



Asset Management | Environmental Services | Spatial Intelligence | Waste Management

# Blue Hills East Extension

BIF Strategic Review Summary

Prepared for Sinosteel Midwest Corporation Ltd  
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## 1 Introduction

Sinosteel Midwest Corporation Pty Ltd (SMC) is undertaking mining activities at its Blue Hills operations in the mid-west of Western Australia (WA). These operations were considered by the Environmental Protection Authority (EPA) in its Report Number 1328 "Koolanooka/Blue Hills Direct Shipping Iron Ore Project" released in June 2009 and subsequently approved.

SMC has since lodged documentation to support expansion of the Blue Hills site to the west and to the east (Blue Hills Expansion Project (BHEP)). This documentation was referred to the EPA pursuant to Section 38 of the *Environmental Protection Act 1986* (EP Act).

Whilst the western extension has since been excised from the BHEP and is being considered separately, SMC is also progressing with the Mungada East Expansion (MEE) in its own right. The EPA has indicated that their preliminary view in relation to the BHEP is that the likely Level of Assessment is 'Assessment on Proponent Information – B' (API-B). If progressed in this manner, the BHEP proposal will be considered by the EPA to be environmentally unacceptable and they will recommend that the project should not proceed.

SMC has engaged Talis Consultants Pty Ltd (Talis) to review the documentation associated with the BHEP and provide a peer review of the SMC documents, the assessment framework and the potential considerations associated with the environmental impact assessment process in WA. The review includes the original Environmental Impact Assessment (EIA) report produced by SMC's consultants in relation to the BHEP, EPA Guidelines and the EPA assessment. Future work is also likely to incorporate peer review of key assessment documents going forward.

This report presents a summary of the findings of the wider review completed by Talis and focuses primarily on the former Department of Environment and Conservation (DEC) and Department of Industry and Resources (DoIR) documentation relating to the "Strategic Review of the Banded Ironstone Formation Ranges of the Midwest and Goldfields" and the "Banded Ironstone Formation Ranges of the Midwest and Goldfields – Interim Status Report".

## 2 Background

The Mungada East Expansion (MEE) incorporates a pit, waste rock dump, processing plant, haul roads and associated access roads. Ore from the new pit (located on the Mungada Ridge, an area of the Blue Hills BIF range) will be processed at a new processing plant (south-east of the pit and off the Ridge). Waste rock will be utilised to backfill existing ME pit infrastructure, however there will be a requirement for a small waste rock dump to be located immediately adjacent to the infrastructure area to the north (again off the Ridge).

The total area to be cleared for the BHEP is 53.563 hectares (ha). This figure is made up of the following components:

- Access Road – 5.317 ha;
- Pit – 10.557 ha;
- Haul Roads – 7.325 ha;
- Infrastructure – 11.250 ha;
- Pit Bund (50m buffer) – 8.112 ha; and
- Waste Dump – 11.002 ha.

In relation to location, only the pit, bund and a small area of haul road sit on Mungada Ridge itself with the majority of the clearing to take place off Mungada Ridge to the south-east (for the waste dump and infrastructure areas).

### 3 Proposal Documentation

Of critical importance to this proposal and its consideration by the EPA are the range of documents being utilised by both parties in their deliberations. In relation to the assessment, the documents of primary interest are:

- *Environmental Protection Act 1986;*
- *Environmental Impact Assessment Procedures 2002;*
- Banded Ironstone Formation Ranges of the Midwest and Goldfields – Interim Status Report September 2007;
- Strategic Review of the Banded Ironstone Formation Ranges of the Midwest and Goldfields (undated);
- Environmental Review Blue Hills Expansion (incorporating site-specific ecological studies) (Ecological Australia, August 2013); and
- Flora and Vegetation Endemism Desktop (Ecologia Environment, August 2013).

## 4 BIF Strategic Review

As noted above, the Strategic Review of the Banded Ironstone Formation Ranges of the Midwest and Goldfields (undated) (BIF Review) is an important document in the context of this assessment. It presents findings from research conducted across a range of BIF areas including that of the proposal and includes fieldwork data from survey efforts conducted over a number of months in 2005 and 2006 in the region.

The document was prepared by the former Departments of Environment and Conservation and Industry and Resources as strategic advice to Government in relation to the potential conservation actions for BIF ranges in the Midwest and Goldfields regions. The report's objectives are:

- *to the extent that available data allows, compile and deliver a strategic level understanding of the biodiversity values within the banded ironstone ranges;*
- *to explain the terms ecological and floristic communities and their application;*
- *to develop a framework and criteria for conservation and reservation decision-making;*
- *to commence comparative analysis of the relative biodiversity values of the individual ranges; and*
- *where there is adequate information, provide strategic recommendations identifying options for proposed conservation reserves in the Midwest and Goldfields, based on assessment of banded ironstone areas that warrant protection via reservation in order to meet recognised conservation reserve system criteria for comprehensiveness, adequacy and representativeness.*

Based on the work undertaken as part of the scope of the BIF Review (including the use of existing data such as the results of the regional flora survey to date, existing herbarium records and proponent data the report provides a number of recommendations which are as follows:

1. *No development activity to proceed in the Yilgarn Craton BIFs that would result in the IUCN threat category of any given plant or animal taxa increasing. That is to say either:*
  - a. *Initially not being listed as threatened under any category to being listed (the three IUCN categories for threatened species being Vulnerable, Endangered and Critically Endangered); or*
  - b. *increasing from Vulnerable to Endangered; or*
  - c. *increasing from Endangered to Critically Endangered.*
2. *No development activity to proceed in the Yilgarn Craton BIFs that would result in the increase of the IUCN Threat Category of any ecological community from:*
  - a. *not being listed as threatened under any category to being listed; or*
  - b. *where already listed (or qualifying for listing) as a threatened ecological community, having its actual or recommended Threat Category increased from Vulnerable to Endangered; or*
  - c. *where already listed (or qualifying for listing) as a threatened ecological community, having its actual or recommended Threat Category increased from Endangered to Critically Endangered.*

3. *A minimum of 15% and up to 60% of the total number of ranges should be reserved in their entirety, protecting complete examples of the landform and ecosystem. Examples of the most outstanding BIF ranges should be protected in their entirety where development has not significantly progressed, e.g. Karara/Mungada/Blue Hills and the Helena-Aurora Range (consistent with recommendations in EPA Bulletin 1256). The initial objective should be to conserve 15% of ranges in their entirety. At the end of the three year DEC flora survey program, a further review should be undertaken to further define the list of ranges requiring reservation in their entirety, with the objective of achieving the 60% target objective of achieving the 60% target.*
4. *Conservation Reserves to include at least 60% of largely contiguous ecosystem/habitat for each of the key banded ironstone species and ecological communities which are restricted to the BIF ranges.*
5. *Subject to recommendations 1 and 2 above, the aim of detailed mine-site planning and assessment should be to maximise the protected area of any floristic community restricted to the BIF, or dependent on the BIF for its conservation.*
6. *Landscape, geodiversity, indigenous heritage values and potential for nature based tourism should be taken into account in developing a reserve system. State, national and international methodologies and criteria should be used for identifying areas of significant landscape, geodiversity, indigenous heritage and tourism potential for protection.*

The BIF Review also provides information on a number of specific case studies, including the Blue Hills area. The commentary in the BIF Review encompasses a number of ranges in the central Midwest area, including:

- Mt Karara / Mungada Ridge / Blue Hills;
- Warriedar Hill / Pinyalling; and
- Minjar / Gnows Nest.



## 5 Discussion

### 5.1 BIF Review General Comments

In terms of quantifying the process and consolidating the information provided across the range of documents identified in Section 3, it is useful to note that the BIF Strategic Review, perhaps the key document utilised by the EPA in its consideration of the matter, is now seven years old. Whilst it was the intention to update this document as additional information became available, this has never occurred. Consequently, it would appear that any decision made by the EPA was done so based on data that has now certainly been superseded and it would be appropriate to consider such additional information within any assessment being conducted. The BIF Review makes particular reference across the documentation to the value of adequate and appropriate information being available and an ongoing process of research and survey being conducted. This is particularly noted within one of the aims of the study which is "...where there is adequate information, provide strategic recommendations identifying options for proposed reserves". Further to this, the Strategic Review cites the International Council on Mining and Metals (ICMM) with respect to Principle 7 of their 10 Principles for sustainable development performance. ICMM Principle No. 7 notes the following in relation to the contribution "to conservation of biodiversity and integrated approaches to land-use planning:

- Respect legally designated protected areas.
- Disseminate scientific data on and promote practices and experiences in biodiversity assessment and management.
- Support the development and implementation of scientifically sound, inclusive and transparent procedures for integrated approaches to land use planning, biodiversity, conservation and mining."

Clearly, the provision of additional site-specific information by SMC in relation to their proposal, including fieldwork over the project area, supports such an approach.

The conclusions of the BIF Review note that a strategic approach to assessments and decision-making should be employed, taking into consideration the local and regional biodiversity and level of impact. Such a comment is important in that it reflects the accepted approach to EIA generally employed by the EPA. The concern Talis holds with respect to the BIF Review is that the document whilst it considers regional biodiversity to some extent, it does so on the basis of regional information that is now over 7 years old and this information has not been revisited. Further to this, the Review also does not consider more relevant information on a local scale.

The nature of the BIF Review is not one of EIA in Talis' opinion. It certainly does not consider site-specific data in relation to the conclusions and this is not the intent of the report. What it does do is look at data that had been accumulated at the time of its preparation as well as provide some additional regional survey findings (over 3 months in 2005 across 7 ranges including Blue Hills) and provide some regional conclusions regarding potential for reservation of areas based on this data. It is a report that is targeted towards reservation of areas and is therefore written with that outcome in mind based on the information available at the time.

Talis suggests that the survey work completed in 2005 to supplement previous regional data is unlikely to be as intensive or as robust as the work carried out by individual proponents in relation to their projects. Certainly the information provided within the Blue Hills region case study detailed in the BIF Review is a less-intensive survey effort and data-set than the work completed by SMC within the same region.

At the very least, such proponent data should be utilised to supplement the BIF Review, allow an update of the Review to be progressed and a review of its findings. For example, there are certainly aspects to the BIF Review which have now been demonstrated to be outdated based on the recent work completed by SMC (discussed later this report) and should be reconsidered in light of the new information. The BIF Review was expected to be revised in 2011 in such a manner, but this did not occur.

Further to the above, it must also be recognised that since the completion of the report in 2007, very little action has been taken by Government to actually act on its findings and set areas aside for reservation. This would suggest that mining can still be considered on a case-by-case basis, utilising contemporary data, survey results and scientific analysis. Further to this, the reservation system also does not preclude mining from progressing, although it does ensure a more detailed level of EIA being pursued, generally under the PER process. Barrow Island is one example where exploitation of resources has been allowed to occur within a Class A Nature Reserve, the highest level of protection afforded under State legislation. A PER process will allow such consideration to occur and determine whether SMC's proposal is environmentally acceptable or otherwise based on an assessment of recent data and commentary in relation to the proposal and comparison of this and the potential impacts to the range of Government policy and guidance documentation, including the BIF Strategic Review.

As noted previously, one of the conclusions of the Strategic Review is that "A minimum of 15% and up to 60% of the total number of ranges should be reserved in their entirety". It is important to recognise that this advice covers the entire suite of BIF ranges, not individual ranges and whilst a number of sources have provided consistent advice, it would appear that this particular conclusion draws heavily from the '*Nationally Agreed Criteria for the Establishment of a Comprehensive, Adequate and Representative (CAR) Reserve System for Forest in Australia*' (Commonwealth of Australia 1997) and detailed within the '*Janis Report*'. This noted that "As a general criterion, 15% of the pre-1750 distribution of each forest ecosystem should be protected in the CAR reserve system." It should also be noted however that this report recognised that "Reductions in the 15% criterion may also be appropriate on a case by case basis where biodiversity conservation objectives can be demonstrated to be met by a lesser area."

As mentioned above, the BIF Review is very focused on reservation and the document notes that the State's current reserve system incorporates 6.9% of WA's land area, well below the target of 15%. Similarly, reservation values for the three IBRA regions covering the BIF areas (Murchison, Yalgoo and Avon), are all well below the 15% target. Talis suggests that the current coverage for reservation do not constitute an end point or a definitive final position and these areas can and will no doubt increase. The question is how and where such reservations should occur. In our view, this requires further information and detailed assessment which should be acquired from a range of sources, including site-specific ecological findings.

In this regard, the BIF Review provides some technical detail in relation to the 2005 survey findings (of which Blue Hills was a sub-set of this effort) and notes that 16 new species were identified, nine of which were collected for the first time. Further to this, 20 new populations of Priority Flora were identified. The report suggests that the Blue Hills plant communities were highly restricted with a high degree of plant endemism. Of particular note are the *Acacia woodmaniorum* P2 species and the suggestion that there is the potential for this species to be recommended as Threatened flora if the criteria necessary for listing were met. This work is elaborated on within the Blue Hills case study which again identifies *Acacia woodmaniorum* as being of primary interest, but also notes the *Lepidosperma* sp. (P3) as a Priority species in the Blue Hills region.

Whilst both species were brought up in the context of the Blue Hills region and are undoubtedly important in relation to wider region, the studies that derived the data were of a regional scale and should not be considered to be definitive in terms of local populations and their distribution. The BIF Review is again very clear on this point and as with other parts of the document, recommends that further work is required to determine the impacts to these species and others resulting from future proposals. In particular and with reference to *Lepidosperma* sp., the report states that “further work is required to better determine local and regional distributions and populations sizes.”

The BIF Review recommends a strategic approach to assessment, particularly from a cumulative impact perspective and states that “Applying a strategic approach to cumulative impacts will involve quantifying local and regional biodiversity values and level of proposed impact...” In general terms and in relation to the findings detailed in Section 5.2 below, Talis suggests that SMC’s approach to investigations as well as the outcomes of the studies conducted in relation to the Blue Hills Extension Project (both MW and ME) are broadly consistent with the BIF Review (despite its obvious bias towards reservation).

Further commentary in relation to the proposal and its alignment with the specific details of the BIF Review is provided in Section 5.3.

## 5.2 SMC Technical Studies

In keeping with the findings of the BIF Review and pursuant to the recommendations requiring additional work at both a regional and local level to be completed, SMC provided two reports to support the Referral to the EPA and is committing to additional survey work through a PER process. The first of these reports, authored by Ecological Australia (August 2013) entitled “Environmental Review Blue Hills Expansion” covered much the technical detail regarding flora and fauna species associated with the Blue Hills project and specifically the expansion project (BW and BE).

Of note are the indicative areas to be cleared for both projects as referred to the EPA and subsequently considered by the EPA in forming the current views of the proposed extension:

- Two additional mine pits and associated boundaries – 27.6 ha;
- New waste dump – 11 ha;
- Processing plant and associated infrastructure – 11.3 ha;
- Haul Roads – 7.9 ha;
- Access Roads – 6.1 ha; and
- Total – 63.9 ha.

The total disturbance associated with BHEP (with the excision of BW) is 53.5 ha and approximately 20 ha of this sits on Mungada Ridge, regarded as the primary area of concern with respect to ecological considerations and potential endemism of Priority species. The Environmental Review report considers the potential impacts to *Acacia woodmaniorum* and *Lepidosperma sp.* in terms of individual plants and notes that in relation to *Acacia*, over 28,000 individuals were found across over 8,800 locations with 3,306 of these located within the BHEP area (resulting in a 11.5% loss of species that have been currently mapped).

In terms of *Lepidosperma sp.*, over 50,000 plants have been identified in over 4,700 locations. 534 individuals are located within the BHEP area resulting in a net loss of 1.01%. Both loss figures are well below the 15% threshold cited in the *Janis Report* and it is important to recognise that these figures are based on areas that have been mapped at present. Further survey work is likely to identify additional populations of these species (Ecological Australia 2013).

It is understood by Talis that the data presented above is currently being reviewed and the impacts are likely to be further reduced based on new information available.

The disturbance to the PEC and conservation significant FCTs from the BHEP are as follows:

- Priority Ecological Communities (PEC) – 0.05% impact (22.7 ha)
- Floristic Community Type (FCT) (conservation significant)
  - FCT 1 – 0.62% impact (6.4 ha)
  - FCT 2 – 0.17% impact (6.1 ha)
  - FCT 10 – 0.33% impact (10.1 ha)

A “Flora and Vegetation Endemism Desktop” report which was prepared by Ecologia Environment (August 2013) was commissioned based on discussions with the EPA which identified the need for further work in relation to the regional significance, floral value and level of endemism of flora and vegetation of Mungada Ridge, as well as the potential impact of the Extension Project. The work compiled the existing data in relation to relevant species and communities to derive an understanding of the level of endemism of key species in the locality, particularly in relation to *Acacia woodmaniorum* and *Lepidosperma sp.*

In relation to *Acacia woodmaniorum* and based on the most recent data available, a total of 8,841 locations were identified with 28,752 individual plants. Of these, only 10.25% of the localities (11.5% of the individuals) were located within the BHEP area with a cumulative overall impact from the whole Blue Hills project of 16.5% of individuals. This suggests that this species is perhaps locally endemic but not to Mungada Ridge and the project area itself.

With respect to *Lepidosperma*, the figures are much lower with 1.75% of the localities (1.01% of the individuals) located within the BHEP area. Cumulative overall impact from the Blue Hills project equates to 1.02% of individuals. This again demonstrates that this species is perhaps regionally endemic, but is not locally restricted.

## 5.3 BIF Review - Comparison

### 5.3.1 General comments

General details regarding the BIF Review are provided in Section 4 and commentary regarding the general nature of the Review and its application to the proposal are provided in Section 5.1. In light of the data presented in the Ecologia and Ecological reports and discussed in Section 5.2 above, it is worth considering the specifics of the proposal and their relationship to the BIF Review.

There are five key 'Recommendations' outlined in the BIF Review that are intended to guide development and the assessment of such development. Again it must be realised that these Recommendations have no statutory weight and are provided as guidance only in relation to the potential, 'future' reservation of areas within the BIF ranges which were studied. Whilst holding no specific statutory function, such Recommendations are useful as a starting point in considering potential impacts from proposed activities.

In terms of some contextual information in relation to this assessment, the information contained in the BIF Strategic Review is now over seven years' old, with survey efforts for Blue Hills being completed in 2005 and findings released in 2006. Whilst Gibson et al released additional information in 2012; this was high-level in nature and did not discuss project specifics. The survey effort in relation to this work was completed on a regional scale and is largely likely to be inappropriate in terms of a 'fine-tuned' application to site-specific areas. Such a conclusion is supported by the BIF Review which notes that the regional survey effort is less intensive than those likely to be completed by proponents. In this regard, the BIF Review recognises further work is required and recommends this (although further updates to the BIF review have not been completed as suggested).

Whilst the recommendations of the BIF review are addressed below, it is worth pointing out that the Review cites the International Council on Mining and Metals (ICMM) and its commentary that assessment should incorporate the "development and implementation of scientifically sound, inclusive and transparent procedures" and ultimately recognises that mining may not be compatible, even after all technically and economically feasible steps to reduce impacts have been considered.

In the context of the commentary above, the BIF Review Recommendations are discussed below.

1. *No development activity to proceed in the Yilgarn Craton BIFs that would result in the IUCN threat category of any given plant or animal taxa increasing. That is to say either:*
  - a. *Initially not being listed as threatened under any category to being listed (the three IUCN categories for threatened species being Vulnerable, Endangered and Critically Endangered); or*
  - b. *increasing from Vulnerable to Endangered; or*
  - c. *increasing from Endangered to Critically Endangered.*

The work completed recently by Ecological identifies the potential impacts to *Acacia woodmaniorum* and *Lepidosperma sp.* in terms of individual plants. These appear to be the two key species that are of primary concern in relation to the EPA's preliminary view on the proposal. *Acacia woodmaniorum* is currently listed as Vulnerable under the IUCN

categories and *Lepidosperma sp.* is not listed. To ensure that the proposal aligns with this first Recommendation, it is necessary to demonstrate that the resulting impacts from the proposal will not result in either species (or any other species) increasing their listing (i.e. from Vulnerable to Endangered) or becoming listed. In considering this, the definitions of the IUCN categories are useful and taking a conservative approach, it would be necessary that the criteria for a 'Vulnerable' species are not triggered for *Lepidosperma sp.* and that the criteria for 'Endangered' species are not triggered for *Acacia woodmaniorum*.

These five criteria are outlined in Appendix 2 of the BIF Strategic Review and cover specific requirements in terms of reduction of population size over defined periods, a reduction in the geographic range of the species as assessed against a range of criteria, a continuing observed decline of species numbers (based on initial low species numbers), a restricted or small population and a prediction of extinction within a defined timeframe.

The work completed by Ecological suggests that the resulting impacts from the proposal are unlikely to trigger any of these criteria for either *Acacia woodmaniorum* (in relation to an 'Endangered' classification) or *Lepidosperma sp.* (in relation to a 'Vulnerable' classification).

Whilst the Strategic Review notes that there is potential for *Acacia woodmaniorum* to be recommended as threatened flora, it clarifies this by noting that this could only occur where the criteria have been satisfied. This would require additional studies to be undertaken such as those completed by Ecological which appear to be conclusive in relation to the known extent of both species and notes that further work is likely to identify additional populations.

It is also important to recognise that the BIF Review provides no commentary or assessment of species impacts against these IUCN criteria and that the EPA's only commentary was that DPAW had concerns that the IUCN threat category for *Acacia woodmaniorum* could be increased. There is no definitive evidence provided to suggest that this has or will occur.

2. *No development activity to proceed in the Yilgarn Craton BIFs that would result in the increase of the IUCN Threat Category of any ecological community from:*
  - a. *not being listed as threatened under any category to being listed; or*
  - b. *where already listed (or qualifying for listing) as a threatened ecological community, having its actual or recommended Threat Category increased from Vulnerable to Endangered; or*
  - c. *where already listed (or qualifying for listing) as a threatened ecological community, having its actual or recommended Threat Category increased from Endangered to Critically Endangered.*

As noted above, there are specific requirements in relation to the IUCN Threat Categories as they related to ecological communities and these are identified in Appendix 2 of the Strategic Review. In terms of community impacts across the Blue Hills Extension Project area, the Ecological report data suggests impacts resulting from the project to the PEC and FCT's are likely to be less than 1% in each circumstance. This could hardly be considered to be significant or trigger the IUCN classification requirements referred to above.



As with the species of concern, there is no data contained within either the BIF Review or the EPA's Statement of Reasons that suggests that any of the ecological communities identified within the project area will be impacted to unacceptable levels, nor trigger a listing or increase to an IUCN threat category. The BIF Strategic Review is clear that further work is required to be completed to verify this and the EPA states that "an assessment of SMC's proposed expansion project on the revised FCT's, and the cumulative impact to significant communities associated with the Blue Hills PEC, is difficult to accurately determine" given that revised regional mapping had only just been provided to DPAW for review. Talis is not aware of the findings of the review of this additional mapping and how this might affect DPAW's assessment of the impacts to the ecological communities in the project area but it is suggested that the likely impact of the proposed Blue Hills expansion will reduce in light of this new knowledge.

- 3. A minimum of 15% and up to 60% of the total number of ranges should be reserved in their entirety, protecting complete examples of the landform and ecosystem. Examples of the most outstanding BIF ranges should be protected in their entirety where development has not significantly progressed, e.g. Karara/Mungada/Blue Hills and the Helena-Aurora Range (consistent with recommendations in EPA Bulletin 1256). The initial objective should be to conserve 15% of ranges in their entirety. At the end of the three year DEC flora survey program, a further review should be undertaken to further define the list of ranges requiring reservation in their entirety, with the objective of achieving the 60% target objective of achieving the 60% target.*

As noted previously, the BIF Review is essentially a document that has been compiled with a view to progressing reservation of ranges with an objective to protect complete examples of landform and ecosystem. Recommendation 3 is therefore compiled with this objective in mind and is not necessarily directed to proponents but to State Government itself. SMC cannot be held accountable for compliance with this Recommendation as it is beholden on the State to carry out such reservation. What can be achieved by SMC is to plan its development around these principles, where feasible.

It is therefore noted that the Blue Hills area and Mungada Ridge are not in a conservation reserve and there is no indication from State Government that any such reservation is likely to occur. What is also clear is that, in the years since the BIF Review was prepared, development has occurred within the Karara/Mungada/Blue Hills area such that reservation of these areas in their entirety, as recommended, is now no longer feasible. It also demonstrates that the initial Recommendation effectively carried little weight in terms of future development of the BIF area in question (otherwise mining would not have been allowed to proceed).

In terms of the criteria to retain 15% of the ranges in their entirety, it is understood that this recommendation is derived from the National criteria for a CAR forest reserve system which suggests 15% of the pre-1750 areas should be retained. What is important to note is that this 15% figure could be reduced if it can be demonstrated that the biodiversity values can be retained with a lesser area. This demonstrates that even this 15% target is not definitive and is subject to further work and consideration.

In light of the above, the work completed by Ecological in relation to the project demonstrates that this objective can be achieved.

4. *Conservation Reserves to include at least 60% of largely contiguous ecosystem/habitat for each of the key banded ironstone species and ecological communities which are restricted to the BIF ranges.*

As noted above, this Recommendation is specific to the Reservation of areas of BIF ranges and largely inconsequential from a 'compliance' perspective for SMC. Despite this, the technical work completed by SMC demonstrates that the cumulative impact from project development will retain greater than 60% of largely contiguous ecosystem/habitat for each of the key banded ironstone species and ecological communities which are associated with the Mungada Ridge and therefore aligns with this Recommendation.

5. *Subject to recommendations 1 and 2 above, the aim of detailed mine-site planning and assessment should be to maximise the protected area of any floristic community restricted to the BIF, or dependent on the BIF for its conservation.*

As outlined in the SMC technical documentation, a considerable array of technical detail has been provided in terms of the mine plan and assessment of impacts such that the areas of potential impact have been minimised as far as practicable. In this regard the areas delineated for protection in terms of the mine footprint are intended to maximise the protected areas of and FCT restricted to the BIF or dependent on the BIF for conservation. Notably in this regard, the Ecologia Endemism Report (2013) suggests limited, if any local endemism for the key species and communities in question, thus demonstrating the impact of the proposal to be less than what would be thought if relying solely on the BIF Review.

This again draws back to the fact that the Review is over 7 years old and significant additional work aligning with the recommendations within the Review has been completed and can demonstrate that the proposed development will not significantly impact on floristic communities that are likely to be significant for the maintenance of long term viability of threatened species and threatened ecological communities.

Further to the above, additional work will be undertaken by SMC during the PER process. This is likely to identify further populations of key species and communities and determine suitable approaches for their management and, where disturbed, their restoration.

6. *Landscape, geodiversity, indigenous heritage values and potential for nature based tourism should be taken into account in developing a reserve system. State, national and international methodologies and criteria should be used for identifying areas of significant landscape, geodiversity, indigenous heritage and tourism potential for protection.*

Whilst this Recommendation is inherently obvious in terms of its intent, and rightly so, it is again difficult to apply to SMC's proposal. There is no reserve system currently in place and, as such, SMC is unlikely to be required to satisfy any criteria in relation to the determination of a reserve system.

In addition to this commentary, it is clear that the BIF Review provides a very subjective view on these values, primarily it would seem, based on the views of the author of the document. This Recommendation, appreciable as it is, is supported by no technical data within the BIF review. The key aspects to consider relate to the IUCN and CAR systems, the goals of which appear to be satisfied within the SMC proposal documentation.



Additional studies are also proposed as part of the assessment process which will add further value to the technical support for the project. This aligns with the recommendations within the BIF Review to conduct further site-specific assessment.

### 5.3.2 Blue Hills Case Study

The BIF Review also presents a number of case studies for areas of BIF significance. The Blue Hills area is one such study included in the review.

It is clear in relation to each case study that the findings are very much based on a broad assessment based on limited and regional survey and assessment work. The assessment covered in the review is also not site-specific and covers a wider range of areas than just Mungada Ridge.

It is therefore correct in Talis' view that the BIF Review draws few conclusions in relation to the key species of concern, being *Acacia woodmaniorum* and *Lepidosperma* sp. other than to note that further work and intensive surveys are required to determine actual population distribution, density and sizes. This is precisely what SMC has undertaken to support their Referral and will continue to undertake during any assessment process.

The BIF Review also notes that cumulative impacts are necessary to take into consideration in relation to the overall impact of mining in the Blue Hills area. Through its technical documentation supporting the Referral, both Ecologia and Ecological are clear that such cumulative impacts are not unacceptable.

Talis suggests that, at no stage does the information contained within the case study for the Blue Hills area suggest that further mining cannot proceed. To the contrary, it recognises the likelihood of further proposals being considered but advises that the BIF Review is not a suitable instrument through which to base an assessment. Additional intensive and site-specific work is recommended to demonstrate the overall impacts (project and cumulative) of any proposal and it is Talis' view that such work has been and will continue to be completed by SMC.

## 6 Summary

Based on the available information and review by Talis as part of this scope of work, it would appear that there is sufficient information that has been supplied by SMC in relation to the BHEP to warrant further consideration by the EPA. The data presented by SMC suggests limited impacts to floristic species and communities of concern and demonstrates that such species and communities are not endemic to the project area. Further to this, Talis also suggests that the work undertaken by SMC and the findings in relation to BHEP are broadly consistent with the details and recommendations outlined within the BIF Review.

To summarise these, there is no evidence in any of the documentation provided by SMC in relation to the proposal that suggests that the BHEP will result in the in the IUCN threat category of any given plant or animal taxa or any ecological community increasing and there is no data presented by the EPA to refute such a suggestion.

Whilst the remaining BIF Recommendations are directed towards State Government in terms of the reserve system, SMC's work demonstrates alignment with the outcomes of the document. It should be reiterated that the Blue Hills area and Mungada Ridge are not in a conservation reserve and there is no indication from State Government that any such reservation is likely to occur. In fact and perhaps more notably, mining has been allowed to occur in these areas. It is therefore difficult to apply criteria resulting from studies that are over seven years' old and directed towards a system of reservation that has not been enacted.

What SMC has done in this regard is to plan its development around these principles, where feasible. This includes completion of studies that suggest that the minimum 15% retention figure for ranges and biodiversity can be achieved (although the IUCN documentation suggest that this figure could be reduced if it can be demonstrated that the biodiversity values can be retained with a lesser area. Further to this, the studies also demonstrate that the cumulative impact from project development will retain greater than 60% of largely contiguous ecosystem/ habitat for each of the key banded ironstone species and ecological communities which are associated with the Mungada Ridge.

## References

Commonwealth Government of Australia "*Nationally Agreed Criteria for the Establishment of a Comprehensive, Adequate and Representative (CAR) Reserve System for Forest in Australia*", 1997

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Ecologia Environment "*Flora and Vegetation Endemism Desktop*", August 2013

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Environmental Protection Authority "*Report Number 1328 Koolanooka/Blue Hills Direct Shipping Iron Ore Project*", 2 June 2009

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