Environment Report

Attachments

Inland Rail - Beveridge to Albury

Attachment D

Inland Rail Beveridge to Albury - EPBC Act Offset Strategy

Prepared for
Australian Rail Track Corporation Ltd
ABN: 75 081 455 754

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Inland Rail - Beveridge to Albury

EPBC Act Offset Strategy

30-Sep-2021

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EPBC Act Offset Strategy

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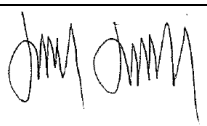
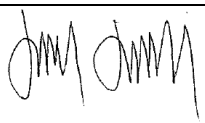
A	11-Aug-2021	Draft for Consultation	Jeff Smith Market Sector Leader - Environment, Power & Industrial, ANZ	
B	16-Aug-2021	Draft for Consultation	Jeff Smith Market Sector Leader - Environment, Power & Industrial, ANZ	
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1.0 Introduction

The Inland Rail – Beveridge to Albury Project (the Project) is the Victorian component of the wider Inland Rail project which aims to enable the use of double-stacked freight trains between Melbourne and Brisbane, including a critical pathway through regional Victoria. Inland Rail will transform the way freight is moved around the country, connecting regional Australia to its markets more efficiently, driving substantial cost savings for producers and consumers, and delivering significant economic benefits. The proponent for the Project is the Australian Rail Track Corporation Ltd (ARTC).

Assessment of the Project by the Victorian and Australian Governments is being undertaken through preparation of an Environment Report by ARTC. The Victorian Minister for Planning determined that an Environment Effects Statement (EES) was not required for the project but that an Environment Report should be prepared to enable assessment of potential impacts. The project was also deemed to be a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requiring assessment of a number of potential ecological impacts. It was agreed that the Environment Report would form the basis of assessment by both levels of government using a Bilateral Agreement established between the Commonwealth of Australia and The State of Victoria in 2014 relating to environmental assessment. The primary focus of the Environment Report is to address the scoping requirements contained within *Scope for the Environment Report under EPBC Act Bilateral (Assessment) Agreement 2014 and the Environment Effects Act 1978* (the 'scoping document') by examining the impacts of the Project on native vegetation, habitat and biodiversity values associated with listed threatened species and communities, as well as describe any feasible alternatives and mitigation measures that could avoid or reduce relevant impacts.

One of the requirements of the Environment Report scoping document (Section 8h) relates to the preparation of an offset package to compensate for significant residual impacts on matters of state or national environmental significance.

This document has been prepared to outline the offset proposal (offset strategy) for the Inland Rail – Beveridge to Albury project for Matters of National Environmental Significance (MNES) protected under the EPBC Act.

The EPBC Act offset for the Project will be achieved via a third party offset on land owned by another party (a native vegetation credit owner). Third party offset sites are established by the landowner via a security agreement registered on the land title that runs in perpetuity.

2.0 EPBC Act offset requirements for the project

Offsets are measures which compensate for the residual adverse impacts of an action on the environment. For assessments under the EPBC Act, offsets are only required if residual impacts on a protected MNES are significant. In the case of the Inland Rail project, the offsets are required due to unavoidable vegetation clearance to enable project infrastructure to be developed.

Ecological studies and surveys conducted in support of the Environment Report have identified that significant residual impacts on MNES anticipated for the project comprise the loss of 6.334 ha of Grey Box *Eucalyptus microcarpa* Grassy Woodland and derived Native Grasslands (GBGW) – listed as endangered under the EPBC Act. This loss is likely to result in significant impacts to GBGW due to reduction in extent of the ecological community and fragmentation or increased fragmentation of some patches that will remain. As such, these impacts will need to be offset.

Residual impacts on GBGW will be compensated for in accordance with the *EPBC Act Environmental Offsets Policy* (DSEWPaC, 2012). It is the expectation of the EPBC Act Environmental Offsets Policy that a minimum of 90% of the offsets proposed for an impact are comprised of direct offsets. Direct offsets are those actions that provide a measurable and immediate conservation gain for impacts on a MNES and most projects (including this Project) are able to provide a direct offset that will satisfy 100% of the offset requirement (DSEWPaC, 2012).

Grey Box *Eucalyptus microcarpa* Grassy Woodland and derived Native Grasslands

GBGW can be found from eastern south Australia extending through western, northern, and central Victoria into Central NSW. The canopy layer of this community is dominated by Grey Box *Eucalyptus microcarpa* with a variable mid-storey of wattles *Acacia* spp., Sweet Bursaria *Bursaria spinosa,* and Cassinia species *Cassinia* spp. The canopy tree or 'overstorey' and the mid-storey layer can be naturally absent or the overstorey has been purposefully cleared in the past, leaving a diverse ground layer of native grasses including Wallaby grasses *Rytidosperma* spp. and Spear Grasses *Austrostipa* spp., herbaceous flowering plants, and smaller chenopod shrubs (DSEWPaC, 2012a).

Ecological Vegetation Classes (EVCs) recorded in the project area that are synonymous with GBGW include Plains Grassy Woodland (EVC 55) and Grassy Woodland (EVC 175). These communities generally support a mature Grey Box overstorey and a relatively undisturbed and diverse understorey with a variety of shrubs, grasses, and herbs. An example of GBGW found in the Project investigation area is provided in Plate 1.

Plate 1 **Grey Box *Eucalyptus microcarpa* Grassy Woodlands and derived Native Grasslands, at overhead powerline investigation area 1078.**

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3.0 Purpose

This offset strategy has been prepared to provide:

- A description of the offset site(s) including location, size, condition and environmental values.
- Justification of how the offsets meet the EPBC Act Environmental Offsets Policy.
- An assessment (and justification for each input used) of the offset sites using the Offset Assessment Guide.

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4.0 Offset site(s)

Initially, two potential sites were identified through native vegetation offset brokers accredited by DELWP, both of which support GBGW community. Both of those landowners were willing to secure the offsets via a Section 69 Landowner Agreement under the Victorian *Conservation, Forests and Lands Acts 1987* which is understood to be the preferred mechanism of the regulators. Following a site assessment of both potential sites undertaken on Thursday 29th July 2021, a preferred site was selected, and this site is described below.

4.1 Description

4.1.1 Location and size of the offset property

The proposed offset site is a [redacted] property on [redacted], approximately [redacted] (Figure 1). At least 20 hectares of the property comprises GBGW, and an undetermined amount (but significantly greater than 20 hectares) is derived native grassland.

The offset property is located within the distribution of GBGW shown in the guide to identification, assessment and management of the community (DSEWPaC, 2012b).

The property has been recently acquired for the purposes of providing offsets. A large population of Golden Sun Moth *Synemon plana* has been confirmed at the site, and the bulk of the property provides suitable habitat for this species. The intent of the landowner is to utilise most of the grassland areas for offsets for this species.

4.1.2 Extent of GBGW within offset site

A site assessment was undertaken on Thursday 29th July 2021 to confirm the occurrence of the community, and (if present), provide an account of the extent and quality of the GBGW at the site.

GBGW occurs in two distinct structural forms at the site – grassy woodland and also as derived native grassland. These two structural forms are recognised in DSEWPaC (2012a) as representing GBGW because, while most of the larger extents of the community are grassy woodland, many others are patches in areas where trees have been historically cleared, leaving an intact native ground layer (derived native grassland).

Four patches of GBGW were mapped on the property as proposed offset areas (Table 1; Figure 1). The patches are comprised of areas of grassy woodland and/or derived native grassland. A description of the four patches and photos are provided in Appendix A. An example of GBGW within the proposed offset site is shown in Plate 2. It should be noted that the mapping provided in the strategy is not considered to provide an exhaustive account of all GBGW present on the property. Rather, mapping of patches ceased when the extents necessary to satisfy offsets for this Project were met. A number of patches were observed that were smaller than the requisite 2 hectares needed to qualify as GBGW. It is likely however, that if considered with the derived grasslands that surround these smaller overstorey patches, their inclusion could be justified.

Table 1 Extent of Grey Box Grassy Woodland patches proposed as offsets

Patch #	Grey Box Grassy Woodland extent (hectares)		
	Grassy woodland	Derived native grassland	Total
1	2.67	2.05	4.72
2	2.95	3.78	6.73
3	2.69	0	2.69
4	7.26	0	7.26
Total	**15.57**	**5.83**	**21.4**

Plate 2 Grey Box *Eucalyptus microcarpa* Grassy Woodlands and derived Native Grasslands at the proposed offset site.

The remainder of the property supports extensive areas of grassland habitat (a significant proportion of which is native) and patches of woodland (Plate 2; also visible on the aerial photograph in Figure 2). The other patches of woodland vegetation were more of a forest structure and/or associated with drainage lines (Plate 3 and Plate 4), and the dominant tree species were not Grey Box. As such, those patches were not included in the mapping of GBGW. Historical land use on the property has been sheep grazing and the condition of some of the patches of native vegetation reflects the influence of the property's long-term agricultural history.

Plate 3 **Context photo of property on which offsets are proposed.**

Plate 4 **Context photo of property on which offsets are proposed showing main watercourse and other patches of native vegetation (Patch 3 is evident in the background).**

EPBC Offset Strategy

1

2

3

4

[redacted]

0 0.25 0.5 Km

Coordinate System: GCS GDA 1994

Site Boundary
Grey Box Grassy Woodland
Derived Native Grassland
Potential GBGW Extent in Victoria
Parcel Boundaries

[redacted]

Date: 13/08/2021 Paper: A3
Author: Brierej Scale: 1:12,000
Data Sources: VICMAP (2021) Figure 1

INLAND RAIL ARTC

The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

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4.1.3 Condition of GBGW

Condition thresholds have been established for determining whether native vegetation represents the listed ecological community. The vegetation on the offset property meets the thresholds as defined by the flowcharts in DSEWPaC (2012a). The assessment of the site against the thresholds is provided in Table 2 for flowchart 1 (presence of GBGW) and Table 3 for flowchart 2 (quality of the patches).

Table 2 Thresholds for determining if GBGW is present at the proposed offset site

Threshold (from Flowchart 1 in DSEWPaC, 2012a)	**Threshold met?**
Is the property within or near the area shown on the Grey Box Grassy Woodland distribution map on p13 [of DSEWPaC, 2012a]?	Yes (see Figure 1)
Is at least 50% of the plant cover in the ground layer made up of perennial native species? OR Is at least 10% of plant cover in ground layer made up of perennial native grass species?	Yes, at least 10% of plant cover is made up of perennial native grass species
Is (or was previously) the most common tree species (or group of species) one of the following- Grey Box, White Box, Yellow Box, Blakely's Red Gum	Yes, the most common trees species is Grey Box *Eucalyptus microcarpa*. GBGW may be present, go to Flowchart 2.

Table 3 Thresholds for determining whether the patch of GBGW is of sufficient quality for national listing

Threshold (from Flowchart 2 in DSEWPaC, 2012a)	**Threshold met?**			
	Patch 1	**Patch 2**	**Patch 3**	**Patch 4**
Is (or was previously) the most common tree species Grey Box (*Eucalyptus microcarpa*)?	Yes	Yes	Yes	Yes
Is the patch at least 0.5 ha in size?	Yes	Yes	Yes	Yes
Do non-grass weeds make up more than 30% of the plant cover in the ground layer?	No	No	No	No
Do trees cover at least 10% of patch?	Yes	Yes	Yes	Yes
Is the patch bigger than 2 ha?*	Yes	Yes	Yes	Yes
Are there at least 8 trees/ha: a) that contain hollows or b) have a diameter >60cm at 1.3m above ground level?	Yes	Yes	Yes	Yes
Is at least 10% of the plant cover in the ground layer made up of perennial native grass species?	Yes	Yes	Yes	Yes
Is the listed national ecological community present?	Yes	Yes	Yes	Yes

**refer to Table 1*

None of the patches are considered to support significant populations of high threat weed species. While very occasional African Boxthorn *Lycium ferocissimum* and Bridal Creeper *Asparagus asparagoides* were observed, these plants were isolated, and considered very easy to eradicate from the site. The exotic species present in the ground layer were typically pasture grass species such as Rye *Lolium* sp., and Panic Veldt Grass *Ehrharta erecta* and broad-leaf weeds such as Flatweed *Hypochaeris radicata*.

4.2 Securing the offset

Third party offset sites are established by the landowner via a security agreement registered on the land title that runs in perpetuity. Security agreements can be via a Section 69 agreement under the *Conservation, Forests and Lands Acts 1987* with the Secretary of DELWP or an offset covenant agreement under the Victorian *Conservation Trust Act 1972* with Trust for Nature (DELWP, 2020).

In this case, the landowner will enter into a Section 69 agreement with the Secretary to the Department of Environment, Land, Water and Planning (DELWP) to protect and improve the extent and quality of native vegetation on the site. The agreement will be recorded on the title of the subject land.

Native vegetation credit owners are responsible for complying with their obligations under the security agreement, actively managing the site to generate gains, and reporting progress of this management to the relevant statutory body (DELWP or Trust for Nature) (DELWP, 2020).

A memorandum of understanding has been prepared and will be signed by ARTC and the offset provider to commit the offset provider to holding these offsets specifically for the Inland Rail project. This will ensure that these offsets remain reserved for the project until such time as they are ratified through a Section 69 agreement.

4.3 Management

As the proposed offset site is not currently operating under an existing covenant, it is not currently being managed under an approved native vegetation Offset Management Plan (a requirement of offset site security agreements).

An Offset Management Plan has been prepared by ARTC in consultation with the landowner to identify management actions required to improve the ecological condition of the site such as weed control, revegetation, and fencing. The Offset Management Plan includes responsibility, timing, and performance criteria to achieve specific environmental outcomes from the management measures. Preparation of the Offset Management Plan has been informed by *Management standards for native vegetation offset sites* (DELWP 2019). Furthermore, this offset site is compelling for the project as the landowner is very experienced with ecological restoration and has a demonstrated history of successful ecological restoration and revegetation projects across offset sites throughout Victoria.

5.0 Assessment of offset site using EPBC Act Offset Assessment Guide (offset calculator)

Offset requirements for the Inland Rail – Albury to Beveridge project have been determined in accordance with the EPBC Act Offsets Policy and an assessment of the proposed offset has been completed using the offset assessment guide spreadsheet (offset calculator) to determine whether it achieves 100% direct offset (Appendix B).

The metrics used in the calculator are based on a brief assessment of the preferred offset site and therefore assume conservative numbers with regard to the starting vegetation quality, risk of time to ecological benefit, and risks of loss with and without offset have assumed average values. These metrics may be subject to change following a detailed field evaluation of the condition of the offset site proposed to be completed to inform the preparation of the Offset Management Plan. As previously mentioned, there are additional areas of GBGW available on the offset property that provide insurance in the event that there is a need (subsequent to the detailed site assessment) to alter the metrics on the offset calculator, and hence increase the extent of GBGW to be protected.

5.1 Impact calculator

Quantum of impact is based on loss of 6.334 ha of GBGW associated with the Inland Rail Reference Design which is the subject of the assessment conducted in the project Environment Report. Most of the impacts to GBGW are concentrated at the Hume Highway (Tallarook) and Seymour Avenel Road/Hume Highway (Seymour) enhancement sites (4.956 ha). The remainder (1.378 ha) will result from overhead powerline works. The quantum of impact is likely to decrease as the design of the Project is finalised in which instance the quantum of proposed offsets will be adjusted accordingly.Quality score for the impact calculator was assigned as 6/10 based on the outcomes of Vegetation Quality Assessment of the patches of GBGW in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017). A VQA assessment assigns a Habitat Hectare (HHa) score for patches of native vegetation. The HHa method measures the condition of native vegetation against a benchmark for the same vegetation type or Ecological Vegetation Class (EVC) as a means of assessing the current condition of the vegetation relative to the condition it would have been prior to European settlement (DSE, 2004). The VQA assessment for the Project scored the patches of GBGW with an average of 0.62 habitat hectares. This average has informed the assignation of the score of 6/10 for the quality in the offset calculator.

Information sources for defining the quantum of impacts and quality include:

- *Inland Rail – Beveridge to Albury Enhancement Sites, Track Slews and Signal Gantries - Ecology: Existing Conditions and Impact Assessment* (AECOM 2021a), which describes existing ecological conditions based on the findings of previous surveys (2017 – 2019) and detailed ecological assessment conducted between October 2020 and March 2021 for the expanded project area for the enhancement sites, track slews, and signal gantries.
- *Inland Rail – Beveridge to Albury Overhead Powerlines – Ecology: Existing Conditions Report* (AECOM 2021b), which describes existing ecological conditions based on the findings of the previous surveys (2017 – 2019) and detailed ecological assessment conducted between October 2020 and March 2021 for the expanded project area for the overhead powerlines.

5.2 Offset calculator

The parameters used in the offset calculator is provided in Table 4.

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Table 4 EPBC Act Offset calculation justification

Factor	Definition	Value in calculator	Justification
Time horizon (years)			
Risk-related time horizon (max 20 years)	Time over which averted loss can be calculated. This is capped at 20 years or the life of an offset, whichever is shorter (see section 2 D for further information).	20 (years)	S69 agreement is in perpetuity therefore maximum time allocation has been used.
Time until ecological benefit	Estimated time for quality improvement of the proposed offset to be realised (in years).	10 (years)	Years of improvement management under Offset Management Plan although site will be maintained in this condition in perpetuity.
Start area and quality			
Start area (hectares)	Area of the proposed offset.	21.4ha*	15.57 hectares of patches supporting a Grey Box overstorey and 5.83 hectares of derived native grassland (adjacent to these patches) are the proposed 21.4 ha offset.
Start quality (scale of 0-10)	Quality of the offset site at the time of assessment.	4	While the area of derived native grassland supports a high cover of native grass species, the patches with an overstorey have attracted sheep, probably for shelter. This has encouraged an abundant cover of weed species in the understorey although native species are still present in low abundance. Scrub Nettle (a native herb which is prone to overabundance) was also prevalent. All patches with a grey box overstorey supported the requisite number of large trees over 60cm in diameter. Many of these supported hollows.

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Factor	Definition	Value in calculator	Justification
Future area and quality without offset			
Risk of loss (%) without offset	Chance that the habitat on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter) over the foreseeable future (either the life of the offset or 20 years, whichever is shorter). Degradation to the quality of a site through current land use and management practices relate to quality not to the risk of loss.	10%	The property is zoned 'Farming Zone' for agricultural land use. There are no current statutory protections over the land that would otherwise protect its ecological value. If the patches of GBGW on the property were not established as offset areas, there is a chance the value of the site would be lost due to the continuation of activities currently permitted including grazing by domestic stock, firewood collection and other farming activities that do not require a permit ('as of rights use'). This may also include the use of the site for cropping activities which might require the extensive removal of the overstorey. Existing weeds which are threatening the persistence of GBGW are mostly not listed under the Catchment and Land Protection Act and therefore currently have no legal obligation to eradicate or manage them. The regional landscape within which this property is located has been significantly cleared (and continues to be cleared) given its predominant agricultural land use. The remaining vegetation on the property is therefore at risk of further loss if it remains subject to agricultural land uses.
Future area without offset (adjusted hectares)		Calculated output (no user input required)	
Future quality without offset (scale of 1 to 10)	Estimate of habitat quality at the time at which the ecological benefit of the offset is expected to be realised (time until ecological benefit) based on a business as usual scenario considering current land use and management practices.	3	Evidence of degradation caused by sheep was noted during the site assessment. Weed invasion and continued access to the patches of GBGW by sheep (permitted under current planning controls) will continue to degrade the ecological community thereby further reducing the quality over time. Overgrazing is recognised as one of the most damaging actions that grassy ecosystems experience (DSEWPaC, 2012a). *Overgrazed areas quickly lose grazing-sensitive native species, which are replaced by less-sensitive native species and some exotic species, and finally by exotics alone. Trampling by stock compacts the soil and decreases water infiltration, which*

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Factor	Definition	Value in calculator	Justification
			can prevent seeds from germinating. A buildup of animal droppings helps exotic species outcompete native species in a similar way to the addition of synthetic fertilisers. The loss of protective plant cover can lead to serious soil erosion. The combination of these factors can prevent the regeneration of native trees, shrubs and ground cover species alike. (p48 DSEWPaC, 2012a). If left unmanaged, weeds will degrade and dominate a site and outcompete native plants for space, water and nutrients. Firewood collection and other farming activities such as cropping that do not require a permit ('as of rights use') will also continue to degrade the ecological community. Without offset, the habitat on the proposed offset site will continue to be degraded to the extent that it no longer meets the threshold for being a listed threatened ecological community based on the understorey condition.
Future area and quality with offset			
Risk of loss (%) with offset		1%	As an offset site, the property will be managed for conservation and the vegetation actively protected from overgrazing by sheep and restored which significantly reduces the risk of loss of GBGW. Vegetation within the site will continue to have a low risk of loss due to wildlife and influence of climate change.
Future area with offset (adjusted hectares)		Calculated output (no user input required)	
Future quality with offset (scale of 1 to 10)	Estimate of habitat quality at the time at which the ecological benefit of the offset is expected to be realised (time until ecological benefit) with proposed offset activities.	6	Within 10 years (time until ecological benefit) the condition of the GBGW patches could be substantially improved to restore the understorey, particularly as high threat weeds are absent. Prevention of sheep grazing will allow mid and ground layer vegetation to recover and encourage recruitment of the overstorey. Gradual improvement in condition of understorey through regeneration and pest plant and animal works (above existing legal requirements)

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Factor	Definition	Value in calculator	Justification
			The landowner (and manager) is very experienced at ecological restoration and has purchased the property primarily to devote a significant portion of the property to provide offsets for MNES in perpetuity and will manage the property accordingly.
Raw gain		Calculated output (no user input required)	
Confidence in result (%)	Level of certainty about the effectiveness of risk mitigation measures.	90%	The offset will be secured via a Section 69 agreement and therefore will be protected in perpetuity.
	Level of certainty about achieving proposed change in quality.	70%	The land manager of the property has extensive experience in ecological restoration and has the equipment to undertake robust management works. Such capabilities mean that there is a high level of confidence that the proposed change in quality can be achieved.
% of impact offset		116.02%	100% direct offset achieved.

** The impact to GBGW current estimated may not be realised when design of the Project is finalised. As such, the quantum of proposed offset will be reduced accordingly.*

6.0 Assessment of alignment with EPBC Act Environmental Offsets Policy

The offset proposal for the Project aligns with the intent of the EPBC Act Environmental Offsets Policy (DSEWPAC, 2012b). The suitability of the offsets is determined by applying the requirements outlined in Section 7 of the Policy and using the offsets assessment guide to calculate the adequacy of the proposed offsets.

Matters to be considered at the offset site include the:

- *extent to which the proposed offset actions correlate to, and adequately compensate for, the impacts on the attributes for the protected matter*
- *conservation gain to be achieved by the offset. This may be through positive management activities that improve the viability of the protected matter or averting the future loss, degradation or damage of the protected matter*
- *current land tenure of the offset and the proposed method of securing and managing the offset for the life of the impact*
- *time it will take to achieve the proposed conservation gain*
- *level of certainty that the proposed offset will be successful. In the case of uncertainty, such as using a previously untested conservation technique, a greater variety and/or quantity of offsets may be required to minimise risk*
- *suitability of the location of the offset site. In most cases this will be as close to the impact site as possible. However, if it can be shown that a greater conservation benefit for the impacted protected matter can be achieved by providing an offset further away, then this will be considered. (*pg 15, DSEWPaC, 2012b*).*

Offsets can be delivered by a range of mechanisms, including market-based mechanisms and contracting third party providers.

The proposed offsets will be delivered through a third-party provider and will achieve the requirements of the EPBC Act Environmental Offset Policy (Table 5).

Table 5 Offset requirements outlined in Section 7 of the offset policy

#	Offset requirement	Justification
7.1	Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter	The proposed offsets achieve an outcome that improves the viability of GBGW in Australia as it secures currently unprotected habitat and manages the vegetation to achieve an improvement in quality.
7.2	Suitable offsets must be built around direct offsets but may include other compensatory measures.	100% direct offset is achieved by this offset strategy (Appendix B).
7.2.1	Tenure for direct offsets	The proposed offset involves the securing of existing unprotected habitat that is zoned for rural (agricultural) land use and could therefore be destroyed or degraded further. Application of a Section 69 agreement will protect the area in an enduring way and implementation of a management plan will maintain and/or improve viability of the GBGW.
7.2.1	Impacting on existing EPBC Act offsets	Not applicable. The proposed offset is not an existing EPBC Act offset.

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#	Offset requirement	Justification
7.3	Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter	Offset calculator factors in the higher conservation value (endangered) of the protected matter.
	Suitable offset must be of a size and scale proportionate to the residual impacts on the protected matter	The proposed offset is of a larger scale than the residual impact of the Project. The Project will result in the loss of 6.33 hectares of GBGW and the proposed offset is 21.4 ha (15.57 hectares of woodland and 5.83 hectares of derived native grassland)(Table 1).
	Suitable offsets must effectively account for and manage the risks of the offset not succeeding.	The offset will be achieved through direct offsets acquitted through an on-title conservation agreement and implementation of an Offset Management Plan. This arrangement presents a low risk that the offset will not succeed and is more likely to result in a conservation gain, particularly given the experience that the landowner has in ecological restoration
7.6	Suitable offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs	The property is currently impacted by sheep grazing and has no relevant statutory protection. There are no other offsets acquitted on the site
7.6.1	Links with state and territory approval processes	State offsets are required for the removal of native vegetation. Although state offsets can *count toward an offset under the EPBC Act to the extent that it compensates for the residual impact to the protected matter identified under the EPBC Act*, at this stage there has been no consideration of the possibility of acquitting the state offsets on the same property.
7.7	Suitable offsets must be efficient, effective, timely, transparent, scientifically robust and reasonable.	The offset will be secured via a Section 69 agreement. An in-principle agreement will be reached between ARTC and the landowner prior to on-site works commencing for the project. An Offset Management Plan will be developed for the patches of GBGW at the offset site in consultation with an experienced ecological restoration contractor.
7.8	Suitable offsets must have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced	The Offset Management Plan will include the requirement to prepare annual reports of the success of the offset implementation. Those reports can be made available to DAWE if required.

7.0 References

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Appendix A

Description of patches

D R A F T

Appendix A Description of patches

An assessment of the quality of the vegetation within each patch was undertaken during the initial offset site assessment. Whilst it is recognised that the application of the Victoria's Vegetation Quality Assessment data is not immediately applicable to communities listed as MNES, it is considered to provide a quantitative analysis of the quality of the vegetation at a site. The assessment was undertaken by an assessor accredited by the Department of Environment, Land, Water and Planning, and the results of the VQA are provided in Table 6, below:

Table 6 VQA assessment of GBGW patches

Habitat Zone			Patches1-4
EVC			EVC 175- Grassy Woodland
Bioregion			Goldfields
Bioregional Conservation Status (BCS)			Vulnerable
EPBC Community			Y
Site Condition	Large Old Trees	10	10
	Tree Canopy Cover	5	5
	Lack of Weeds	15	6
	Understorey	25	5
	Recruitment	10	5
	Organic Litter	5	4
	Logs	5	5
	Total Site Score	75	40
Landscape Context	Patch Size	10	1
	Distance to Core Area	5	2
	Neighbourhood	10	1
	Total Landscape Score	25	3
Habitat Score		100	43
Habitat Points = Score/100		1	0.43

A description of the patches is provided below.

D R A F T

Patch 1

Patch 1 is comprised of grassy woodland and derived native grassland, totalling 4.72 hectares of land. While the treeless portion is dominated by native grasses, the understorey of the woodland area has a higher proportion of exotic grass and broad-leaf weed species, none of which are considered highly invasive, and all of which are easily managed. Over-abundant Scrub Nettle (a native species) makes up a significant proportion of the broad-leaf plants in the understory. On balance with the adjacent derived native grassland, the cover of herbaceous weeds is <30%. Native grass species are common throughout the woodland, albeit heavily grazed. Fallen timber in the patch of trees provides an additional structural element to the habitat.

Plate 5 Patch 1 - Grey Box Grassy Woodland

Plate 6 Patch 1 - derived native grassland area of Grey Box Grassy Woodland.

Patch 2

Patch 2 is similar to patch 1 in that it is comprised of a patch of trees with an understorey disturbed by sheep and dominated by exotic species and an adjacent patch of derived native grassland. Cumulatively, these patches comprise 6.73 hectares. Scrub Nettle is dominant in the understorey beneath the woodland, with the greatest cover of native species occurring in the proximal derived grassland. This patch also supports the requisite number of large (>60cm diameter) trees and provides additional habitat value in the form of coarse woody debris.

Plate 7 Patch 2 - Grey Box Grassy Woodland

Plate 8 Patch 2 – derived native grassland

Patch 3

Patch 3 is a more structurally complex patch with a more intact understorey. Extensive fallen timber appears to have reduced the intensity of sheep use of the area which is reflected in the understorey being dominated by perennial native grasses rather than exotic species. The patch is surrounded by derived native grassland and is perhaps the highest value patch assessed. Occasional Saloop *Einadia hastata* and Common Raspwort *Gonocarpus tetragynus* were observed, In the derived native grassland, the diversity of indigenous species was high with Spear grass *Austrostipa* spp., Wallaby-grass *Rytidospoerma* and Wheat-grass *Anthosachne scabra* observed (amongst other native species. This diversity has persisted despite the grazing pressure from sheep.

Plate 9 Patch 3 - Grey Box Grassy Woodland

Plate 10 Patch 3 – derived native grassland

Patch 4

Patch 4 is characterised by a more open woodland structure than the other patches. Both Grey Box and Red Stringybark *Eucalyptus macrorhyncha* were the dominant overstorey species. Large trees were common. Both these species appeared to be actively recruiting which suggests a less intense grazing history, allowing seed to germinate and grow from both species. Exposed rock in the understorey provided a unique addition to the habitat complexity of the patch and this was not seen in other examples of GBGW on the property. The lesser grazing pressure from sheep has allowed for the persistence of a native understorey, although the identification of species was challenging as grazing (presumably Eastern Grey Kangaroo *Macropus giganteus*) was still impacting understorey structure

Plate 11 Patch 4 - Grey Box Grassy Woodland

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Appendix B

EPBC Act offset assessment guide

D R A F T

Appendix B EPBC Act offset assessment guide

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	GBGW
EPBC Act status	Endangered
Annual probability of extinction Based on IUCN category definitions	**1.2%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	Yes	Grey Box Grassy Woodland patches	**Area**	6.334	Hectares	Exisitng conditions and impact assessments (AECOM, 2021a, b)
			Quality	**6**	Scale 0-10	
			Total quantum of impact	3.80	Adjusted hectares	
Threatened species habitat						
Area of habitat	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	Yes	3.80	Adjusted hectares	Grey Box Grassy Woodland patches comprised of grassy woodland and derived native grassland on a property at [redacted]	**Risk-related time horizon (max. 20 years)**	20	**Start area (hectares)**	21.4	**Risk of loss (%) without offset**	10%	**Risk of loss (%) with offset**	1%	1.93	90%	1.73	1.37	116.02%	Yes		
									Future area without offset (adjusted hectares)	19.3	**Future area with offset (adjusted hectares)**	21.2				4.41				
					Time until ecological benefit	10	**Start quality (scale of 0-10)**	**4**	**Future quality without offset (scale of 0-10)**	**3**	**Future quality with offset (scale of 0-10)**	**6**	3.00	70%	2.10	1.86				
Threatened species habitat																				
Area of habitat	No				**Time over which loss is averted (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	0				$0.00		$0.00
Area of community	3.8004	4.41	116.02%	**Yes**	$0.00	N/A	$0.00
					$0.00	**$0.00**	**$0.00**