Assessment of EPBC Act-listed threatened species and communities for projects

Suggested information for inclusion in the advice to DP&E

Brandy Hill Quarry Extension (Seaham) (SSD 5899) EPBC Bilateral Assessment - OEH Assessment

1. Identifying MNES

(a) **Confirm** whether all the EPBC Act-listed threatened species and communities that occur on the project site, or in the vicinity are identified in the EIS. Note which species and/or communities have not been identified.

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed threatened species and communities that occur on the project site or in the vicinity as generated from the Protected Matters Search Tool* have been identified in the *Brandy Hill Expansion Project Environmental Impact Statement* (EIS – February 2017), notably in the Appendix 7 Biodiversity – Biodiversity Assessment Report (BAR – dated 8 November 2016) and the updated BAR (dated 5 November 2017), submitted as part of the Response to Submissions report (as Appendix 8). The latter (revised) BAR will be utilised in this EPBC Act appraisal, unless specifically stated. Table 29 in the BAR lists likely impacts to EPBC Act threatened fauna and flora species. No ecological communities were listed or are considered likely to be impacted by the project. Note: The revised BAR addresses Office of Environment and Heritage (OEH) issues as per our review of the EIS dated 6 April 2017 (DOC17/139733-1: Comments on EIS).

An assessment of the likelihood of each entity occurring has been undertaken and a decision as to whether an assessment of significance is required has been made (Appendix 5 – likelihood and Appendix 6 – assessment of significance of the BAR). Two flora species (*Grevillea parviflora* subsp. *parviflora* and *Persicaria elatior*) and five fauna species (grey-headed flying-fox, koala, regent honeyeater, spotted-tail quoll and swift parrot) were considered to have the potential to occur within the construction footprint (Table 29 of the BAR). Appendix 7B of the original BAR (8 November 2016) provides EPBC Act appraisal, which addressed the requirements under the EPBC Act for matters of national environmental significance (MNES) identified by the Department of Environment. It provides page links to relevant assessment criteria or EPBC Act requirements. This document is not replicated in the BAR (5 November 2017). Appendix 8 of the BAR provides an assessment of significance, but it is very broad and generic and concludes that a significant impact is unlikely for each species (except for koala), which is at odds with the Department of Environment's (DoE) referral advice.

Based on a Hanson's referral to the DoE (EPBC 2014/7453) five of these species were considered likely to be impacted upon (as per DoE 'Decision on Referral' dated 3 June 2015): grey-headed flying-fox, koala, regent honeyeater, spotted-tail quoll and swift parrot.

*Proponents undertook a MNES search (Appendix 7c of the original BAR [8 November 2016] with a 10-kilometre buffer, this identified 33 threatened species, 2 threatened ecological communities, 12 migratory species and 1 wetland of international importance).

<u>Lack of MNES Assessment and Requirement for further information – DECEMBER 2018</u>

Both OEH and the Department of Planning and Environment (DP&E) are of the opinion the 'Assessment of MNES' is inadequate and have requested for further information on the Brandy Hill Expansion Project, in relation to Commonwealth Biodiversity matters (as per DP&E email to proponents dated 28 November 2018). OEH and DP&E believe the Significant Impact Criteria (SIC) assessment has not been prepared in accordance with the '*Matters of National Environmental Significance, Significant Impact Criteria guidelines 1.1 Environment Protection and Biodiversity Conservation Act*' (DoE 2013) for species determined to have moderate or high likelihood of occurrence within the project area.

DP&E requested further elaboration and assessment of the significance of impacts to the koala, grey-headed flying-fox, spotted-tailed quoll, regent honeyeater and swift parrot, which have been identified by the Commonwealth as Matters of National Significance (MNES).

Appendix 8 of the BAR provides Significant Impact Criteria (SIC) assessments for these species, however, the SIC assessments and the BAR do not contain important information required by Attachment 4 of the revised Environmental Assessment Requirements (DoE, 9 July 2015). To allow for the proper consideration of impacts to MNES, both agencies requested:

- discussion of the likely direct, indirect, cumulative and consequential impacts relevant to MNES;
- description of the quantum and nature of the impacts on the species, the populations and/or the extent of the community (including discussion of the scale of impact in relation to local, regional, state and national populations / habitat);
- discussion of the nature and significance of impacts in the context of any relevant Approved Conservation Advice;
- statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible; and
- details of specific measures to avoid, mitigate and/or offset impacts to relevant MNES, with reference to any relevant policies or plans such as Conservation Advice, Recovery Plans and Threat Abatement Plans.

OEH has also noted that potential habitat exists for the above MNES species and failure to identify a species during field surveys should not result in no further assessment being undertaken for those species (when potential habitat is present). DP&E reiterated to the proponent: where there is potential habitat for a species, assessment of the above matters should be undertaken.

Additionally, Section 8 of the BAR notes that Tier 1 offsets are available for most of the credits required. DP&E noted that OEH has advised a number of mechanisms to retire ecosystem and species credits, including payment into the Biodiversity Conservation Fund (BCF) is permissible under the Major Project's Framework for Biodiversity Assessment (FBA). However, it is important to note that the Commonwealth Government has not accredited the use of the BCF for retirement of credits required for MNES. As such the proponents have also been asked to confirm that the identified credit amounts for MNES are still available in the absence of this mechanism, and what the preferred credit retirement option will be.

<u>5 February 2019 – Biosis: Addendum Report</u>

R.W. Corkery & Co. provided DP&E and OEH with an Addendum Report on Commonwealth Biodiversity Matters on 7 February 2019 (authored by Biosis Pty Ltd and dated 5 February 2019). This report was commissioned to address the additional information requested on MNES (as detailed above).

OEH confirms that the addendum report assesses impacts on the following species: koala, grey-headed flying-fox, spotted-tailed quoll, regent honeyeater and swift parrot. This assessment includes (i) direct and indirect impacts, including cumulative impacts and local scale (ii) details on the quantum of the impact, (iii) assessment of significance (for each species), (iv) discussion of the nature of the impact, (v) statements on whether impacts are unknown or unpredictable, and (vi) details of avoid and mitigate. Table 4 and Table 5 of the Addendum Report provides the bulk of the information pertaining to impact, quantum and significance in Section 3, with 'Avoid and Mitigate' addressed in Section 4. Table 6 of the report details impacts consistent with the Approved Conservation Advice.

The Addendum Report makes the following conclusions with respect to each species:

- koala – impact considered to be likely significant at a National, State and Local scale due to the project removal a large area of known habitat,
- grey-headed flying-fox – impact unlikely to be significant at all levels, due to only one individual sighted, the project area not being utilised as a camp and minimal loss of foraging habitat compared to its overall extent across the region,
- spotted-tailed quoll – impact unlikely to be significant at all levels, due to large areas of forest habitat available in the region, lack of known high density populations in the area, and the lack of any records for the project site,
- swift parrot – impact unlikely to be significant at all levels, due to large extent of foraging habitat remaining in the local region, and

- regent honeyeater – impact unlikely to be significant at all levels, due to large extent of foraging habitat remaining in the local region.

OEH is of the opinion the Addendum Report adequately addresses MNES.

(b) **Comment** on whether the Framework for Biodiversity Assessment (FBA) has been applied to all EPBC Act-listed threatened species and communities that occur on the project site or in the vicinity.

All entities that were identified as requiring an assessment of significance (grey-headed flying-fox, koala, regent honeyeater, spotted-tail quoll and swift parrot) have been assessed, but not adequately under the Assessment of MNES as required by DoE (see above in (a)). Both OEH and DP&E requested additional information on MNES. The Addendum Report now adequately addresses MNES.

Impacts on the five species likely to be significantly impacted were identified and credit liabilities were determined under the FBA at a State level, and under the MNES process at a Commonwealth level. The FBA has been correctly applied to the project. Both species and ecosystem credits have been generated for all EPBC Act-listed threatened species likely to be significantly impacted.

Approximately 45.8 hectares of suitable koala habitat was identified within the study area, based on State Environmental Planning Policy No. 44 (SEPP44) - Koala Habitat Protection criteria (i.e. Plant Community Types [PCTs] with known feed / browse trees greater than 15% of the canopy cover) and the mapping of 'Preferred' / 'Supplementary' Koala habitat on site (as per the Port Stephens Council Comprehensive Koala Plan of Management [PSC 2002]) were used to determine core koala habitat, in conjunction with the Spot Analysis Technique (SAT: Phillips, S. and Callaghan, J. (2011) The Spot Assessment Technique (a tool for determining localised levels of habitat use by koalas *Phascolarctos cinereus*. *Australian Zoologist*, 35, pp:774-780) was used to further assess these areas to determine potential occupancy rates. Section 5.4.3 and Appendix 8 (Targeted Koala Survey Report of the BAR) outlines the approach taken to determine the habitat ('species credit') polygon. Essentially, Biosis have applied the above methodology, but have applied it in a much more precautionary way, in that any PCT which recorded greater than 15% of the trees as primary browse species was considered to be potential habitat, as compared to mapping the specific parts of the PCT were this occurred. This has resulted in a species polygon of 45.8 hectares which represents almost all the subject site. OEH is of the belief that the koala habitat may have been over-estimated, to which the proponent has agreed noting that '*this precautionary approach is considered by Hanson (the proponent) to be appropriate given the prominence of Koala as an icon species in the locality'*. The following PCTs are recognised as potential koala habitat and were utilised in determining the species polygon under the FBA (i.e. 45.8 hectares):

- HU806 (PCT 1592): Spotted Gum - Red Ironbark - Grey Gum shrub - grass open forest of the Lower Hunter – 1.12 hectares,
- HU812 (PCT1598): (Forest Red Gum grassy open forest on floodplains of the Lower Hunter – 1.67 hectares,
- HU814 (PCT 1600): Spotted Gum - Red Ironbark - Narrow-leaved Ironbark - Grey Box shrub-grass open forest of the lower Hunter – 17.1 hectares, and
- HU816 (PCT 1602): Spotted Gum - Narrow-leaved Ironbark shrub - grass open forest of the central and lower Hunter – 25.9 hectares.

The BAR concludes that the koala will be significantly impacted by the proposal. Under OEH's FBA and Biobanking Assessment Methodology (BBAM), koala foraging habitat is treated as a 'species credit' species. The proposal generates 1,191 species credits for koala. The Biodiversity Offset Strategy (BOS) states that the appropriate credits will be purchased and retired from a registered biobanking agreement site. Given koala species credits will be purchased, this fulfils a Tier 1 outcome, and as such ensures any offsets for the koala fulfil the direct offset requirements of the EPBC Act Environmental Offsets Policy (DSEWPaC 2012).

At a Commonwealth level, the five identified species have been adequately assessed under MNES in the Addendum Report. Refer to part (a) for specifics.

Targeted surveys (12-13 October 2017) for the other two 'species credit species', *Grevillea parviflora* subsp. *parviflora* and *Persicaria elatior* were undertaken in accordance with the FBA and OEH's survey guidelines. No individuals of these species were detected.

The following ecosystem species were recorded for the site or potential habitat was likely to be impacted upon:

1. Grey-headed flying-fox - during the field survey grey-headed flying-foxes were recorded within the study area. Additionally, background searches revealed that approximately 23 individuals had been previously recorded approximately 3.5 kilometres of the study area (OEH BioNet). The Project will remove 48.62 hectares of foraging habitat for the grey-headed flying-fox. The EIS concluded that the grey-headed flying-fox is unlikely to be significantly impacted by the Project and as such, a Referral under the provisions of the EPBC Act was not recommended for this species. This was not supported by DoE in their 'Decision of Referral' (2014/7453), nor OEH and DP&E who requested further assessment. A further assessment of MNES matters was provided in an Adendum Report. Although this report still considers the impact of the proposed project to be not significant, the proponents have provided reasonable arguments and assessment to why this is the case. OEH does not disagree with their findings for grey-headed flying-fox. The FBA process has been applied to this project to offset any residual impacts to this species (i.e. the removal of about 48.62 hectares of native vegetation) that cannot be avoided or mitigated.

2. Regent honeyeater - despite targeted surveys, the regent honeyeater was not recorded within the study area. However, it may occasionally utilise seasonal forage habitat within the study area, albeit infrequently. Wildlife Atlas data indicates that the closest record for the regent honeyeater is approximately 4.5 kilometres from the study area (OEH BioNet). Within the Hunter-Central region, the regent honeyeater is associated with a range of vegetation formations, classes and types with extensively recorded 'known' distributions outside the study area. The EIS concluded that the regent honeyeater is unlikely to be significantly impacted by the Project and as such, a Referral under the provisions of the EPBC Act was not recommended for this species. This was not supported by DoE in their 'Decision of Referral' (2014/7453), nor OEH and DP&E who requested further assessment. A further assessment of MNES matters was provided in an Addendum Report. Although this report still considers the impact of the proposed project to be not significant, the proponents have provided reasonable arguments and assessment to why this is the case. OEH does not disagree with their findings for regent honeyeater. The FBA process has been applied to this project to offset any residual impacts to this species (i.e. the removal of about 48.62 hectares of native vegetation) that cannot be avoided or mitigated.

3. Swift parrot - despite targeted surveys, the swift parrot was not recorded within the study area. However, it may occasionally utilise seasonal forage habitat within the study area, albeit infrequently. Wildlife Atlas data indicates that the closest record for the swift parrot is 5 kilometres from the study area (OEH BioNet). Within the Hunter-Central region, the swift parrot is associated with a range of vegetation formations, classes and types with extensively recorded 'known' distributions outside the study area. The EIS concluded that the swift parrot is unlikely to be significantly impacted by the Project and as such, a Referral under the provisions of the EPBC Act was not recommended for this species. This was not supported by DoE in their 'Decision of Referral' (2014/7453), nor OEH and DP&E who requested further assessment. A further assessment of MNES matters was provided in an Adendum Report. Although this report still considers the impact of the proposed project to be not significant, the proponents have provided reasonable arguments and assessment to why this is the case. OEH does not disagree with their findings for swift parrot.The FBA process has been applied to this project to offset any residual impacts to this species (i.e. the removal of about 48.62 hectares of native vegetation) that cannot be avoided or mitigated.

4. Spotted-tail quoll - it is recorded across a range of habitat such as; rainforest, open forest, woodland, coastal heath, inland riparian forest, the sub-alpine zone to the coastline in eastern NSW, eastern Victoria, south-east and north-eastern Queensland and Tasmania. Spotted-tailed quolls use hollow-bearing trees, fallen logs, caves, rock outcrops and rocky-cliff faces as den sites. Spotted-tailed Quolls were not recorded within the study area during field surveys, despite the use of survey methods targeting this species. Given the proximity of records of the spotted-tailed quoll from the wider locality, combined with habitat assessment it is assumed that the Project will remove approximately 48.62 hectares of potential habitat for this species. The FBA process has been applied to this project to offset any residual impacts to this species (i.e. the removal of about 48.62 hectares of native vegetation) that cannot be avoided or mitigated.

Under the BBAM, the foraging and breeding habitat for the above four species are offset via the retirement of appropriate 'ecosystem credits'. All native vegetation on site is considered suitable habitat, as such 'ecosystem credits' have been generated for all Plant Community Types (PCTs) (i.e. 48.62 hectares), these are:

- HU591 (PCT 1064): Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin – 0.67 hectares [46 credits],
- HU798 (PCT 1584): White Mahogany - Spotted Gum - Grey Myrtle semi-mesic shrubby open forest of the central and lower Hunter Valley – 2.16 hectares [103 credits],
- HU806 (PCT 1592): Spotted Gum - Red Ironbark - Grey Gum shrub - grass open forest of the Lower Hunter – 1.12 hectares [64 credits],
- HU812 (PCT1598): (Forest Red Gum grassy open forest on floodplains of the Lower Hunter – 1.67 hectares [111 credits],
- HU814 (PCT 1600): Spotted Gum - Red Ironbark - Narrow-leaved Ironbark - Grey Box shrub-grass open forest of the lower Hunter – 17.1 hectares [984 credits], and
- HU816 (PCT 1602): Spotted Gum - Narrow-leaved Ironbark shrub - grass open forest of the central and lower Hunter – 25.9 hectares [1,491 credits].

The BOS (Section 8.2 of the BAR) states that the appropriate credits will be purchased and retired from a registered biobanking agreement site. A total of 2,799 ecosystem credits will need to be retired across six PCTs (as summarised in Table 31 (BAR).

OEH confirms that the minimum number of transects/plots were undertaken for each vegetation zone / PCT (as per Figure 3: Vegetation Zones and BioBanking Plots/Transects in BAR).

A BOS was submitted with the BAR and is in accordance with the FBA (Section 8.2 of the BAR). The BOS indicates that Hanson will aim to retire the biodiversity credits (2,799 ecosystem and 1,191 species [as per the 'biobanking credit profile report' in Appendix 7 of the BAR]). Species credits will be purchased and retired from a registered biobanking agreement site on a like for like basis, which fulfils a Tier 1 outcome, under the EPBC Act Environmental Offsets Policy (DSEWPaC 2012). Ecosystem credits will also be sourced from existing registered biobanking agreement / biodiversity stewardship sites; and will aim to match ecosystem and species credits on a 'like for like' basis (incl. for all MNES species). Where this is not possible, the credit trading rules associated with major projects under the FBA will be used to source suitable credits.

Table 28 (BAR) indicates where possible, credits have been provided to meet Tier 1 (improve or maintain) outcome outlined in the interim policy (OEH NSW OEH interim policy on assessing and offsetting biodiversity impacts of Part 3A, State significant development (SSD) and State significant infrastructure (SSI) projects – OEH June 2011). This was achieved by providing credits as per the offset options outlined in the BioBanking credit report (Appendix 7). The offset strategy will fulfil the Tier 1 requirements for four of the six PCTs recorded within the study area. Due to the presence of two EECs with a site value score of more than 34 (red flags) within the study area Tier 1 offsets could not be provided for HU591 and HU812. For these communities Tier 2 (no net loss) offsets were investigated. However, no offsets that meet the offset options outlined in the BioBanking credit report (Appendix 7 of the BAR) were found to be available. For these two PCTs variation criteria A, as outlined in the interim policy (OEH 2011) was applied to achieve a Tier 3 (mitigated net loss) outcome. Credits from the same vegetation formation and the same IBRA region were investigated. Both PCTs are part of the Forested Wetlands vegetation formation, and the study area is located within the NSW North Coast IBRA region. Preliminary offset investigations have identified available credits which satisfy the Project's offsetting requirements. OEH supported this approach and confirmed it was in line with the FBA and the 2011 credit variation policy.

OEH supported the BOS and this approach as per correspondence sent to DP&E on 6 April 2017 (DOC17/139733-1: Comments on EIS). Although State matters have been adequately addressed, as indicated above in Section (a), the Commonwealth requires offsets to meet 'Tier 1 – like for like' and they do not support certain mechanisms which modify the credit profile requirements or offsetting process, including payment into the Biodiversity Conservation Fund (BCF). As such DP&E requested that the proponents confirm that the identified credit amounts for MNES are still available in the absence of these mechanisms, and what the preferred credit retirement option will be. Table 7 of the Addendum Report provides details of the required biodiversity credits and how they will be offset. Most 'ecosystem credits' will be off set on a 'like for like' basis (Tier 1), whilst three PCTs (HU591, HU806 and HU812) will be offset under a Tier 3

scenario, which is at the broader 'formation' level. **As such the latter may not meet Commonwealth requirements**. All species credits (koala) will be on a Tier 1 – like for like basis. Furthermore, the proponents have indicated that the BCF will not be used for the project, as credits will be sourced from existing Stewardship sites or nearly established sites.

(c) In the circumstance where there are EPBC Act-listed species that are not addressed by the FBA (i.e. migratory species) **comment** on whether these species have been assessed in accordance with the SEARs and provide references to where the assessment information is detailed in the EIS.

The Protected Matters Search (Appendix D of the BAR) identifies 12 migratory species listed under the EPBC Act as potentially occurring in the locality (not including marine and pelagic species) (based DoE Protected Matters Search Tool database [DoE 2014; accessed on 06/08/2014]). However, Table 29 and 37 of the BAR state that thirty-one (31) are known or predicted to occur in the locality. This difference appears to be due to the fact that Table 37 'list of migratory species' is based on a variety of sources, not just the Protected Matters Search, namely: OEH NSW BioNet Wildlife Atlas (OEH 2014f; accessed on 06/08/2014), BirdLife Australia data search (Birdlife Australia 2014) and the fauna survey's undertaken for the Project. Furthermore, Table 37 includes 'predicted' species. The EPBC Act Referral (Appendix 7B of the original BAR [8 November 2016]) and Appendix 4 – Fauna (original BAR) indicates three migratory species (black-faced monarch, rainbow bee-eater and white-bellied sea-eagle) were recorded on site. The cattle egret was also recorded in the study area, but not the site (as per Appendix 4 of the original BAR). No further discussion is provided on the cattle egret nor any other species likely to occur on the site.

Assessment of migratory species is in Table 29, which states: '*While some of these species would be expected to use the study area on occasion, some may do so regularly, and others may be resident, the study area does not provide important habitat for an ecologically significant proportion of any of these species*'. This is a general statement which applies to all 31-species known or predicted to occur on site. The EPBC Act Referral (Appendix 7B of the original BAR [8 November 2016]) notes the following for the three-migratory species recorded on site:

- White-bellied sea-eagle – no breeding habitat present and similar suitable forage habitat present in the wider locality. No adverse impacts on this species are likely as a result of the Project.
- Black-faced monarch – similar suitable forage and breeding habitat present in the wider locality. No adverse impacts on this species are likely as a result of the Project.
- Rainbow bee-eater – similar suitable forage and breeding habitat present in the wider locality. No adverse impacts on this species are likely as a result of the Project.

The EPBC Act referral concludes that the subject site is not considered important habitat for any of these species, according to the above reasons. However, the assessment (including the Addendum Report) does not appear to assess the species against the significant impact criteria for migratory species, nor indicate whether the study area: (i) would an ecologically significant proportion of the population of these species, (ii) is of critical importance to these species life-cycle stages, (iii) is at the limit of these species ranges, and (iv) is within an area where these species are declining. **OEH recommends that the proponent provide further assessment on these species**, including predicted taxa that may utilise the subject site.

OEH notes that the ecosystem credits that will be offset for impacts to the PCTs: HU591 (PCT 1064), HU798 (PCT 1584), HU806 (PCT 1592), HU812 (PCT1598), HU814 (PCT 1600), and HU816 (PCT 1602) would also provide habitat for these species.

RAMSAR WETLANDS

The Protected Matters Search (Appendix D of the BAR) identified one (1) Wetland of International Importance (Ramsar), that being the Hunter estuary wetlands. The BAR (Table 29) states that '*the study area is located approximately 18 kilometres northwest of this Ramsar site and Deadman's Creek is a tributary of the Hunter River. However, as an ephemeral creek line, it is considered unlikely that the Project will have any direct impacts on this Ramsar Site. Deadman's Creek is also considered to provide only a minor contribution of flow into this Ramsar Site*'. This suggests that the project will not impact on the Ramsar site, which is consistent with DoE's 'Decision on Referral' dated 3 June 2015, which does not include impacts to wetlands (Ramsar).

(d) **Verify** that the proponent has expressed a statement about the potential impact i.e. likely significant, low risk of impact, not occurring, for each listed threatened species and community protected by the EPBC Act referred to in 1(a). Note which species and/or communities have not been addressed in this manner.

An assessment of whether each threatened species is likely to occur in the proposal area and whether a subsequent assessment of significance is required has been undertaken (Addendum Report – Section 3 – Tables 4, 5 and 6).

Outcomes of the assessment are:

- koala – about 45.8 hectares of potential foraging habitat would be removed because of the proposal. The proponent considered that the Project is likely to have a significant impact on koala:
    - quantum of foraging habitat to be removed in comparison to surrounding areas,
    - long-term reduction and fragmentation of koala habitat, and
    - the disjunct nature of koala populations in the local Region and their general known decline in the locale.

- grey-headed flying fox – the project will remove some limited foraging habitat but will have no direct impact on breeding habitat / known camps. As such the proponent considered that the project will not result in a significant impact.

- spotted-tailed quoll – no direct impact on spotted-tailed quoll populations, due to similar habitat remaining in the general locale and naturally low densities. The species was not recorded for the site.

- swift parrot – proposal will impact on 45.34 hectares of foraging habitat but given the extent of this habitat the proponent considers that the proposal will not result in a likely significant impact. No breeding habitat impacted upon.

- regent honeyeater – proposal will impact on 44.12 hectares of foraging habitat but given the extent of this habitat the proponent considers that the proposal will not result in a likely significant impact. No breeding habitat impacted upon; not mapped as key breeding habitat (see Figure 2).

Based on the above, species credits have been generated for koala only.

(e) I**dentify** where further information from the proponent is critical to the assessment of MNES particularly in relation to mapping Table 1 (A), analysis of impacts Table 1 (F) and Table 2 (F), avoidance, mitigation and offsetting, and 6.

Both OEH and DP&E considered that the 'Assessment of MNES' in the revised BAR was inadequate and requested for further information on the Brandy Hill Expansion Project, in relation to Commonwealth Biodiversity matters (as per DP&E email to proponents dated 28 November 2018).

R.W. Corkery & Co. provided DP&E and OEH with an Addendum Report on Commonwealth Biodiversity Matters on 7 February 2019 (authored by Biosis Pty Ltd and dated 5 February 2019). This report was commissioned to address the additional information requested on MNES (as detailed above).

OEH confirms that the addendum report assesses impacts on the following species: koala, grey-headed flying-fox, spotted-tailed quoll, regent honeyeater and swift parrot. This assessment includes (i) direct and indirect impacts, including cumulative impacts and local scale (ii) details on the quantum of the impact, (iii) assessment of significance (for each species), (iv) discussion of the nature of the impact, (v) statements on whether impacts are unknown or unpredictable, and (vi) details of avoid and mitigate. Table 2 details survey effort for each listed species.

OEH considers that the Addendum Report adequately addresses MNES.

2. Assessment of the relevant impacts

All EPBC Act-listed species and/or communities that the Commonwealth consider would be significantly impacted (as noted in the referral documentation) should be assessed and offset. These are referred to as relevant impacts.

(a) **Verify** [by ticking the following boxes]:

X the nature and extent of all the relevant impacts has been described

X measures to avoid and mitigate have been described

? an appropriate offset for any residual adverse significant impact has been determined.

DoE determined that the following threatened species are likely to be significantly impacted:

- grey-headed flying-fox,
- koala,
- regent honeyeater,
- spotted-tail quoll,
- and swift parrot.

The proponent also considered two threatened flora species (*Grevillea parviflora* subsp. *parviflora* and *Persicaria elatior*), but targeted searches eliminated these species due to lack of detection.

(b) **Note** if information in relation to any of these boxes has not been provided for any relevant EPBC Act-listed species and communities.

Both OEH and DP&E considered that the 'Assessment of MNES' in the revised BAR was inadequate and requested further information on the Brandy Hill Expansion Project, in relation to Commonwealth Biodiversity matters (as per DP&E email to proponents dated 28 November 2018).

R.W. Corkery & Co. provided DP&E and OEH with an Addendum Report on Commonwealth Biodiversity Matters on 7 February 2019 (authored by Biosis Pty Ltd and dated 5 February 2019). This report was commissioned to address the additional information requested on MNES (as detailed above).

OEH is of the opinion the Addendum Report adequately addresses MNES.

(c) There may be listed threatened species and communities for which the proponent will claim that the impact will be **not** significant in accordance with the *EPBC Act Significant Impact Guidelines*. Please **provide** advice for cases where OEH disagrees with this finding.

Not applicable. OEH agrees with the assessment of MNES provided in the Addendum Report.

(d) Provide references to where specific lists or tables are detailed in the EIS

EIS

- Appendix 7 Biodiversity – Biodiversity Assessment Report (and Biodiversity Offset Strategy)
- Section 2.9 – Alternatives to the Final Proposal, pg. 55
- Section 2.9.3 – Alternative quarry footprint, pg. 56
- Section 2.9.4 – Alternative offset sites, pg. 56
- Table 3.1:1 – Consultation Summary, pg. 61
- Section 4.2 (4.2.1) – Relevant Legislation - Environment Protection and Biodiversity Conservation Act 1999, pg. 81
- Table 5.1:1 – Environmental Risk Analysis (includes Biodiversity), pg. 111
- Section 5.0 – Biodiversity (Key Environmental Issues), pg. 154
- Table 5.5:2 – Plant Community Types of the study area and corresponding formation and class (Keith 2004), pg. 160

- Figure 6.9 – Impact Summary for the Project, pg. 161
- Table 5.5:3 – Species status within study area, pg. 161
- Section 5.5.2.4 – Mitigation Measures, pg. 165
- Table 5.5:6 – MNES Description, pg. 171
- Table 5.5:7 – Applicable Recovery Plans (includes MNES species), pg. 172
- Table 5.5:8 – Mitigation Measures (*Columns 1, 2 & 4 extracted from the BAR [Biosis 2014]), pg. 175
- Table 5.5:10 – Review of project alternatives on MNES, pg. 181
- Table 5.5:11 – Continuing management, mitigation and monitoring measures for review, pg. 182
- Figure 6.10 – Koala Habitat Planning Map - Port Stephens Council, pg. 185
- Table 5.5:12 – Ecosystem credits required to offset impacts of the Project, pg. 195
- Table 5.5:14 – Required biodiversity credits and proposed offset options, pg. 197

Updated / Revised BAR (dated 5 November 2017), submitted as part of the Response to Submissions report (as Appendix 8).

- Table 1 – Key biodiversity legislation and policy (includes EPBC Act 1999), pg. 5
- Section 1.3 – Site Description, pg. 8
- Figure 1 – Location of the study area, Seaham NSW, pg. 11
- Figure 2 – Site Map, pg. 12
- Section 3.4 – Assessment of landscape value, pg. 18
- Table 2 – Extent of native vegetation cover before and after development, pg. 18
- Table 3 – Connectivity condition classes, pg. 19
- Table 4 – Plant Community Types of the study area and corresponding formation and class (Keith 2004), pp. 21
- Table 5 – PCT and corresponding vegetation zones mapped within the study area, pg. 22
- Table 6 – Vegetation zone 1 community description (Vegetation zone 1: Spotted Gum - Red Ironbark - Narrow-leaved Ironbark - Grey Box shrub-grass open forest of the lower Hunter), pg. 22
- Table 7 – Vegetation zone 2 community description (Vegetation zone 2: Spotted Gum - Narrow-leaved Ironbark shrub - grass open forest of the central and lower Hunter), pg. 24
- Table 8 – Vegetation zone 3 community description (Vegetation zone 3: Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion), pg. 25
- Table 9 – Vegetation zone 4 community description (Vegetation zone 4: Spotted Gum - Red Ironbark - Grey Gum shrub - grass open forest of the Lower Hunter), pg. 27
- Table 10 – Vegetation zone 5 community description (Vegetation zone 5: Forest Red Gum grassy open forest on floodplains of the lower Hunter), pg. 28
- Table 11 – Vegetation zone 6 community description (Vegetation zone 6: White Mahogany - Spotted Gum - Grey Myrtle semi-mesic shrubby open forest of the central and lower Hunter Valley), pg. 30
- Table 12 – Site value scores for all Vegetation Zones, pg. 32
- Figure 3 – Vegetation Zones and BioBanking Plots/Transects, pg. 33
- Table 14 – Summary of fauna survey effort, pg. 36
- Figure 4 – Flora and fauna survey effort, pg. 40
- Table 15 – Assessment of geographic habitat features within the study area, pg. 42
- Table 16 – Assessment of ecosystem credit species within the study area, pg. 44
- Table 18 – Species credit species (fauna) and status within the study area, pg. 48
- Table 22 – Recommendations to minimise ecological impacts, pg. 56
- Section 6.2 – Impact summary, pg. 59
- Table 23 – Impacts to Plant Community Types, including Management Zones, pg. 60
- Figure 5 – Impact summary for the Project, pg. 62
- Table 24 – Summary of ecosystem credits for all management zones, pg. 64
- Section 8 – Biodiversity Offset Strategy, pg. 66
- Table 26 – Ecosystem credits required to offset impacts of the Project, pg. 66
- Table 27 – Species credits required to offset impacts of the Project, pg. 66
- Table 28 – Required biodiversity credits and proposed offset options, pg. 67

- Section 9.1 – Environment Protection and Biodiversity Conservation Act 1999, pg. 70
- Table 29 – Assessment of the Project against the EPBC Act, pg. 70
- Appendix 2 – Native vegetation data (BioBanking)
- Appendix 5 – Threatened species (includes flora and fauna [both BC and EPBC Acts], and tables of likelihood against potential habitat)
- Appendix 5.3 – Migratory species (EPBC Act listed)
- Appendix 6 – Significant Impact Criteria assessments (EPBC Act listed species only)
- Appendix 7 – Credit profile report
- Appendix 8 – Targeted Koala Survey Report

Additional Sections from Appendix 7 – Original BAR to the EIS (dated 8 November 2016) Not in Revised BAR

- Appendix 7B – Biodiversity: EPBC Act Referral
- Appendix 7C – Biodiversity: MNES Search
- Appendix 7 D – Biodiversity: Referral Decision

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- Table 1 – Plant Community Types of the study area, pg. 2
- Table 2 – Survey effort for each species considered under MNES, pg. 4
- Table 3 Threatened fauna and EPBC Act status, pg. 7
- Section 3 – Discussion of impacts, pg. 8
- Table 4 – Direct, indirect, cumulative and consequential impacts relevant to MNES, pg. 8
- Table 5 – Quantum and nature of impacts on MNES, populations and the extent of the habitat, pg. 11
- Table 6 – Impacts consistent with Approved Conservation Advice and identification of unknown and unpredictable impacts, pg. 16
- Section 4 – details on avoidance and mitigation measures, pg. 17
- Table 7 – Required biodiversity credits and proposed offset options, pg. 19
- Figure 1 – Grey-headed flying fox camps around the study area
- Figure 2 – Regent honeyeater key breeding habitat around the study area

Table 1 Impact Summary Relevant EPBC Act – listed Ecological Communities (refer to section 3)

A	B	C	D	E		F	G
EPBC Act -listed EEC	Y/N	PCTs	Y/N/comment	Ha	Credits	Comment	Relevant page numbers in the EIS
Not applicable - No EPBC listed threatened ecological communities are being impacted upon.							

(A) **List** the relevant EPBC Act listed ecological communities that will be significantly impacted in accordance with the referral documentation.
(B) **Verify** that there is evidence in the EIS that listed EEC and species habitat has been mapped in accordance with relevant listing guidelines (Yes/No).
Proponents are required by the SEARs to ensure that EPBC-listed communities are mapped in accordance with EPBC Act listing criteria. It is important that any derived native grassland components of an EPBC listed EEC are included in the mapping of native vegetation extent.
(C) **List** the Plant Community Types (PCTs) associated with the ecological communities in accordance with Chapter 5 of the FBA.
(D) **Confirm** that the identification of PCTs has been correct (Yes/No) and comment if not correct.
(E) **Record** the area of impact (ha) and credits required.

(F) **Comment** on the analysis of the impacts in relation to the nature and extent of the impact and whether or not the EIS includes an analysis of the direct and indirect impacts to the EEC. Note whether further information might be required.

(G) **Cite** relevant page numbers for details provided the EIS and Appendices for each EEC.

Table 2 Impact Summary Relevant EPBC Act – listed Species (refer to section 4)

*NOTE: Of the five-species species detailed in the DoE Referral Document, only grey-headed flying-fox, koala, regent honeyeater, spotted-tail quoll and swift parrot will be significantly impacted upon by the proposal. *Grevillea parviflora* subsp. *parviflora* and *Persicaria elatior*, although having potential habitat, were not detected during targeted flora surveys (that were done in accordance with the FBA and OEH survey guidelines) and as such a significant impact on these species is unlikely.

A	B	C	D	E		F	G
Threatened species (listed under the EPBC Act)	Credit Type (SC/EC)	Record PCTs associated with ecosystem credits	Y/N/Comment	Hectares (total species habitat)	Credits (total species habitat)	Comment	Relevant page numbers in the EIS and Appendices
Koala	Species credit	Not applicable.	Y	45.8 hectares	1,191 species credits	N/A.	EIS – Main Report: pgs. 5-6, 64, 81, 85, 106, 157-59, 162, 166-69, 176-7, 184-90, 195 & 198. Appendix 8 (of RTS report) – Revised BAR (dated 5 November 2017): pgs. 5, 14, 35, 37-9, 48-9, 56-57, 59, 62, 65-9 & 70-2. Appendix 5 (BAR) – Threatened Species Assessment: pg. 130.

A	B	C	D	E		F	G
Threatened species (listed under the EPBC Act)	Credit Type (SC/EC)	Record PCTs associated with ecosystem credits	Y/N/Comment	Hectares (total species habitat)	Credits (total species habitat)	Comment	Relevant page numbers in the EIS and Appendices
							Appendix 6 (BAR) – EPBC Act assessments of Significance: pgs. 144-5. Appendix 7 (BAR) – Credit profile report. Appendix 8 (BAR) Targeted Koala Survey Report. Addendum Report: pgs. 8-20
Grey-headed flying-fox Regent honeyeater Spotted-tail quoll Swift parrot *Note: All PCTs on the site are considered suitable	Ecosystem credit	HU591 (PCT 1064): Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin – 0.67 hectares [46 credits], HU798 (PCT 1584): White Mahogany - Spotted Gum - Grey Myrtle semi-mesic shrubby open forest of the central and lower Hunter Valley – 2.16 hectares [103 credits], HU806 (PCT 1592): Spotted Gum - Red Ironbark - Grey Gum shrub -	Y	48.62 hectares	2,799 credits	A biobank site has an average credit generation rate of 7.5 credits per hectare, which means approximately 373 hectares of suitable foraging habitat would be secured via a BioBanking agreement and managed for conservation in perpetuity.	EIS – Main Report: pgs. 6, 168-72, 195 & 197. Appendix 8 (of RTS report) – Revised BAR (dated 5 November 2017): pgs. 5, 36-7, 44-5, 63-4, 66-70 & 72.

A	B	C	D	E		F	G
Threatened species (listed under the EPBC Act)	Credit Type (SC/EC)	Record PCTs associated with ecosystem credits	Y/N/Comment	Hectares (total species habitat)	Credits (total species habitat)	Comment	Relevant page numbers in the EIS and Appendices
habitat for all these species and as such are offset by all the 'ecosystem credits' generated by the development.		grass open forest of the Lower Hunter – 1.12 hectares [64 credits], HU812 (PCT1598): (Forest Red Gum grassy open forest on floodplains of the Lower Hunter – 1.67 hectares [111 credits], HU814 (PCT 1600): Spotted Gum - Red Ironbark - Narrow-leaved Ironbark - Grey Box shrub-grass open forest of the lower Hunter – 17.1 hectares [984 credits], and HU816 (PCT 1602): Spotted Gum - Narrow-leaved Ironbark shrub - grass open forest of the central and lower Hunter – 25.9 hectares [1,491 credits].					Appendix 5 (BAR) – Threatened Species Assessment: pg. 112, 118, 126 & 132. Appendix 6 (BAR) – EPBC Act assessments of Significance: pgs. 146-52. Appendix 7 (BAR) – Credit profile report. Addendum Report: pgs. 8-20

(A) **List** the relevant threatened species that will be significantly impacted in accordance with the referral documentation.
(B) **Record** whether the relevant threatened species is classified as "species credit species" of ecosystem credit species for the purposes of the FBA.
(C) **List** the PCTs associated with the ecosystem credit species.
(D) Verify that the habitat polygons for MNES have been mapped appropriately representing the foraging and/or breeding habitat for the species that will be impacted by the development.
(E) **Record** the area of impact (ha) and credits required. For impacts associated with ecosystem credit species identify the total credit requirements associated with the cleared PCTs identified as habitat for the species.
(F) **Comment** on the adequacy of the analysis of the impacts in relation to the nature and extent of the impact and whether or not the EIS includes an analysis of the direct and indirect impacts to the species. Note if further information is required.
(G) **Cite** relevant page numbers for details provided in the EIS and Appendices for each threatened species.

3. Avoid, mitigate and offset

Comment on whether or not the EIS identifies measures to avoid and minimise impacts on the relevant EPBC Act-listed threatened species and communities. Section 8 of the FBA requires that proponents detail these efforts and commitments in the EIS. Identify gaps in the discussion on measures to avoid and minimise impacts on Commonwealth matters. Provide references to sections and page numbers in the EIS.

EIS

Section 2.9 of the EIS outlines the consideration of alternatives to the final project, namely:

- Sourcing alternative material from another quarry outside the Region,
- Alternate quarry site for hard rock,
- Alternate quarry footprint,
- Alternative operational hours,
- Alternative of continuing with existing quarry production, and
- Not proceeding with the project.

All the alternatives were considered during the planning process, but the lack of viability of these options or the inability to source other suitable material, proved to be the key drivers as to why they were not chosen.

Koala:

The EIS deals with koala separately, noting that '*complete avoidance of habitat removal suitable for the threatened koala could not be undertaken due to other ecological constraints (i.e. Deadman's Creek) and limitations of environmental protection zoning*'. However, the proponent (Hanson) has stated that it is committed to minimising impacts on the koala by applying alternate avoidance and minimisation practices, namely:

- The commission of a separate and complete threatened species survey for the koala to more accurately quantify the activity, abundance and nature of koalas within the project area. This survey will assist in developing practical recommendations to minimise impacts through the staged progression of the Brandy Hill expansion project,
- A Biodiversity Management Plan (incorporating management measures for koalas), should be prepared to outline the clearance procedure (including protection measures for adjacent vegetation), protocols for koala finds and incidents, including an educational brochure for all workers to review prior to working on the Project,
- An ecologist undertaking pre-clearance surveys for koalas within the Project area immediately before removal of any vegetation,
- Should any koalas be identified, those specimens being removed and placed in the care of a koala/native fauna care group or ecologist before clearing proceeds,
- An ecologist or fauna rescuer being present during vegetation clearing to minimise impacts on koalas displaced or injured during clearing,
- An ecologist or regional koala care group being contacted if any koalas are injured and/or distressed during the construction and operation phases of the Project,
- Low vehicle speed limits being enforced on-site to reduce the potential for vehicle impacts on koalas,
- All drivers working on the Project being made aware of koalas and instructed to take precautions when driving on-site, and
- Avoid disturbance to surrounding adjoining vegetation and thereby enable local koala activity in other suitable habitat within the adjoining Hanson landholdings in the immediate local area.

Biodiversity (incl. other threatened species / biota)

Table 5.5:8: (Mitigation Measures) of the EIS outlines the mitigation measures to be employed to protect on-site biodiversity. This table is based on the BAR and includes the following measures:

- Biodiversity Management Plan (BMP) to be prepared to outline the clearance procedure, avoid and mitigate impacts to EECs, protocols for koala and other threatened species finds and manage all other biodiversity issues on site.
- Pre-clearance surveys will be conducted prior to any vegetation clearance in areas of identified threatened species habitat to ensure that threatened species are not present prior to vegetation removal.
- Vegetated boundaries of the Project area to be clearly fenced off and signposted to ensure no access from personnel or equipment.
- Exclusion fencing to be discussed during all site inductions.
- Exclusion fencing to be routinely checked by an environmental representative.
- Exclusion fence footings to be free of stockpiled soils and vegetation to allow routine checks and to ensure that the boundary fence and adjoining vegetation (e.g. root zones of trees) to be retained are not smothered with soil.
- A Biodiversity Offset Strategy has been prepared to offset the residual impacts to biodiversity arising from the Project (as outlined in Section 5.5.8 of the EIS).
- Hanson to develop a strict erosion and sediment control plan for the expansion to ensure that erosion and sediment is contained on site. Measures to include:
    - Sediment fencing to be placed inside the exclusion fencing and routinely checked for sediment breeches and to ensure structural integrity is maintained through vegetation clearance activities, and
    - Vehicles and equipment to ensure that tyres and tracks are free of sediment entering/exiting site.
- Noxious weeds, including fire weed and pampas grass recorded within vegetation clearance areas to be removed and management outlined in a BMP. These noxious weeds must be removed and appropriately disposed of in an appropriate waste facility as required by NSW DPI through the Port Stephens Council under the NW Act.
- BMP to outline pathogen management control associated with vehicle movements and vegetation clearance.
- Lighting associated with night works to be directed away from adjoining vegetation at all times.
- Heavy vehicle/machinery use to be limited to standard hours of operation as per Project Approval conditions.

Appendix 8 (of RTS report) – Revised BAR (dated 5 November 2017)

Section 6.1 (Avoidance and minimisation) of the BAR specifically addresses the avoidance, mitigation and offset strategies for relevant MNES. These measures are identical to those outlined in the EIS and described above.

Addendum Report (Biosis Pty Ltd – dated 5 February 2019)

Section 4 of the Addendum Report provides details on avoidance and the proposed mitigation measures. The proposal has reduced the extraction area due to geological and ecological constraints and was further minimised on the basis to minimise impacts to flora and fauna.

A list of the proposed mitigation measures to minimise the impacts of the project are provided on Page 18 (Section 4) of the Addendum Report., this includes the provision of a Biodiversity Management Plan for the development footprint and associated areas.

Comment on the adequacy and feasibility of measures to avoid and minimise impacts. Identify inadequacies where further efforts could be made to avoid and minimise impacts on Commonwealth matters. Provide

references to sections and page numbers in the EIS that discuss avoidance and mitigation measures relevant to EPBC Act-listed species and communities.

See discussion above.

The project has considered alternate proposals or strategies (as outlined above), which include the avoidance and minimisation to areas of significant biodiversity (as outlined above). Specific measures will be implemented during the construction phase that aim to mitigate or minimise impacts (as outlined above). It is expected that the detailed design will reduce the impacts to PCTs and habitat, particularly with regards to the siting of construction infrastructure and ancillary works.

Unavoidable impacts to biodiversity have been assessed and quantified in accordance with the NSW FBA. A BOS has been prepared for the project that details the physical offsets required and measures to be used to acquire these offsets (Appendix 8 – Revised BAR of the RTS).

EIS and BAR references are the same as above.

A list of the proposed mitigation measures to minimise the impacts of the project are provided on Page 18 (Section 4) of the Addendum Report, this includes the provision of a Biodiversity Management Plan for the development footprint and associated areas.

4. Offsetting

(a) **Verify** [by ticking the following boxes] that the offsets proposed to address impacts to EPBC-listed threatened species and communities are in accordance with the requirements under the EPBC Act.

✓ An appropriate offset for any residual adverse significant impact has been determined.

✗ Proposed offsets for EECs provide a like for like outcome i.e. proponents have identified PCTs attributed to the specific threatened ecological community being impacted. Note: No EPBC listed Threatened Ecological Communities (TECs) are being impacted upon. As such this requirement is not applicable.

✓ Proposed offsets have been determined using the FBA

If offsets have not been determined in accordance with the FBA, Planning is required to discuss the proposed approach with the Commonwealth as soon as possible.

A BOS was included within the BAR and is in accordance with the FBA. The BOS indicates that Hanson will aim to retire the biodiversity credits (2,799 ecosystem and 1,191 species [as per the 'biobanking credit report' in Appendix 7 of the BAR]) from existing registered biobanking agreement / biodiversity stewardship sites; and will aim to match ecosystem and species credits on a 'like for like' basis (incl. for all MNES species). Where this is not possible, the credit trading rules associated with major projects under the FBA will be used to source suitable credits and / or supplementary measures will be investigated in consultation with the consent authority. OEH supported the BOS and this approach, as per correspondence sent to DP&E on 6 April 2017 (DOC17/139733-1: Comments on EIS).

Details of the proposed offset sites at this stage are not formally known.

With respect to the five-threatened species listed under the EPBC that will be significantly impacted upon:

- Koala – the FBA process has been applied to this project to determine an appropriate offset for residual impacts to this species (i.e. the removal of 45.8 ha of its foraging habitat) that cannot be avoided or mitigated. The BOS states that the appropriate credits (1,191 species credits) will be purchased and retired from a registered biobanking agreement site. Given koala species credits will be purchased, this fulfils a Tier 1 outcome, and as such ensures any offsets for the koala fulfil the direct offset requirements of the EPBC Act Environmental Offsets Policy (DSEWPaC 2012).
- Grey-headed flying fox, regent honeyeater, spotted-tail quoll and swift parrot – the project will remove 48.62 hectares of foraging, roosting or breeding habitat critical to the survival of these species. The FBA process has been applied to this project and the ecosystem credits that are generated for impacts to the PCTs:

HU591 (PCT 1064), HU798 (PCT 1584), HU806 (PCT 1592), HU812 (PCT1598), HU814 (PCT 1600), and HU816 (PCT 1602), adequately offset the loss of habitat to these species.

OEH supported the BOS for the State assessment and this approach as per correspondence sent to DP&E on 6 April 2017 (DOC17/139733-1: Comments on EIS). Although State matters have been adequately addressed, as indicated above in Section (a), the Commonwealth generally requires offsets to meet 'Tier 1 – like for like' and they do not support certain mechanisms which modify the credit profile requirements or offsetting process, including payment into the Biodiversity Conservation Fund (BCF). As such DP&E requested that the proponents confirm that the identified credit amounts for MNES are still available in the absence of these mechanisms, and what the preferred credit retirement option will be. Table 7 of the Addendum Report provides details of the required biodiversity credits and how they will be offset. Most 'ecosystem credits' will be off set on a 'like for like' basis (Tier 1), whilst three PCTs (HU591, HU806 and HU812) will be offset under a Tier 3 scenario, which is at the broader 'formation' level. **As such the latter may not meet Commonwealth requirements**. All species credits (koala) will be on a Tier 1 – like for like basis. Furthermore, the proponents have indicated that the BCF will not be used for the project, as credits will be sourced from existing Stewardship sites or nearly established sites.

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5. Comment on whether the information and data relied upon for the assessment have been appropriately referenced in the EIS. Comment on the validity of the sources of information and robustness of the evidence.

The information and data used in the assessment has been appropriately referenced, and the sources of information are valid.

Table 3 Summary of Offset Requirements

A	B	C	D	E	F
Threatened species or EEC (listed under the EPBC Act)	Credits required as calculated by the FBA	Credits generated from offsets in remnant vegetation	Credits generated from offsets proposed by other means	Comment on the proposed offsets.	Relevant page numbers in the EIS and Appendices
Koala	1,191 (species credits)	0	0	A BOS was included within the BAR and is in accordance with the FBA. The BOS indicates that Hanson will aim to retire the biodiversity credits (2,799 ecosystem and 1,191 species [as per the 'biobanking credit report' in Appendix 7 of the BAR]) from existing registered biobanking agreement / stewardship sites; and will aim to match ecosystem and species credits on a 'like for like' basis (incl. for all MNES species). Where this is not possible, the credit trading rules associated with major projects under the FBA will be used to source suitable credits and / or supplementary measures will be investigated in consultation with the consent authority. OEH supported the BOS and this approach, as per correspondence sent to DP&E on 6 April 2017 (DOC17/139733-1: Comments on EIS). Details of the proposed offset sites at this stage are not formally known.	**Appendix 8 (of RTS report) – Revised BAR (dated 5 November 2017):** • Table 24 – Summary of ecosystem credits for all management zones. • Table 25 – Summary of species credits for all management zones. • Table 26 – Ecosystem credits required to offset impacts of the Project • Table 27 – Species credits required to offset impacts of the Project • Appendix 7 (BAR) – Credit profile report.
Grey-headed flying-fox, regent honeyeater, spotted-tailed quoll and swift parrot.	2,799 (ecosystem credits)	0	0		

(A) **List** the relevant threatened species or ecological community included in the proposed offset package (these are the listed species and communities that will be significantly impacted in accordance with the *EPBC Act Significant Impact Guidelines 1.1*.). Identify any relevant species or ecological communities which have not been included in the proposed offset package.

(B) **List** the total credit requirement identified by the FBA for impacted listed threatened species and ecological community. For EECs and ecosystem credit species this is the sum of the credits generated by PCTs associated.

(C) **Identify** the total number of required credits which are proposed to be retired through conserving and managing remnant / mature vegetation.

(D) **Identify** the number of credits proposed to be met through other methods allowable under the FBA, such as rehabilitation of impacted areas or regrowth vegetation.

(E) **Comment** on the adequacy of the proposed offset in meeting requirements of the FBA and the EPBC Act. In particular is there a reasonable argument for a shortfall in credits required for MNES and/or non-compliance with like-for like? Are the offsets proposed by means other than protection of remnant vegetation adequate?

(F) **Reference** the relevant page numbers from the EIS and Appendices for each threatened species and community.