BCD Review

Newnes Plateau Swamp – maximum offset liability Angus Place Mine Extension (15 May 2019)

Background

In order to verify the maximum offset liability calculations for Newnes Plateau Shrub Swamps (NPSS) at Angus Place presented in the Angus Place mine extension project amendment report and swamp offset strategy, additional information is required.

BCD requested a copy of the maximum offset liability report and supporting data from Centennial Coal on 24 March 2020. The report and data (including spatial files) were provided on 17 April 2020.

The information and data provided to BCD relating to the calculation of maximum offset liability at Angus Place includes:

- The report, RPS (2019) *Newnes Plateau swamp – maximum offset liability: Angus Place mine extension*. RPS 15 May 2019.
- A spreadsheet of BAM plot data for 58 plots (140194_FloraList_Bam_Data_20190411.xlsx)
- Spatial shapefiles showing locations of plots, swamp mapping, longwalls etc

1 Calculation of ecosystem credits

The maximum offset liability was calculated using the Biodiversity Assessment Method (BAM). BCD notes that a biodiversity development assessment report (BDAR) has not been prepared.

BCD supports the assumption of total loss of swamps used by RPS (2019) in their calculation of maximum offset liability.

1.1 Credits have been calculated by longwall, rather than swamps

Potential impact swamps (both NPSS and Newnes Plateau Hanging Swamps (NPHS)) were identified and grouped into vegetation zones based on their position related to the longwall plan, swamp type and vegetation condition.

Maximum offset liability was calculated in a cumulative manner, with liability calculated stepwise in accordance with the order of longwall extraction. This has resulted in calculations that are confusing and difficult to verify.

BCD notes that some vegetation zones (i.e. swamps) are positioned where they may experience impact from extraction of more than one longwall. In these cases, impacts to swamps were considered once, and for the first longwall that may impact them.

BCD considers the approach of zoning swamps (especially NPSS) by longwall to be confusing as it makes it difficult to ascertain the credit liability for the individual swamps. Table 1 of the maximum offset liability report identifies BAM plots for longwalls, but not the

individual swamps. The figures provided in the report do not distinguish between NPSS and NPHS.

Based on the information presented in the ecosystem and species credit summary reports, some credit calculations have been conducted for parts of swamps rather than entire swamps. For example, only one hectare of the ten-hectare Sunnyside Swamp is included in the credit calculations. Similarly, 0.2 hectares of East Wolgan Swamp, which totals 8.3 hectares, has been included. Due to the unclear presentation of the information (including figures three to twelve, where it is difficult to discern the swamps allocated to different longwalls due to the colours used in the maps), it is unknown whether other swamps have been included partially or entirely.

Maximum offset liability should be calculated and presented for the individual swamps as discrete zones. It needs to be made clear which credit calculations correspond to each individual swamp. Clear credit calculations should be provided for all NPSS likely to be impacted by the Angus Place mine extension project including:

- Trail Six / Japan
- Twin Gully and Twin Gully North
- Wolgan River
- Wolgan River Upper
- Tristar
- Birdrock
- Crocodile
- Sunnyside
- East Wolgan

NPHS should also be dealt with as units, with individual swamps clearly identified and named or numbered. Credits should be calculated for NPHS based on BAM plot data where available. If this is unavailable, the benchmark data for plant community type (PCT) 657 should be used.

Recommendation

1.1.1 Credit liability calculations should be presented for each individual swamp. All swamps should be individually identified, categorised as Newnes Plateau Shrub Swamps or Newnes Plateau Hanging Swamps, and labelled for clarity.

1.2 A subset of plot data has been used

BCD is unclear regarding exactly which plots have been used to populate the biodiversity assessment calculator:

- The report states that, *Data from 75 BAM plots was collected from the THPSS located within the project area, of which 33 were utilised to populate the credit calculator.* (Section 2.2.5.3)
- The spreadsheet provided to BCD provides data for 76 BAM plots. Eleven of these appear to be from reference swamps, leaving 65 from impact swamps.
- The shapefile (140194_BAMplotgroups_20190305) contains a total of 53 plots
- Table 1 of the maximum offset liability report (RPS 15 May 2019) lists 33 plots. BCD was unable to locate five of these plots in the shapefile (plot numbers 67, 68, 69, 70, and 76)

The maximum offset liability report states that, where BAM plots undertaken exceed the BAM plot number requirement, the plot/s with the highest vegetation integrity scores were chosen to represent the vegetation zone. This approach ensured the most conservative estimate of vegetation integrity of NPSs that may be impacted.

A summary of the vegetation integrity scores used is provided in section 3.1.1 of the report. However, the report does not include a summary list of all plots, including those not used, with their locations and vegetation integrity scores. This is required to verify whether the plots used to generate the maximum offset liability score are the most appropriate.

Recommendation

1.2.1 A summary list of all plots, including those not used in the Biodiversity Assessment Method calculations, be provided. This should include the location of each plot, the swamp it is in and the vegetation integrity score.

1.3 Definition of vegetation condition is unclear

The report provides no explanation of what constitutes 'low' versus 'high' condition. The table of vegetation integrity scores in section 3.1.1 contains vegetation integrity scores where the 'low' condition score is higher than the 'high' condition score. The vegetation integrity scores for NPSS are summarised in table 1:

Table 1 NPSS vegetation integrity scores presented in section 3.1.1 of the report

Longwall	High condition score	Low condition score
LW1001	47.3	59.3
LW1002	45.7	25.6
LW1003	34.9	61.5
LW1004	60.8	51.7
LW1005	55.1	N/A
LW1006	47.8	N/A
LW1007	N/A	45.6
LW1008	24.7	21.7
LW1009	29.3	31.4
LW1013	21.7	N/A

Note that the benchmark vegetation integrity score for PCT 657 is 98.3

Recommendation

1.3.1 Definitions should be provided for 'high' and 'low' condition swamps

2 Calculation of species credits

Table 3 of the report summarises the ecosystem and species credit liabilities. Species credits calculated are shown in section 3.3 (table 3) of the report. Four species are identified as generating a species offset liability.

Table 2 Summary of species credit requirements presented in section 3.3 (table 3) of the report

Species	Number of species credits required
Blue Mountains water skink	844
Giant dragonfly	1276
Deane's boronia	844
Red-crowned toadlet	639

Blue Mountains water skink

The report states that the entire area encompassed by the NPSS swamp boundary was considered suitable habitat for Blue Mountains water skink (BMWS) and used to define the species polygon.

It is not stated in the report whether all NPSS to be impacted by the Angus Place mine extension project were included as habitat for BMWS, or whether only those NPSS where the skink has been recorded are included.

The spatial shapefiles provided to BCD include both BMWS survey locations and survey results for 2019. The surveys appear to cover all NPSS except Bird Rock Swamp, and have located BMWS in Tristar, Twin Gully, Trail Six (Japan) and Sunnyside swamps. Wolgan River and Wolgan River Upper swamps have been surveyed, with no BMWS recorded.

Based on the areas (hectares) by longwall presented in the BAM credit summary report, it appears that credits have been calculated for all NPSS allocated to longwalls within the impact area. However, as for ecosystem credits it is unclear which NPSS have been included in part, or in full.

Giant dragonfly

As for BMWS, the report states that the entire area encompassed by the NPSS swamp boundary was considered suitable habitat for Giant Dragonfly. The summary of ecosystem and species credit requirements in table 3 of the report shows that more credits have been generated for giant dragonfly than for BMWS. Examination of the BAM credit summary report for this species indicates that both NPSS and NPHS have been included in the calculations of species credits for giant dragonfly. BCD supports the inclusion of both NPSS and NPHS as habitat for giant dragonfly.

Again, it is unclear whether individual swamps have been included partially or fully.

Deane's boronia

Based on the credit calculations, it would appear that Deane's boronia credits have been calculated over the same area as BMWS.

The report notes that in the future, species polygons for Deane's boronia will be delineated using colour-based classification of aerial imagery. Spectral reflectance of the species when flowering would be analysed to identify potential populations of the species.

BCD notes that this method was developed and optimised as part of the *Boronia deanei research and management program: 2017 Boronia deanei monitoring report* prepared for Centennial Coal, Springvale (RPS 2019).

BCD request that a copy of this report be provided to enable a review of the methodology and results and to determine its applicability to calculation of maximum offset liability for Deane's boronia.

Red-crowned toadlet

The report states species credits for red-crowned toadlet are based on area calculations for each swamp. Note that the red-crowned toadlet generates fewer credits than the other species as it has a lower biodiversity risk rating in the BAM calculator.

Examination of the BAM credit summary report for this species indicates that both NPSS and NPHS have been included in the calculations of species credits for red-crowned toadlet. BCD supports the inclusion of both NPSS and NPHS as habitat for red-crowned toadlet.

Klaphake's sedge

The threatened species Klaphake's sedge (*Carex klaphakei)*, which has been recorded in Tri Star and Twin Gully swamps, has not been included in species credit calculations. There is no explanation provided in the report for this species' omission.

Recommendations

2.1 A table clearly showing each individual Newnes Plateau Shrub Swamps and Newnes Plateau Hanging Swamps, the threatened species associated with that swamp, total area of the swamp, area of the swamp used for the species polygon, and the species credits generated for the swamp, be provided. A clear map should also be provided showing the locations of each Newnes Plateau Shrub Swamps and Newnes Plateau Hanging Swamps.

2.2 A copy of *Boronia deanei research and management program: 2017 Boronia deanei monitoring report* prepared for Centennial Coal, Springvale (RPS 2019) be provided to BCD.

2.3 Species credits be calculated for Klaphake's sedge.

3 Conclusion

The approach taken of calculating ecosystem and species credits by longwall rather than by swamp is confusing, making it difficult to verify credit calculations presented in the maximum offset liability report for Angus Place mine extension.

Recommendations

3.1 The maximum offset liability report for Angus Place be reworked so that ecosystem and species credit calculations are presented for each individual Newnes Plateau Shrub Swamps and Newnes Plateau Hanging Swamps rather than by longwall.

3.2 This report should follow the format of a biodiversity development assessment report consistent with the Biodiversity Assessment Method.

Summary of recommendations

1.1.1 Credit liability calculations should be presented for each individual swamp. All swamps should be individually identified, categorised as Newnes Plateau Shrub Swamps and Newnes Plateau Hanging Swamps, and labelled for clarity.

1.2.1 A summary list of all plots, including those not used in the Biodiversity Assessment Method calculations, be provided. This should include the location of each plot, the swamp it is in and the vegetation integrity score.

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