracks as distinct from all of the species/taxa recorded on the areas assessed to date on the Feral deposit. The latter possibly reflects the extent of effort to date on additional areas that are well beyond the proposed 3.24ha to enable clarity on the local flora values. *40.* The differences in the range of taxa recorded appear to reflect the past grazing and disturbance activities in the area from agricultural activities. Hence it is not surprising that the range of species is lower. *41.* The classification was based on floristics also. Whilst structure and dominance were utilised in descriptions, detailed analyses were undertaken in delineating communities. *42.* Two way tables were supplied to OEPA with the PER by the proponent. It is recognized by the proponent that	

	expected). The difference of 49 taxa is not explained. • There is a significant difference between the mean number of taxa recorded in quadrats on the Perenjori Hills by the Department of Environment and Conservation (now Parks and Wildlife, see Meissner and Caruso 2008) and the mean recorded in survey quadrats for this proposal. On average, the quadrats recorded in the survey for this proposal had five (ca. 23%) fewer species. The basis of this apparent difference in species richness should be explained. • The classification of vegetation in the survey report and PER is based primarily on structure and dominance, then species composition. In comparison with other surveys undertaken in the Yilgarn Craton BIF, for the survey work conducted for this proposal there is a high correlation between floristic composition and vegetation structure. • The information provided to Parks and Wildlife did not include plot photos or two-way tables to assist in the review of flora and vegetation information. Parks and Wildlife would need greater access to the in-depth survey data and	if the drilling did lead to further studies and activities that there would be a more complex analysis undertaken in consultation with DPAW personnel.	

	resolution of any issues identified with respect to data and analysis, if this survey was proposed for use in supporting a proposal to mine the Koolanooka System.		
Wildflower Society of WA	The proponent plans to minimise impacts to the BIF by clearing (vegetation in) tracks by raking (page 3). This proposed clearing method is unknown to the Society and the proponent fails to demonstrate in the PER how raking would create less of an impact than traditional clearing. What is meant by raking ?	*43.* Raking is a method employed in all best practice exploration which attempts to leave the root stock of plants in the ground. Hermitage has extensive experience using this technique in desert environments where revegetation has occurred after rain.	
P	This proposal appears to have been constructed in clear scientific way that aims to minimise the potential interference with: • priority species by including the on-site presence of a botanist to ensure the priority species can be avoided during clearing (Section 7.4); • planning to minimise clearing by utilising track mounted drill rigs (Section 5); and • recognition that with the drying of the northern Wheatbelt it may take more than one season for re-growth to occur (Section 7.4).	*44.* The submitter has recognised that the proposal has included strategies to avoid and minimise disturbance to flora and fauna.	

Terrestrial Fauna

Submitter	Submission and/or issue	Proponent response to comment	OEPA advice on proponent response
P	This proposal appears to have been constructed in clear scientific way that aims to minimise the potential interference with: • malleefowl nesting sites by avoiding the sites (Section 7.4); and • priority species by including the on-site presence of a botanist to ensure the priority species can be avoided during clearing (Section 7.4).	*45.* The submitter has recognised that the proposal has included strategies to avoid and minimise disturbance to flora and fauna.	

Rehabilitation and Closure

Submitter	Submission and/or issue	Proponent response to comment	OEPA advice on proponent response
DMP	DMP's assessment of the corresponding PoW is on hold pending the EPA assessment. The Environmental Management and Rehabilitation of the PER details most of the standard management procedures that DMP would expect for a PoW. DMP will require further details on the methods proposed to minimise the risk of hydrocarbon spillage	*46.* If a hydrocarbon spill occurs during drilling the following procedure will be followed: • if the flow of hydrocarbon be stopped safely do so; • define the size, position and content of the spill, if over 1 litre shut down the rig until the hydrocarbon spill has been	

	during the drilling programme, and this can be dealt with via the PoW assessment.	completely cleaned from the area; • identify any potential hazards to the environment; • be aware of any mitigating weather conditions that could affect the spill; • before applying any absorbent from the Spill Kit , ensure the type of product to be cleaned is compatible with the absorbent (Not to be used on Hydrofluoric Acid); • contain the spill to a limited area using Containment Sock or Boom located in the spill kit; • clean up the spill using the Spill Kit Containment Sock or Boom to 'drag' the spill to the smallest possible area; • remove pads once soaked with Hydrocarbon (Hydrocarbon) and replace if required; • place used Containment Sock or Boom into the Contaminated Waste Bags provided in the Spill Kit; • once all hydrocarbon has been contained therein dispose of the material in accordance with the Environmental Policy; • ensure the Spill Kit is replenished; and • fill out Incident Report and notify appropriate personnel of the spill.	

Parks and Wildlife	The impacts of loss or degradation of areas of vegetation and habitat within the Koolanooka System from development proposals cannot be directly mitigated off-site because the values of the System are distinct and not replaceable. BIF ranges in general are demonstrably floristically distinct from each other and from other habitats and ecosystems and are not considered replaceable though rehabilitation. As a result, significant impacts on BIF ranges cannot be directly mitigated off-site. For the Koolanooka System, the biodiversity values are of the highest order and are second only to the Mount Manning cluster of BIF ranges in the Goldfields in terms of the biodiversity significance of BIF ranges in the Yilgarn Craton. Mitigation efforts that achieve no net loss or a net environmental gain are not considered feasible in this scenario.	*47.* The proposal has already added substantial scientific data to the State record. There will be as little disturbance to priority species as possibly by detailed on the ground adjustment of the track path to avoid significant species directed by an onsite botanist. The values of the area are detailed in the PER. *48.* The Perenjori Hills are a low elevation landform that will not be changed by this proposal.	
Wildflower Society of WA	It is unclear how topsoil will be stripped and stored. Page 77 of the PER shows that reverse circulation holes will need to be backfilled and covered with topsoil. Topsoil management has not been adequately demonstrated.	*49.* Very little topsoil will be stripped. The backfilling of holes will be with concrete, the mounding will be with local earth as is exploration best practice. Any topsoil moved will be stored as close to source as possible and re-spread in the same location.	

Heritage

Submitter	Submission and/or issue	Proponent response to comment	OEPA advice on proponent response
DAA	DAA notes that the proponent has conducted a search of the Aboriginal Heritage Inquiry System in accordance with the State's Aboriginal Heritage Due Diligence Guidelines and that they are aware that there are heritage places within the tenement. The relevant DAA records are: • DAA 5368 – Kooldesak Quartz Quarry • DAA 5371 – Kooldesak Rockshelter • DAA 5372 – Kooldesak Gnamma Hole • DAA 5373 – Kooldesak Outcrop • DAA 5528 – Perenjori Rockhole • DAA 5532 – Perenjori Artifact 04 • DAA 5534 – Perenjori Artifact 06 The heritage places are currently listed on the DAA database as Insufficient Information, which indicates that the Aboriginal Cultural Material Committee is yet to assess whether they are places to which the *Aboriginal Heritage Act 1972* (AHA) applies.	*50.* As per Section 3, the submission of a POW to DMP requires the proponent to consult the Register of Aboriginal Sites, and to state whether the proposal partly or wholly intersects the boundary of a registered site. This has been done in Section 3 of the POW which notes that there is no registered site that is affected by the proposal. The proponents are aware of their obligations set out in the AHA Due Diligence Guidelines. *51.* The PER document notes on Page 71 that an un-registered heritage place (ID 5532, artefact site Perenjori 04) occurs to the north of the proposed drilling program. This place is centred on the original rock bar in an ephemeral stream that cuts across the BIF ridge just north of Bestry Road. The rock bar has subsequently been buried by a stock-water dam. The location of 5532 is shown on page 72 of the PER. The other sites reported are more distant from the area of this proposal to explore. *52.* In 2012, two holes were drilled by	

	It is also noted that the majority of the tenement is an area for which DAA has no record of any past Aboriginal heritage investigations. There may be Sites to which the AHA applies that are yet to be identified and are therefore not on DAA's records, and it should be noted that these Sites are still afforded protection under the AHA. If the proponent has any additional information about the above places or any other places to which the AHA may apply, this information must be reported under section 15 of the AHA and can be submitted online at www.daa.wa.gov.au via the 'Reporting a Site' link.	Quest Minerals (previous operator on this project) 120m south of the rock bar under POW 36627. This POW was granted by DMP after consultation with DAA. The entire area of this proposal is south of Site 5532 and previous liaisons with DAA in 2013 indicated this would not interfere. *53.* The current proposed program under the follow-up POW is more distant from the place being 200m south of the two initial holes drilled in 2012. Consequently DMP was happy with the declarations in Section 3 of the POW, and the proponents deemed it not necessary to consult further with DIAA.	
DAA	DAA recommends the proponent seek guidance from DAA to verify if the proposed works will impact on any Aboriginal heritage sites. The proponent may also wish to contact relevant Native Title claimant groups to seek their view as to whether the proposed development is likely to impact any Aboriginal heritage sites. The relevant Native Title groups are the Amangu People (WC2004/002) and the Widi Mob (WC1997/072). Yamatji Marlpa Aboriginal Corporation	*54.* The area covered by this proposal is outside of the envelope around Site 5532 as drawn on the DAA map more than 200 m south of the original rock hole that likely existed at the Salmons prior to burial due to farm development and construction of a dam. *55.* The advice provided by the DAA in its submission is acknowledged and further consultation will be undertaken in relation to DAA recommendations. *56.* There are Two Native Title claims covering the district the Widi Mob and	

	(YMAC) is the legal representatives for the Amangu People. Should concerns be raised by either group, DAA would recommend further advice is sought from this department prior to commissioning any Aboriginal heritage survey or submitting an application under the AHA.	the Amangu People submitted respectively in 2005 and 2004 respectively. The entire proposal is on freehold land owned and operated by local farmers. *57.* All contractors on site will be familiar with the DAA Due Diligence Guidelines and the proponent is confident of being able to work within the obligations. A briefing will be provided to exploration teams and drillers prior to entry and will be integrated into contractual arrangements will all teams involved with the proposed activities.	