Department of Infrastructure, Transport, Regional Development and Communications

Western Sydney International (Nancy-Bird Walton) Airport 2019 - 2020 BODP Implementation Report

December 2021

Executive summary

This *Western Sydney International (Nancy-Bird Walton) Airport 2020 BODP Implementation Report* has been prepared to demonstrate to an auditor that the Department of Infrastructure, Transport, Regional Development and Communications (Infrastructure) is delivering the offset proposal presented in the Biodiversity Offset Delivery Plan (BODP) in accordance with the Airport Plan conditions, including:

- A description of activities undertaken to identify, secure and quantify direct offsets.
- A description of the other compensatory measures that have been delivered and steps taken to identify additional measures.
- Calculation of the quantum of direct biodiversity offsets obtained for the airport based on information presented in the BODP and detailed biodiversity assessments for offset sites.
- Reporting on the implementation of the BODP to meet condition 39(3) of the Airport Plan.

The construction and operation of Western Sydney International (Nancy-Bird Walton) Airport (WSI) was assessed in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). Approval for the construction and operation of WSI is controlled by the *Airports Act 1996* (Cth) (Airports Act) which provides for the preparation of an Airport Plan identifying a staged development of the airport. The Airport Plan contains a number of biodiversity conditions, which require mitigation and management measures to be implemented to reduce the potential impacts on biodiversity values and to offset unavoidable residual impacts.

The Airport Plan conditions required Infrastructure to prepare for approval a BODP to compensate for significant residual impacts associated with the construction and development of the WSI (DIRD 2018). The BODP was prepared in accordance with the requirements set out in condition 30 of the Airport Plan, including that the BODP takes into account the *EPBC Act 1999 Environmental Offsets Policy October 2012* (EPBC Act Offsets Policy) (DSEWPaC 2012).

Under the BODP, biodiversity offsets are required to offset impacts on threatened species and communities listed under the EPBC Act and threatened plants, animals and their habitat listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act) (repealed in August 2016 and replaced by NSW *Biodiversity Conservation Act 2016*(BC Act)).

The BODP provides that Infrastructure can meet its biodiversity offsets obligations via a number of mechanisms. A majority of the required offsets will be delivered through conservation of Department of Defence (Defence) land at Orchard Hills. The relative contributions of each offset proposal can be determined by assessment guides under either the EPBC Act or the BC Act. These contributions are generally affected by the quality of the conservation gain anticipated, the tenure security of the project or land and the likelihood of the land otherwise being developed.

Biodiversity offsets are required for significant residual impacts of WSI on:

- The threatened species and communities listed under the EPBC Act (affected threatened biota):
  - Cumberland Shale Plains Woodland and Shale-Gravel Transition Forest (Cumberland Plain Woodland)
  - Grey-headed Flying-fox (*Pteropus poliocephalus)*
  - Swift Parrot (*Lathamus discolor*) foraging habitat

  - Spiked Rice-flower (*Pimelea spicata*)
- Other plants, animals and their habitat on Commonwealth Land, including threatened biota listed under the New South Wales (NSW) *Biodiversity Conservation Act 2016* (BC Act).

This 2020 BODP Implementation Report presents BODP implementation activities undertaken by Infrastructure during the second year following the approval of the BODP for the period from 25 August 2019 to 25 August 2020. This report has been independently audited by a suitably qualified biodiversity expert in accordance with Condition 30 (11) of the Airport Plan.

The BODP implementation activities that have been implemented up to the end of the 2020 period comprise:

- Synthesis of existing information and consultation with various offset vendors to identify, obtain and secure direct offsets.
- Establishment of the Offset Area at Defence Establishment Orchard Hills, including execution of a Memorandum of Understanding to secure at least 900 hectares of land as an offset, completion of an Initial Ecological Survey report and consultation with Defence on the preparation of the Offset Plan for management of the site.
- Purchase of biodiversity credits to obtain direct offsets for Cumberland Plain Woodland, the Grey-headed Flying-fox and Swift Parrot foraging habitat and for various plants, animals and their habitat, noting that these offsets will be secured once the credits are retired.
- Finalisation of the threatened flora propagation program required by Condition 33 of the Airport Plan, delivery of a *Pimelea spicata* genetic research program and initial stages in the establishment of an *ex situ Pimelea spicata* population to support conservation of the species.
- Continued implementation of the Greening Australia native seed collection and production program required by Condition 32 of the Airport Plan.
- Consideration of potential research, restoration and rewilding programs.
- Other activities include discussions with key stakeholders from governments, private industry, and communities.

Consultation with Environment has confirmed that:

- The quantum of offset for both plants, animals and their habitat' and 'affected threatened biota' can be expressed in terms of equivalent biodiversity credits.
- Offsets for Cumberland Plain Woodland can be expressed in terms of equivalent ecosystem credits for vegetation types that may comprise an occurrence of the community and may be counted towards the quantum of offset for the community regardless of the current condition of the vegetation that has generated the credits and whether vegetation at the offset site meets the patch size and condition thresholds stated in the listing advice for the community (TSSC 2008).
- Grey-headed Flying-fox habitat and Swift Parrot foraging habitat can be expressed in terms of equivalent ecosystem credits for any woodland or forest vegetation type that contains food trees for these species, and that ecosystem credits may be counted towards the quantum of offset regardless of the current condition of the vegetation that has generated the credits. The total quantum of offset obtained up to the end of the 2020 BODP implementation period is summarised in the table below.

The EPBC Act offset areas obtained up to the end of the 2020 BODP implementation period include 945.32 hectares of land recognised as a conservation priority in BIO Map (OEH 2015). Implementation of the BODP has ensured the:

- Conservation and improvement of 647.32 hectares of 'core habitat' comprising EPBC Act Cumberland Plain Woodland and other better condition vegetation with a near-natural structure within regional biodiversity corridors.
- Restoration of 505.82 hectares of poorer quality Cumberland Plain Woodland and other derived grassland or scrub and associated increase in the extent and connectivity of habitat within and adjoining these priority lands.

Collectively the direct offsets obtained in the 2020 BODP implementation period will help conserve habitat with strategic value through the conservation of over 1193 hectares of habitat in 2020 BODP implementation period offset areas. Once the full quantum of offsets is obtained, credits will be retired by Infrastructure, which will secure the offset in perpetuity.

Based on the review of available documentation and observations made during the audit, Infrastructure are meeting compliance criteria for the Implementation of the BODP in accordance with the Airport Plan conditions.

Total quantum of offset secured in the 2019 and 2020 BODP implementation periods

Credit type	Credits required [1]	Credits provided by Orchard Hills Offset Area [2]	% provided by Orchard Hills offset area [5]	Biodiversity credits obtained in 2020	Total obtained at end of 2020 BODP implementation period (credit equivalent) [5]	Total BODP implementation % of total requirement [5]
Ecosystem credits						
Total Cumberland Plain Woodland (HN528 high, medium, poor and low and HN529 high and poor)[3]	12,746	9,351	73%	3,805	13,156	103%
Total River Flat Eucalypt Forest (HN526 high, poor and low)	2,661	1,979	74%	254	2,233	84%
Total Shale-gravel Transition Forest (HN512 high and poor and HN513 high)	359	709	197%	0	709	197%
Total equivalent ecosystem credits for Grey-headed Flying-fox habitat and Swift Parrot foraging habitat[3, 4]	15,766	12,039	76%	4,059	16,098	102%
Freshwater wetland (HN630)	926	41	4%	4	45	5%
Species credits						
Pimelea spicata	n/a	0	0%	0	0	0%
Cumberland Plain Land Snail	2,441	2,799	115%	0	2,799	115%
Dillwynia tenuifolia	540	409	76%	29	438	81%
Marsdenia viridiflora subsp. *viridiflora* endangered population	5,800	14,512	250%	0	14,512	250%
Pultenaea parviflora	60	7,486	12477%	0	7,486	12477%
Southern Myotis	1,617	759	47%	0 [6]	759	47%

Notes: 1) based on Framework for Biodiversity Assessment credit calculations in the approved BODP (DIRD 2018). All credits expressed as FBA/BBAM credits.

2) based on the approved Orchard Hills Initial Ecological Survey Report as updated to reflect addition of land to the Offset Area and discounting of credit generation rates for existing management obligations. All credits expressed as FBA/BBAM credits.

3) assuming credits may be traded without regard to the current condition of the vegetation zone(s) associated with the credits and whether or not the vegetation zone(s) comprise: Cumberland Plain Woodland patch size and condition thresholds as stated in the listing advice for the community (TSSC 2008); or Grey-headed Flying-fox habitat and Swift Parrot foraging habitat in their current condition.

4) this includes the offset requirement for both Grey-headed Flying-fox habitat and Swift Parrot foraging habitat, that have been obtained through the offsetting of Cumberland Plain Woodland.

5) pink indicates an offset deficit, green indicates credit obligations have been met.

6) Infrastructure obtained 458 Southern Myotis species credits in September 2021

Glossary of terms and acronyms

Term	Definition
Affected threatened biota	Threatened species or communities listed under the EPBC Act, which are likely to suffer a significant impact as a result of a proposal and which require biodiversity offsets having regard to the EPBC Act Offset Policy. In this report it is as defined in the BODP and comprises: • Cumberland Plain Woodland • Grey-headed Flying-fox (*Pteropus poliocephalus)* • Swift Parrot (*Lathamus discolor)* foraging habitat • Spiked Rice-flower (*Pimelea spicata*)
BAM	Biodiversity Assessment Methodology
BAR	BioBanking Assessment Report
BBAM	The NSW BioBanking Assessment Methodology (OEH 2014).
BC Act	*Biodiversity Conservation Act 2017 (NSW)*
BCD	Biodiversity Conservation Division of NSW Department of Planning, Industry and Environment, formerly NSW Office of Environment and Heritage (OEH). Note that data maintained by the current BCD appears on the internet as published by OEH and is referenced as such in this report.
BCT	NSW Biodiversity Conservation Trust (BCT, formerly Nature Conservation Trust)
Biobank site	Land that is designated by a biobanking agreement under Part 7A of the former TSC Act to be a biobank site (see Biodiversity Stewardship Site – BSS).
Biobanking agreement	An agreement entered into between the landowner and the NSW Environment Minister under Part 7A of the former TSC Act for establishing a biobank site (see Biodiversity Stewardship Agreement – BSA).
Biodiversity credit, NSW biodiversity credit	A unit of biodiversity value to measure specific development impacts or conservation gains in accordance with the FBA, the BBAM or the BAM. Includes ecosystem credits or species credits.
Biodiversity credit report	Specifies the number and type of biodiversity credits required to offset the impacts of a Major Project in accordance with the FBA or that would be generated through conservation and management of an offset site under a BioBanking agreement or a BSA.
Biodiversity offset delivery plan (BODP)	The plan prepared to compensate for residual significant impacts associated with Western Sydney International development. The BODP was prepared in accordance with condition 30 of the Airport Plan and approved by the Environment Minister on 25 August 2018.
Biodiversity offset package	See GHD (2016a). Appendix K2 to the airport EIS, which outlines the approach to the delivery of biodiversity offsets for the airport, including an estimate of the quantum of offsets required, options to deliver these offsets, an estimate of the costs involved and the additional steps required to finalise their delivery.
Biodiversity offsets	Specific measures that are put in place to compensate for impacts on biodiversity values.
Biodiversity Stewardship Agreement (BSA)	An agreement entered into between the landowner and the Minister under Part 5 of the *Biodiversity Conservation Act 2016* (BC Act) for establishing a Biodiversity Stewardship Site.
Biodiversity Stewardship Site (BSS)	Land that is designated by a Biodiversity Stewardship Agreement to be a Biodiversity Stewardship Site. Equivalent to the former 'biobank site'.
Biodiversity values	The composition, structure and function of ecosystems, including native species, populations and ecological communities, and their habitats.
BOS	NSW Biodiversity Offset Scheme
CEEC	Critically endangered ecological community.
CHL	Australia's Commonwealth Heritage List, which is a list of Indigenous, historic and natural heritage places owned or controlled by the Australian Government.
Confidence in result	Means the assessor's estimated percentage confidence in the data entered in the offsets assessment guide that supports the Environmental Offsets Policy.
Defence	The Australian Government Department of Defence
DoEE	The former Australian Government Department of the Environment and Energy (now Department of Agriculture, Water and the Environment, abbreviated to 'Environment').
DPI	The NSW Department of Primary Industries.
DPIE	The NSW Department of Planning, Industry and Environment

Term	Definition
DSEWPaC	The former Department of Sustainability, Environment, Water, Populations and Communities, now the Department of Agriculture, Water and the Environment, abbreviated to 'Environment'.
Ecosystem credit	The class of biodiversity credits created or required for the impact on EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur within a vegetation type according to the BBAM, FBA and BAM.
EEC	Endangered ecological community
EIS	Environmental Impact Statement
Environment	The Australian Government Department of Agriculture, Water and the Environment, formerly the Department of the Environment and Energy.
EPBC Act	The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (Cth)
EPBC Act-listed biota	Threatened species and communities and migratory species listed under the EPBC Act.
FBA	The Framework for Biodiversity Assessment (OEH 2014a). The methodology to assess impacts on biodiversity that is used to assess all biodiversity values on the development site for a Major Project under the NSW *Environmental Planning and Assessment Act 197*9 (EPA Act) and in accordance with The NSW Biodiversity Offsets Policy for Major Projects (OEH 2014a).
Food tree	A tree species that is recognised as being of value as a foraging resource for a given fauna species.
GIS	Geographic information systems
Habitat tree	A tree that is recognised as being of value as a shelter, roosting and/or nesting resource for fauna species. Includes hollow-bearing trees, stags (standing dead trees) and trees with nests or other signs of fauna occupancy.
Infrastructure	Department of Infrastructure, Transport, Regional Development and Communications, responsible for preparing this report and for preparing and implementing the BODP.
Main Construction Works	Substantial physical works on a particular part of the WSI site (including large-scale vegetation clearance, bulk earthworks and the carrying out of other physical works, and the erection of buildings and structures) described in Part 3 of the Airport Plan, other than TransGrid Relocation Works or Preparatory Activities.
Migratory species	Species that are listed as migratory under the EPBC Act.
NPW Act	*The National Parks and Wildlife Act 1974* (NSW)
NPWS	The NSW National Parks and Wildlife Service
NSW-listed biota	Threatened species, populations and communities listed under the NSW BC Act or FM Act.
OEH	Former NSW Office of Environment and Heritage now Biodiversity Conservation Division of NSW Department of Planning, Industry and Environment. Note that data maintained by the current BCD appears on the internet as published by OEH and is referenced as such in this report.
Offset Area; Orchard Hills Offset Area	The area of land of no less than 900 hectares at Orchard Hills that is the subject of the MOU between Defence and Infrastructure that functions as a biodiversity offset for WSI and that is the subject of this report.
Offset Improvement Period	Means the period commencing when the Offset Plan is approved and ending when the improvements provided for in the plan have been completed and all related monitoring, reporting and auditing requirements have been finalised.
Orchard Hills, DEOH	Defence Establishment Orchard Hills
PCT	Plant community type
Quality Score, site quality	Means the site quality score of habitat within an impact area or offset area measured under the offsets assessment guide that supports the Environmental Offsets Policy.
Retired (credits)	Means biodiversity credits that have been used to offset the impacts of a particular development or to facilitate private land conservation and that are not available to offset the impacts of a development.
Species credit	The class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates according to the BBAM, FBA and BAM.
Species-credit type threatened species	Threatened species that are linked to species credits according to the BBAM (rather than ecosystem credits) because they cannot be reliably predicted to use an area of land based on habitat surrogates according to the BBAM.
Stage 1 Construction Impact Zone (CIZ)	The disturbance footprint for construction of the Stage 1 development of WSI, including the anticipated extent of vegetation clearing and grubbing, earthworks, drainage works and the permanent infrastructure that would be constructed for Stage 1 of the airport.
Stage 1 development	The initial stage in the development of WSI, including a single runway and facilities for 10 million annual passengers.

Term	Definition
TEC	Threatened ecological community listed under the EPBC Act and/or the BC Act.
The EPBC Act Offsets Policy	The *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy October 2012* (DSEWPaC 2012)
The locality	Land within a 10km radius of the Offset Area.
The MOU	The Memorandum of Understanding (MOU) that was entered into between Defence and Infrastructure that *inter alia* provides for the definition of an Offset Area of no less than 900 hectares at Orchard Hills and its conservation and management to function as a biodiversity offset for WSI.
The offsets assessment guide	The spreadsheet offset calculator that accompanies the EPBC Act Offsets Policy (DSEWPaC 2012).
The region	A bioregion defined in a national system of bio-regionalisation. For this study this is the Sydney Basin Bioregion as defined in the Interim Biogeographic Regionalisation for Australia (Thackway and Cresswell 1995).
Threatened biota	Threatened species, populations or communities listed under the EPBC Act, BC Act or FM Act.
TSC Act	The *Threatened Species Conservation Act 1995* (NSW), which was repealed and replaced by the BC Act in August 2017.
Western Sydney International (Nancy-Bird Walton) Airport (WSI).	The airport project that is the subject of the BODP. The airport is referred to as Sydney West Airport under the Airports Act.
WSI site	The site for Sydney West Airport as defined in the Airports Act, now known as Western Sydney International (Nancy-Bird Walton) Airport (WSI).

Table of contents

Table index

Figure index

Appendices

1. Introduction

1.1 Background

The EPBC Act Offsets Policy requires biodiversity offset sites to be secured under a legally binding conservation covenant (or other appropriate mechanisms) and provides for the calculation of offsets for impacts on the affected threatened biota using the 'offsets assessment guide' spreadsheet or other methods if deemed appropriate by the Department of Agriculture, Water and Environment (Environment). Offsets for significant residual impacts on plants, animals and their habitat have been calculated with reference to the NSW Framework for Biodiversity Assessment (FBA) methodology (OEH 2014a). The FBA is based on the NSW Biodiversity Banking and Offsets Scheme (BioBanking) credit calculator and assessment methodology (OEH 2014b), which was the methodology used to calculate offsets for major projects in NSW at the time that the airport EIS was prepared.

Infrastructure will meet its biodiversity offsets obligations via a number of mechanisms. A majority of offsets is intended to be delivered through conservation of Department of Defence (Defence) land at Orchard Hills. Additional offsets will likely include purchasing of credits through the NSW Biodiversity Offsets Scheme, acquisition of land, restoration and rewilding programs, and other compensatory measures. The relative contributions of each offset proposal can be determined through either the EPBC Act offset assessment guides or credit calculations using NSW methodologies. These contributions are generally affected by the quality of the conservation gain anticipated, the tenure security of the project or land and the likelihood of the land otherwise being developed.

This 2020 Biodiversity Offset Delivery Plan (BODP) implementation report has been prepared to demonstrate to an auditor that Infrastructure has delivered the offset proposal presented in the BODP in accordance with the Airport Plan conditions, including:

- A description of activities undertaken to identify, secure and quantify direct offsets.
- A description of the other compensatory measures that have been delivered and steps taken to identify additional measures.
- Calculation of the quantum of direct biodiversity offsets secured for the airport based on information presented in the BODP and detailed biodiversity assessments for offset sites.

The new Western Sydney International (Nancy-Bird Walton) Airport (WSI) is located in western Sydney (refer to Figure 1). The construction and operation of WSI was assessed in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). Approval for the construction and operation of the airport is controlled by the *Airports Act 1996* (Cth) (Airports Act). The Airports Act provides for the preparation of an Airport Plan, which serves as the authorisation for the development of the airport. An Airport Plan was developed identifying a staged development of the airport. The Airport Plan contains a number of biodiversity conditions, which require mitigation and management measures to be implemented to reduce the potential impacts on biodiversity and to offset unavoidable residual impacts.

The Airport Plan conditions required Infrastructure to prepare for approval a BODP to compensate for significant residual impacts associated with the construction and development of the WSI (DIRD 2018). The BODP was prepared in accordance with the requirements set out in condition 30 of the Airport Plan, including that the BODP takes into account the *EPBC Act 1999 Environmental Offsets Policy October 2012* (EPBC Act Offsets Policy) (DSEWPaC 2012).

Biodiversity offsets are required for significant residual impacts of WSI on:

- Threatened species and communities listed under the EPBC Act (affected threatened biota).
- Plants, animals and their habitat on Commonwealth Land, including threatened biota listed under the New South Wales (NSW) *Biodiversity Conservation Act 2016* (BC Act).

The BODP and the EPBC Act Offsets Policy recognises options available for delivery of direct offsets, including market-based tools such as BioBanking – now the NSW Biodiversity Offset Strategy (BOS) and Biodiversity Assessment Methodology (BAM) (OEH 2017, OEH 2020). BioBanking was established under the now-repealed NSW *Threatened Species Conservation Act 1995* (TSC Act), and the BOS and BAM were established under the NSW *Biodiversity Conservation Act 2016* (BC Act) and *Biodiversity Conservation Regulation 2017* (BC Regulation). The EPBC Act Offsets Policy requires biodiversity offset sites to be secured under a legally binding conservation covenant (or other appropriate mechanisms) and actively managed.

The BODP was approved by the former Department of the Environment and Energy (Environment) on 24 August 2018 prior to substantial physical works being undertaken at the airport site. This commenced the BODP implementation phase with Infrastructure identifying and securing biodiversity offsets in accordance with the BODP and the Airport Plan conditions. The BODP accounts for Infrastructure's delivery of offsets to compensate for the impacts on biodiversity resulting from the construction of Stage 1 of the airport.

Implementation of the BODP, includes the following main steps:

- Additional field surveys, assessment, consultation, confirmation of legal arrangements and payment of compensation as required to secure the known offsets presented in the BODP.
- Synthesis of information and consultation as required to identify additional offsets, followed by the steps outlined above to secure those offsets.
- Preparation and audit of BODP Implementation reports to ensure independent verification of the effective implementation of the BODP.

This *Western Sydney International (Nancy-Bird Walton) Airport 2020 BODP Implementation Report* presents BODP implementation activities undertaken by Infrastructure during the second year following the approval of the BODP (25 August 2019 to 24 August 2020). This report has been independently audited by a suitably qualified biodiversity expert in accordance with Condition 30 (11) of the Airport Plan.

Figure 1 Western Sydney International (Nancy-Bird Walton) Airport site

1.2 Overview of the offset requirement

Biodiversity offsets are required for significant residual impacts of the WSI on the following affected threatened biota listed under the EPBC Act:

- Cumberland Shale Plains Woodland and Shale-Gravel Transition Forest (Cumberland Plain Woodland), which is listed as a critically endangered ecological community (CEEC) under the EPBC Act and occurs at the WSI site. Construction of WSI would require the permanent removal of 141 hectares of vegetation within the local occurrence of Cumberland Plain Woodland.
- The Grey-headed Flying-fox (*Pteropus poliocephalus*), which is listed as a vulnerable species under the EPBC Act and has been observed at the airport site. Construction of WSI would remove 187.8 hectares of potential foraging habitat for the Grey-headed Flying-fox, including foraging resources for local roost camps when resources are scarce and at critical lifecycle stages.
- Swift Parrot foraging habitat, as the Swift Parrot (*Lathamus discolor*) may occur at the WSI site on occasion during its winter migration, although it was not detected during targeted surveys. This species is listed as a critically endangered species under the EPBC Act. Construction of WSI would remove 187.8 hectares of potential winter foraging habitat for the Swift Parrot.
- The Spiked Rice-flower (*Pimelea spicata*), which is listed as an endangered species under the EPBC Act. A total of 4118 clumps of *Pimelea spicata* were recorded at the WSI site in March–April 2017, including many flowering plants. Construction of WSI is likely to have a significant impact on *Pimelea spicata* through the complete removal of this population and 2.94 hectares of occupied habitat.

Biodiversity offsets are also required for significant impacts on plants, animals and their habitats on Commonwealth Land.

Impacts and offset requirements for affected threatened biota were calculated in the BODP using the DSEWPaC '*Offsets assessment guide*' spreadsheet (2012c). The guide calculates the percentage of the total requirement for the individual protected matter that would be delivered by an offset proposal. Further to this, offsets for significant residual impacts on plants, animals and their habitat have been calculated with reference to the NSW Framework for Biodiversity Assessment (FBA) methodology (OEH 2014a). The FBA is based on the NSW Biodiversity Banking and Offsets Scheme (BioBanking) credit calculator and assessment methodology (OEH 2014b), which was the methodology used to calculate offsets for major projects in NSW at the time that the airport EIS was prepared.

The ecosystem credits that would be required to offset the impacts of the airport on plants, animals and their habitat are shown in Table 1, along with potential offset options (that is the Plant Community Types (PCTs) that can be used to offset these impacts according to the FBA/BioBanking credit trading rules).

Infrastructure will meet its biodiversity offsets obligations via a number of mechanisms, referencing current policy and legislation. A majority of offsets have been secured through conservation of Department of Defence (Defence) land at Orchard Hills. Additional offsets have been obtained through purchase of credits through the NSW Biodiversity Offsets Scheme and other compensatory measures. Once the full quantum of offsets is obtained, credits will be retired by Infrastructure, which will secure the offset in perpetuity. The relative contributions of each offset proposal can be determined through either the EPBC Act offset assessment guides or credit calculations using NSW methodologies. As such Table 1 includes a summary of the ecosystem credits that are equivalent to the protected matters 'Cumberland Plain Woodland' and 'Grey-headed Flying-fox habitat and Swift parrot foraging habitat'. Offset contributions

(whether calculated using the EPBC Act offset assessment guides or NSW methodologies) are generally affected by the quality of the conservation gain anticipated, the tenure security of the project or land and the likelihood of the land otherwise being developed.

Table 1 Ecosystem credits required to offset impacts of the airport

Plant community type name	PCT ID	EPBC Act status	BC Act status	Management zone area (ha)	Ecosystem credit requirement	Offset options – credit types
Good condition Grey Box – Forest Red Gum grassy woodland on flats (HN528)	849	CEEC (part)[1]	CEEC	104.8	6,545	HN528
Poor condition Grey Box – Forest Red Gum grassy woodland on flats (HN528)	849	-	CEEC	113.2	3,829	HN528
Medium condition Grey Box – Forest Red Gum grassy woodland on flats (HN528)	849	-	CEEC	6.1	210	HN528
Good condition Grey Box – Forest Red Gum grassy woodland on shale (HN529)	850	CEEC (part) [1]	CEEC	35.5	1,651	HN529, HN528
Poor condition Grey Box – Forest Red Gum grassy woodland on shale (HN529)	850	-	CEEC	13.2	511	HN529, HN528
Total ecosystem credits associated with Cumberland Plain Woodland [2]					**12,746**	
Good condition Forest Red Gum – Rough-barked Apple grassy woodland (HN526)	835	-	EEC	35.9	2,146	HN526
Poor condition Forest Red Gum – Rough-barked Apple grassy woodland (HN526)	835	-	EEC	11.7	515	HN526
Good condition Broad-leaved Ironbark – Grey Box – *Melaleuca decora* grassy open forest (HN512)	724	CEEC (part) [1]	EEC	5.5	338	HN512, HN513, HN604, HN556
Poor condition Broad-leaved Ironbark – Grey Box – *Melaleuca decora* grassy open forest (HN512)	724	-	EEC	0.4	21	HN512, HN513, HN604, HN556
Total ecosystem credits associated with Grey-headed Flying-fox habitat and Swift Parrot foraging habitat [2]					**15,766**	
Good condition artificial freshwater wetland on floodplain (HN630)	1071	-		32.7	926	HN630, HN520

Notes: CEEC – critically endangered ecological community. EEC – endangered ecological community.

1) Dependent upon patch size and condition thresholds as stated in the listing advice for the community (TSSC 2008). 2) assuming credits may be traded without regard to the current condition of the vegetation zone(s) associated with the credits and whether or not the vegetation zone(s) comprise: Cumberland Plain Woodland patch size and condition thresholds as stated in the listing advice for the community (TSSC 2008); or Grey-headed Flying-fox habitat and Swift Parrot foraging habitat in their current condition.

The species credits that would be required to offset the impacts of the Stage 1 development on plants, animals and their habitat are shown in Table 2. Species credits will be traded on a 'like for like' basis. Consultation with Environment has confirmed that offsets for *Pimelea spicata* could be calculated using the EPBC Act offset assessment guide or expressed in terms of NSW biodiversity credits. See Section 1.6 for further detail regarding offset calculations.

Table 2 Species credits required to offset impacts of the airport

Common name	Scientific name	EPBC Act status	BC Act status	Quantum of impact	Threatened species multiplier	Species credits required
Cumberland Plain Land Snail	*Meridolum corneovirens*	-	E	183.2 ha of habitat	1.3	2,441
Dillwynia tenuifolia	*Dillwynia tenuifolia*	-	V	30 individuals	1.8	540
Marsdenia viridiflora subsp. *viridiflora* in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	*Marsdenia viridiflora* subsp. *viridiflora* endangered population	-	EP	145 stems	4.0	5,800
Pultenaea parviflora	*Pultenaea parviflora*	V	E	4 individuals	1.5	60
Southern Myotis	*Myotis macropus*	-	V	71.7 ha of habitat	2.2	1,617
Spiked Rice-flower	*Pimelea spicata*	E	E	4118 clumps, 2.94 ha of habitat	2.6	107,068

Notes: E – endangered species. V – vulnerable species. EP – endangered population.

1.3 Overview of the offset proposal

The approved BODP sets out the proposed approach for Infrastructure to identify and secure biodiversity offsets in accordance with the Airport Plan conditions. The BODP development and implementation process is shown in Figure 2.

At this stage of the implementation of the BODP, the majority of biodiversity offsets have been obtained through conservation of suitable offset sites.

A large component of the direct offsets to be implemented under the BODP are associated with an offset site at the Defence Establishment Orchard Hills (DEOH). The Orchard Hills Offset Area is owned by the Commonwealth and most of the site is entered on the Commonwealth Heritage List (CHL) as 'Orchard Hills Cumberland Plain Woodland, The Northern Rd' (refer to Figure 3a and Figure 3b). It is subject to the environmental protection framework set out in the EPBC Act under the control of the Environment Minister or approved delegate. A Memorandum of Understanding (MOU) was entered into between the Department of Defence (Defence) and Infrastructure in September 2018 with provisions that are additional to any Commonwealth Heritage Listing requirements.

The MOU provides for:

- a defined Orchard Hills Offset Area of no less than 900 hectares.
- an Offset Plan to be developed, funded and implemented to provide measurable ecological improvements to the quality of habitat for the affected threatened biota and for plants, animals and their habitat.

- various monitoring, record keeping, reporting and auditing arrangements to be put in place, consistent with the BODP and the Airport Plan.
- the Orchard Hills Offset Area to be maintained following completion of the improvements, so as to retain long-term benefits of the quality improvements following implementation of the Offset Plan.

Based on the recommendations made by the auditor of this 2020 BODP Implementation Report, a 20% discount rate has been applied to biodiversity credits generated on land within the CHL area (refer to Figure 3a and Figure 3b). This is in line with the BAM 2020 (DPIE 2020b) standards for publicly owned land.

A proportion of the direct offsets for the airport would be secured by purchasing and retiring biodiversity credits from Biodiversity Stewardship Agreement (BSA) sites, secured under the NSW BOS (formerly BioBanking) and BC Act. A map of the direct offset sites obtained in the 2019/2020 financial year is shown on Figure 3 series.

Once the full offset requirement is obtained, credits will be retired by Infrastructure, which will secure the offset in perpetuity.

In addition to these direct offsets, a Threatened Flora Propagation Program (TFPP) and a native seed production program are being implemented as other compensatory measures in accordance with the Airport Plan conditions and the EPBC Act Offsets Policy.

As part of the development of the BODP a variety of options for biodiversity 'research, restoration and rewilding' programs have been identified.

The offset proposal presented in the BODP includes the direct offsets, other compensatory measures and longer-term options outlined above and summarised in Table 3. The offset proposal was developed based on Infrastructure's *assessment criteria for biodiversity offsets* developed with reference to the EPBC Act Offsets Policy and Airport Plan conditions and refined in consultation with a Biodiversity Experts Group. The actual offsets that have been obtained are shown in Table 7.

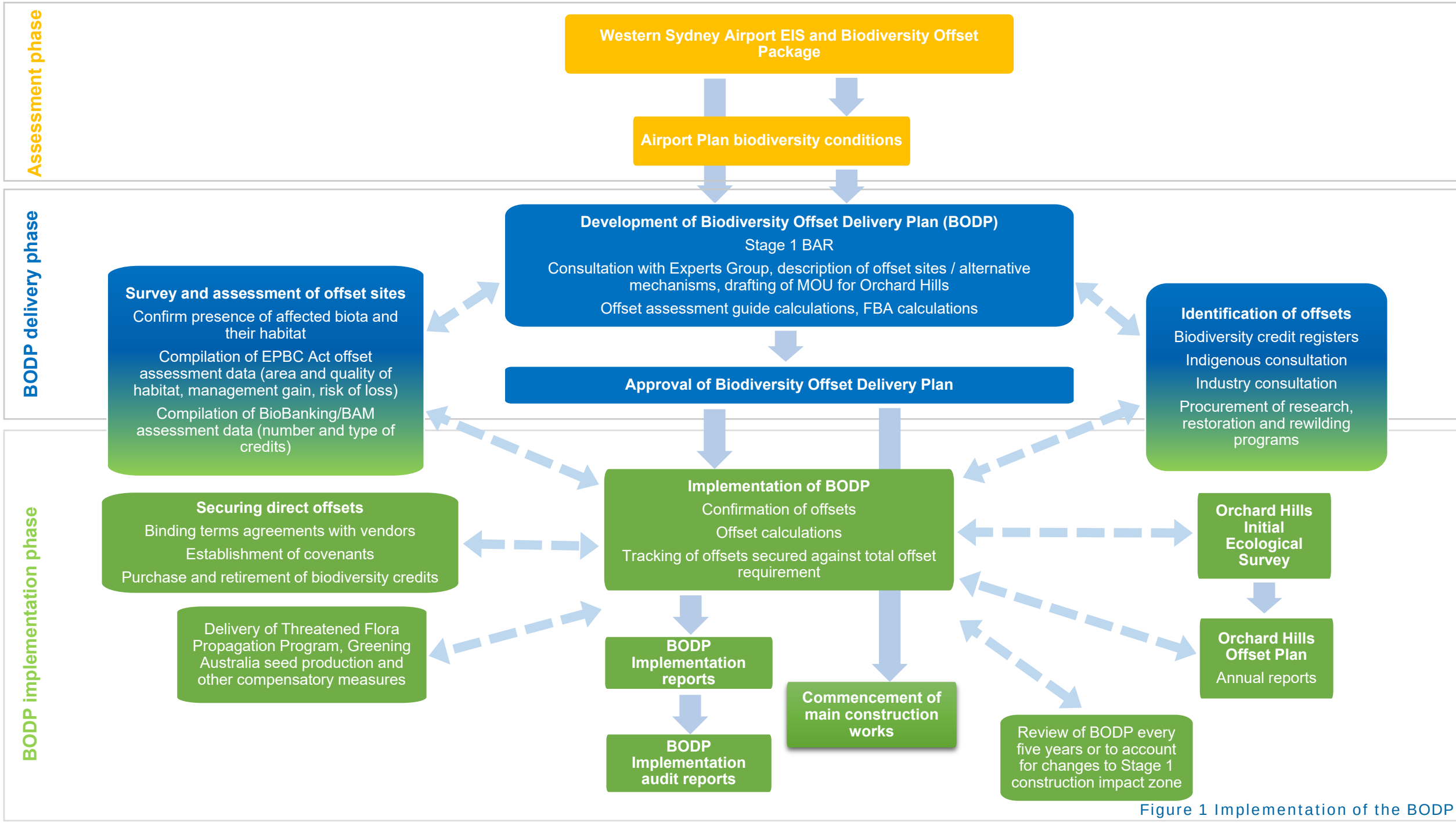
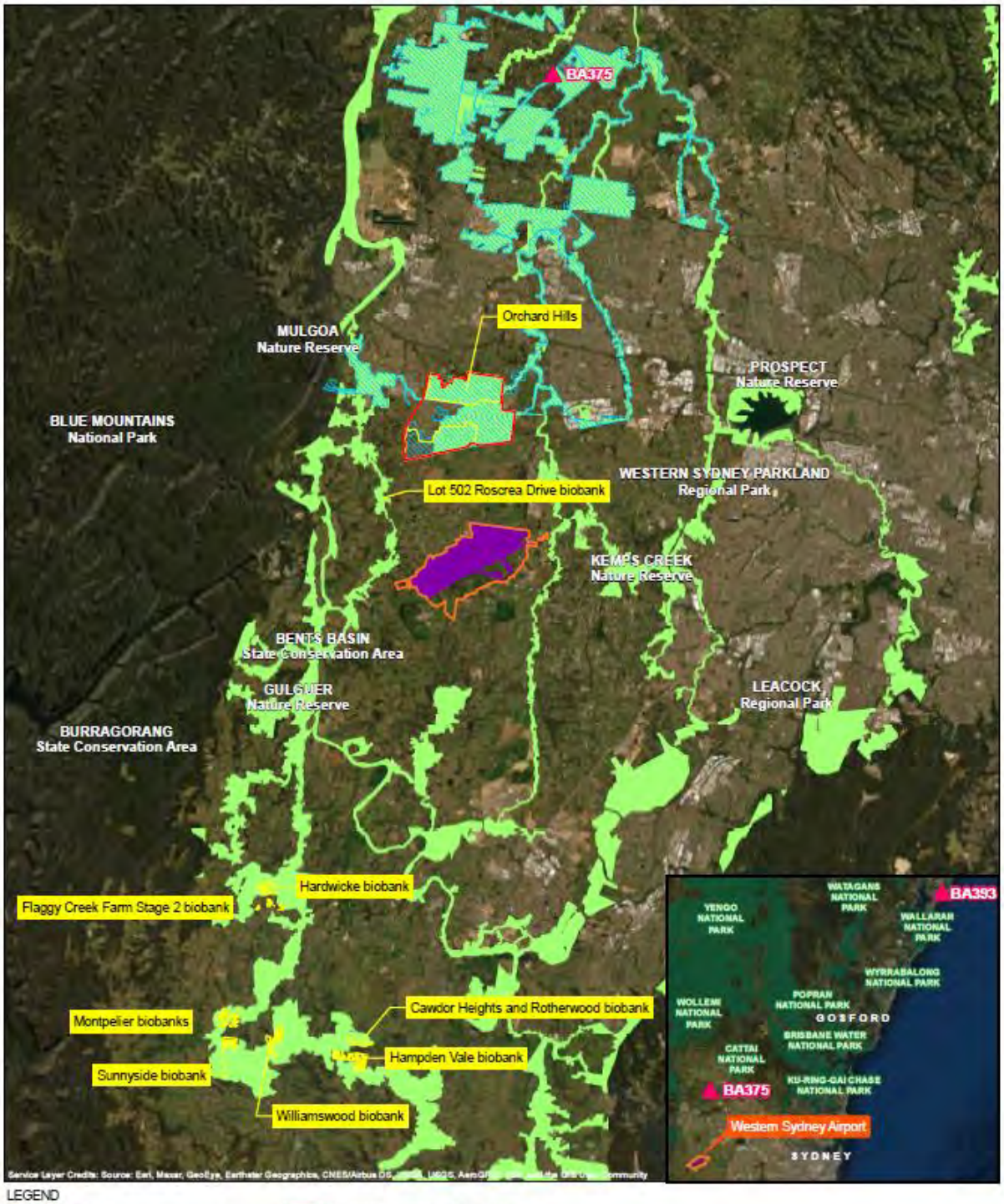


Figure 1 Implementation of the BODP

Figure 3 BODP implementation period offset areas



Data source: Aerial Imagery - ESRI 2021, Offset sites - GHD 2017, Cumberland Plain Conservation - OEH 2016, Airport layout data - WSU 2016; General topo - NSW LPI DTDB 2015 & 2012. Created by:jprice Created by:jprice

Table 3 The Western Sydney International Airport offset proposal

Measure	Summary	Characteristics	Quantum of offset	Timing
Direct offsets			**At least 90% of direct offsets**[1]	
Orchard Hills Offset Area	Secure the ongoing conservation and enhance the biodiversity value of a large site with strategic value and a significant amount of like-for-like native vegetation in close proximity to the airport site.	Secures and strengthens the conservation outcomes of a large site with strategic value and strong connectivity benefits, in addition to existing environmental obligations. Conservation of a significant amount of Cumberland Plain Woodland and other like-for-like native vegetation and habitats in close proximity to the airport site. Strong potential for complementary outcomes. Under the MOU, there would be requirements for active management, monitoring, reporting and auditing to improve biodiversity values with a commitment to achieve an increase in site quality and provision for ongoing management. Moderate averted risk of loss through exclusion of future development or harmful activities. Management described in the Offset Plan, prepared in accordance with the MOU, to be fully funded for the improvement period, anticipated to be up to 20 years with a high certainty of success and ongoing conservation and management obligations.	Infrastructure has entered into a MOU with Defence and the Initial Ecological Survey of the Orchard Hills Offset Area has been completed and verified. Based on the independently verified Offset assessment guide calculations, conservation and management of the Orchard Hills Offset Area was considered likely to provide around: - 90 % of the offset for Cumberland Plain Woodland, including - 60 % through conservation of EPBC Act Cumberland Plain Woodland and - 47 % through improvement of poorer quality Cumberland Plain Woodland; - 77 % of the offset requirement for the Grey-headed flying-fox; and - 51% of the offset requirement for Swift Parrot foraging habitat. N.B. the offset calculations presented in chapter 3 of this report are expressed in terms of biodiversity credits and do not directly relate to Offset assessment guide calculations. The Orchard Hills Offset Area could also meet a substantial proportion of the offset requirement for impacts on plants, animals and their habitats as a direct offset when translated into the equivalent biodiversity credits.	Implementation commenced in the 2018/19 Financial Year. A Draft Offset Plan was completed in March 2020, around 18 months after approval of the BODP. The core offset site and any other agreed areas will be actively managed as an offset for the airport for the period required to achieve the offset objectives, expected to be up to 20 years, with ongoing maintenance thereafter.
Purchase of credits through the NSW Biodiversity Offsets Scheme	Secure areas for conservation in perpetuity through the purchase of biodiversity credits.	The NSW Biodiversity Offsets Scheme provides for a secure conservation covenant, detailed management plan, secure funding, monitoring, and auditing and enforcement by the BCT. Sites chosen will have relevant ecological communities and species to meet offset requirements.	The quantum of offset that would be delivered is subject to the identification of suitable suites of credits sourced from appropriate offset sites, information presented in Biodiversity Stewardship Site Assessment Reports in accordance with the BAM and EPBC Act offset calculations. This measure is likely to deliver:	Purchase of credits will be staged, with the initial tranche of credits purchased in the 2018/19 Financial Year conserving species and communities of the Cumberland Plain and a second tranche purchased in the 2019/20 financial year providing offsets for *Dillwynia tenuifolia* species credits and freshwater wetlands. The total quantum of required credits is

Measure	Summary	Characteristics	Quantum of offset	Timing
		Sites will be strategically located with good connectivity outcomes.	- at least 10% of the offset requirement for Cumberland Plain Woodland; - around 15 to 25% of the offset requirement for the Grey-headed Flying-fox and Swift Parrot foraging habitat; and - up to 100% of the offset requirement for *Pimelea spicata* when linked to an area of occupied habitat. This measure would meet a substantial proportion of the offset requirement for impacts on plants, animals and their habitats with a particular focus on securing offsets for threatened biota not delivered by other measures.	expected to be purchased and secured within three years of BODP approval.
Acquisition of land	Acquisition of strategic parcels of land that promote connectivity for the Cumberland Plain Corridor to be managed in perpetuity by a third party.	Sites chosen will have relevant ecological communities and species to meet offsetting requirements. Sites will be strategically located and enhance connectivity outcomes for the Cumberland Plain Corridor. An appropriate mechanism will be applied to ensure security of tenure in perpetuity. Time and flexibility will be built into the process to ensure the best land parcels can be acquired. Acquisition processes will make use of the expertise of appropriate local experts in site selection and governance. Active management plans will include provisions for monitoring and evaluation, and will be funded to deliver specific biodiversity outcomes.	The quantum of offset that would be delivered is subject to the identification of suitable sites, biodiversity survey and assessment with reference to the BAM, preparation of a biodiversity management plan (or equivalent) and EPBC Act offset calculations. This measure would also help meet the offset requirement for impacts on plants, animals and their habitats.	Subject to confirmation that this option meets Infrastructure's value for money criteria, an advisory group may be established and it is expected that suitable parcels of land will be identified and secured within 3 years of the establishment of the advisory group.
Restoration and rewilding programs	Improve the extent, connectivity and condition of native vegetation and habitat in the Cumberland Plain on non-biodiversity stewardship sites.	Measures will be selected that have strategic or complementary benefits that help ensure conservation gains at least equivalent to other options for direct offsets. Sites chosen will have relevant ecological communities and species to meet offsetting requirements. Land tenure of sites will be closely	The quantum of offset that would be delivered is subject to the identification of suitable sites and programs, biodiversity survey and assessment with reference to the BAM, preparation of a biodiversity management plan (or equivalent) and offset calculations.	Scoping and identifying restoration and rewilding programs commenced in the 2018/19 Financial Year, with programs expected to be delivered for up to 10 years.

Measure	Summary	Characteristics	Quantum of offset	Timing
		considered to ensure long-term viability of restoration and revegetation. Sites of work will be strategically chosen to improve connectivity and conservation corridors. Long-term management objectives and funding sources must be built into any programs, along with ongoing monitoring and evaluation. Restoration and rewilding must be additional to the status quo. There will be a preference for programs that link with other measures such as Aboriginal land management, research and other on-ground conservation work.		
Other compensatory measures			**Up to 10%**	
Threatened Flora Propagation Program (TFPP)	Propagation, research program and *in situ* collection of threatened plant species found at the airport site.	TFPP implemented in accordance with Condition 33 of the Airport Plan. Additional genetic research program targeting regional populations of *Pimelea spicata* and helping to address knowledge gaps identified in the recovery plan for the species (DEC 2005a). Maintenance of an *ex situ* potted collection of *Pimelea spicata* to support translocation of the airport site population and restoration programs (refer to RGBDT, 2019; ABGMA, 2019).	The quantum of offset delivered will be calculated as a percentage offset contribution to the total requirement for *Pimelea spicata* using the 'Other compensatory ($)' section of the EPBC Act offsets assessment guide or translation to equivalent credits, consistent with the approach used to calculate direct offsets for the species. The TFPP would also deliver biodiversity offsets for individual threatened plants, though the precise contribution has not been calculated since 100% of the total quantum of offset for *Pultenaea parviflora, Dillwynia tenuifolia* and *Marsdenia viridiflora* subsp. *viridiflora* has been obtained as direct offsets.	The TFPP commenced in the 2016/17 Financial Year and was completed by July 1 2019. The Stage 2 TFPP genetic research program and maintenance of an *ex situ* population commenced in April 2019 with the research completed in October 2019. The *ex situ* population was established in 2019/2020 and will be maintained for a period of at least 5 years.
Greening Australia seed collection and production program	Secure ongoing collection of native seeds for the region	Native seed production implemented in accordance with Condition 32 of the Airport Plan. The Department has entered into an agreement with Greening Australia to contribute funds to the organisation's Cumberland Seed Hub program in Western Sydney. Delivers a reliable, species-rich and local provenance source of native seed for use	The quantum of offset delivered will be calculated as a percentage offset contribution to the total requirement for Cumberland Plain Woodland, Grey-headed Flying-fox habitat and Swift Parrot foraging habitat and for individual plants, animals and their habitats, by estimating the equivalent percentage of the total biodiversity credit requirement (calculated using the FBA) for the affected biota.	Program commenced in the 2017/18 Financial Year and will run for 5 years and be completed in 2021/22.

Measure	Summary	Characteristics	Quantum of offset	Timing
		in restoration activities. Research outcomes should inform future on-ground activities.		
Longer term research and capacity building, including training	Undertake research into effective restoration techniques for threatened ecological communities and species on the Cumberland Plain. Provide capacity building and training, including Aboriginal land management, in on-ground conservation and ecological restoration activities.	Research should align with the Research Priorities in the Commonwealth Conservation Advice and Appendix 4 of the Cumberland Plain Recovery Plan (DECCW 2010). Research to have strong engagement with local projects and organisations and contribute to capacity building. Be complementary to on-ground works undertaken as part of the offsets package and contribute to ongoing monitoring, evaluation and adaptive management practices. Funding for training would not extend to those with existing obligations under BSAs.	The quantum of offset delivered will be calculated as a percentage offset contribution to the total requirement for affected threatened biota using the 'Other compensatory ($)' section of the EPBC Act offsets assessment guide. Also likely to deliver biodiversity offsets for plants, animals and their habitats, which would be estimated by taking the percentage offset calculated using the offsets assessment guide and equating it to an equivalent percentage of the total biodiversity credit requirement (calculated using the FBA) for the affected biota.	Scoping and identification of programs commenced in the 2018/19 Financial Year, with programs expected to be delivered for up to 10 years.
Complementary outcomes				
Aboriginal land management	Secure long-term training and employment opportunities in land management and restoration for Aboriginal peoples in Western Sydney.	To be based on partnerships and consultative co-design processes with leadership from local Aboriginal groups. Preference for approaches that make strong links to other offset measures included in the offset proposal. As a complementary outcome can be applied to any land-based offset measures.	As a complementary outcome, would not contribute to the biodiversity offset requirement.	Timing would be the same as for the relevant land-based proposed offset measures. Aboriginal land management is complementary to the delivery of site based offsets.

Notes:

1 – As per the EPBC Act Environmental Offsets Policy requirement that "A minimum of 90 per cent of the offset requirements for any given impact must be met through direct offsets".

1.4 Purpose and structure of this report

Condition 30(10) of the Airport Plan requires that Infrastructure must implement the approved BODP on behalf of the Commonwealth. Condition 47(3) states that following approval of the BODP, Infrastructure must report to Environment every 12 months on its implementation until all biodiversity offsets and other compensatory measures under the BODP have been secured or implemented.

Condition 30(11) of the Airport Plan requires that Infrastructure must:

- (a) ensure that an independent audit of its compliance with condition 30(10) is conducted in respect of:
  - (i) the 12-month period commencing with the approval of the BODP;
  - (ii) each subsequent 18-month period until all biodiversity offsets required by the BODP have been secured or implemented; and
- (b) submit a report of each audit that is carried out to Environment within six months of the end of the period in respect of which the audit was conducted.

This 2020 BODP implementation report:

- Is for the second 12-month period after the approval of the BODP, specifically 25 August 2019 to 25 August 2020; and
- Has been audited and submitted to Environment.

The purpose of this 2020 BODP implementation report is to demonstrate to an auditor how Infrastructure is delivering the offset proposal presented in the BODP in accordance with the Airport Plan conditions, including:

- A description of activities undertaken to identify, secure and quantify direct offsets.
- A description of the other compensatory measures that have been delivered and steps taken to identify additional measures.
- Calculation of the quantum of direct biodiversity offsets secured for the airport based on information presented in the BODP and detailed biodiversity assessments for offset sites.

The BODP implementation activities that have been implemented during the 2020 period comprise:

- Synthesis of existing information and consultation with various offset vendors to identify and obtain direct offsets.
- Establishment of the Offset Area at Defence Establishment Orchard Hills over at least 900 hectares, completion and verification of an Initial Ecological Survey and consultation with Defence on the preparation of the Offset Plan for management of the site (Section 2.1).
- Purchase of biodiversity credits which once retired, will secure direct offsets for various plants, animals and their habitat (Section 2.2).
- Finalisation of a *Pimelea spicata* genetic research program and establishment of an *ex situ Pimelea spicata* population to support conservation of the species (Section 2.3).
- Continued implementation of the Greening Australia native seed collection and production program required by Condition 32 of the Airport Plan (Section 2.4).
- Consideration of potential research, restoration and rewilding programs (Section 2.5).
- Other activities, including discussions with key stakeholders from governments, private industry, and communities.

1.5 Relationship with other reports

This 2020 BODP implementation report should be read in conjunction with the *Western Sydney Airport Biodiversity Offset Delivery Plan* (BODP) (DIRD 2018). This 2020 BODP implementation report references impact assessments and preliminary offset calculations presented in the BODP. The BODP was prepared in accordance with condition 30 of the Airport Plan, including requirements to take into account:

- The biodiversity assessment and offset package in the airport EIS (GHD 2016a, 2016b).
- The updated biodiversity survey of the WSI site and impact calculations presented in the *Western Sydney Airport Stage 1 Biodiversity Assessment Report Addendum* (the Stage 1 BAR addendum, GHD 2018b).
- The EPBC Act Offsets Policy (DSEWPaC 2012).

The BODP outlines the:

- Impact area and quality of habitat for the affected threatened biota in the Stage 1 construction impact zone.
- The number and type of biodiversity credits required to offset impacts of the Stage 1 development of WSI on plants, animals and their habitats.
- Consultation activities and advice of the Biodiversity Experts Group that helped identify potential biodiversity offsets.
- The direct offsets that would be delivered, including preliminary assessment of the Orchard Hills Offset Area and the process for identifying and securing other offset sites.
- Other compensatory measures that would be delivered.
- The approach and indicative timing for implementation of the BODP.

The quantum of impact of the Stage 1 development of WSI that has been used to calculate the offset delivered in this report was approved by Environment in the BODP.

The *Orchard Hills Offset Area Initial Ecological Survey Report* (GHD 2020a) presents the results of detailed biodiversity surveys and offset calculations for the Orchard Hills offset area. It presents the baseline site quality scores for affected threatened biota and start and future site value scores for plants, animals and their habitats as inputs to offset calculations. The MOU between Defence and Infrastructure provides for an Offset Plan to be developed, funded and implemented over a period of 20 years to provide measurable ecological improvements to the quality of habitat for the affected threatened biota and plants, animals and their habitat at the Orchard Hills Offset Area, consistent with the EPBC Act Offsets Policy and through the implementation of biodiversity management actions. The *Defence Establishment Orchard Hills Offset Plan* (GHD 2020b) presents specific targets and management objectives to achieve the future site value scores with management that support the offset calculations.

The quantum of offset for plants, animals and their habitat associated with the purchase of biodiversity credits from direct offset sites is based on various BioBanking assessment reports prepared by accredited assessors and referenced throughout this report.

The summary of activities related to the WSI threatened flora propagation program is based on the:

- *Western Sydney International Airport Threatened Flora Propagation Program Delivery Report* (ABGMA 2019).
- *Conservation genomics of Pimelea spicata (*Spiked Rice-flower*) in support of management and translocation activities* (RBGDT 2019).

The summary of activities related to the Greening Australia seed production program is based on program delivery and progress update reports provided by Greening Australia.

1.6 Methodology for calculating and securing offset

1.6.1 Direct offsets

As confirmed through consultation with Environment, the relative contributions of each offset proposal can be determined through either the EPBC Act offset assessment guide or biodiversity credit calculations using NSW methodologies.

The EPBC Act policy requires a formal assessment of impacts and offset contributions for EPBC Act-listed species and communities using the 'offsets assessment guide'. The offsets assessment guide uses a balance sheet approach to measure impacts and offsets. According to the EPBC Act Offsets Policy, controlled actions (ie an action that the Commonwealth Minister for the Environment considers is likely to result in a significant impact, and deems a controlled action) requiring offsets must achieve a minimum 90% direct offset except in limited circumstances specified in the policy. Direct offsets are defined as those actions that provide a measurable conservation gain for an impacted protected matter.

The majority of the direct offsets for the airport would comprise the conservation and management of the affected threatened biota and their habitat in offset sites. These measures would achieve improvement in the condition of habitat, creation of new habitat resources, mitigation of threats and averted risk of loss through development or agricultural activities. A single offset area can compensate for impacts on multiple threatened biota if they have common habitat requirements (DSEWPaC 2012a). Therefore, some offset areas at potential offset sites will contribute to meeting Cumberland Plain Woodland, Grey-headed Flying-fox and Swift Parrot foraging habitat offset requirements.

The quantum of offset required for significant impacts on plants, animals and their habitats affected by WSI was calculated in the BODP with reference to the NSW Framework for Biodiversity Assessment (FBA) methodology (DIRD 2018). The FBA is based on the NSW Biodiversity Banking and Offsets Scheme (BioBanking) credit calculator and assessment methodology, which was the methodology used to calculate offsets for major projects in NSW at the time that the airport EIS was prepared.

The EPBC Act Offsets Policy recognises that there are various options available for delivery of direct offsets, including market-based tools such as BioBanking – now the NSW Biodiversity Offset Strategy (BOS) – and Biodiversity Assessment Methodology (BAM). The EPBC Act Offsets Policy requires biodiversity offset sites to be securely titled under a legally binding conservation covenant (or other appropriate mechanisms) and actively managed. The purchase and retirement of biodiversity credits from offset sites secures the associated area of habitat in accordance with the EPBC Act offset policy as well as providing direct offsets for impacts to plants, animals and their habitat. Consultation with Environment has confirmed that the quantum of EPBC Act offset can also be expressed in terms of equivalent biodiversity credits (namely FBA/BBAM credits or BAM credits).

There are two types of biodiversity credits:

- Ecosystem credits, for impacts to native vegetation types and associated habitat for native fauna, including threatened species that can be reliably predicted to occur based on habitat surrogates.
- Species credits for individual threatened plant species, endangered populations and threatened fauna species or habitat features that cannot be confirmed without targeted survey.

The suite of ecosystem credits and species credits required to offset impacts of WSI are presented in Table 1 and Table 2.

Ecosystem credits are linked to plant community type (PCT) codes under the BAM, which are equivalent to NSW vegetation types under BioBanking but do not include a code indicating the catchment management authority region in which the credits were generated. The former BioBanking ecosystem credit code is presented in the BODP and throughout this implementation report to allow direct comparison with the impact calculations (e.g. HN528, HN526 etc.).

Offsets for Cumberland Plain Woodland can be expressed in terms of equivalent ecosystem credits for vegetation types that may comprise an occurrence of the community, specifically HN529, HN528 or HN512. Consultation with Environment has confirmed that ecosystem credits may be counted towards the quantum of offset for the community regardless of the current condition of the vegetation that has generated the credits and whether vegetation at the offset site meets the patch size and condition thresholds stated in the listing advice for the community (TSSC 2008).

In line with an observation resulting from the audit of this 2020 BODP Implementation Report, Biodiversity credits generated at the Orchard Hills Offset Area within the CHL have been discounted in line with the principle of 'existing obligations and management actions' as defined by section 12.10 of the NSW BioBanking Assessment Methodology (OEH 2014). There is no industry-accepted standard discount rate for publicly owned land under the NSW BioBanking Assessment Methodology (OEH 2014); instead, a range of values have been applied over time to projects assessed using this methodology. To provide consistency with the current methodology for determining the number and type of biodiversity credits that would be generated at a site, a 20% discount rate was applied, based on the guidance provided in Table 9 of the BAM 2020 (DPIE 2020b).

Grey-headed Flying-fox habitat and Swift Parrot foraging habitat can be expressed in terms of equivalent ecosystem credits for any woodland or forest vegetation type that contains food trees for these species. Consultation with Environment has confirmed that ecosystem credits may be counted towards the quantum of offset for the Grey-headed Flying-fox habitat and for Swift Parrot foraging habitat regardless of the current condition of the vegetation that has generated the credits. Specifically, tree-less areas can be restored to eventually become treed and suitable as habitat. DAWE has endorsed the BAM (and previous FBA) as a method for determining offsets on the basis that the management actions will bring back trees to the areas over the specified time period.

Pimelea spicata offsets are expressed in terms of *Pimelea spicata* species credits.

The direct offsets that were obtained through the purchase of biodiversity credits during the 2020 BODP implementation period are each associated with sites conserved under existing Biodiversity Stewardship Agreements (BSAs) and that were assessed by accredited assessors in accordance with the BioBanking Assessment Methodology (BBAM). BioBanking Assessment Reports were prepared and independently verified for each BSA prior to credits being generated for sale. The review, approval and governance arrangements of the BOS provide certainty that the credit calculations and descriptions of biodiversity values presented in the approved BioBanking Assessment Reports are reliable. Therefore, the quantum of offset comprises a direct comparison between the credit requirement presented in the BODP and the matching credits purchased by Infrastructure. Once the full quantum of offsets is obtained, credits will be retired by Infrastructure, which will secure the offset in perpetuity.

The outstanding offset requirement as of 25 August 2020 that would be presented in future BODP Implementation reports is likely to be secured from biodiversity stewardship sites that were established since 2017 and assessed with the BAM. Infrastructure have obtained a

Statement of assessment of reasonable equivalence of biodiversity credits (DPIE 2020a) from the NSW Department of Planning Industry and Environment (DPIE). A delegate of the NSW Environment Agency Head of DPIE has determined the number and class of BAM biodiversity credits that are reasonably equivalent to the number of BBAM biodiversity credits required to offset the impacts of WSI that were believed to be outstanding based on the results of the Initial Ecological Survey Report (GHD 2020a). As a result of changes made to credit calculations resulting from the observations made during the independent audit of this 2020 BODP Implementation Report, there is now a shortfall for some entities that were not included in the original *Statement of assessment of reasonable equivalence of biodiversity credits* requested by Infrastructure. Table 12 of this 2020 BODP Implementation Report presents the remaining quantum of offset to be secured in terms of BAM credits based on the information presented in the assessment of reasonable equivalence (DPIE 2020a), for those matters included on the statement.

1.6.2 Other compensatory measures

The WSI threatened flora propagation program (TFPP), Greening Australia Native Seed Production Area program and potentially other research, rewilding and restoration programs, will be presented as other compensatory measures in accordance with the EPBC Act offsets policy and the BODP.

The approved BODP confirmed that the Greening Australia Seed Production Area will be presented as a compensatory measure for Cumberland Plain Woodland and for *Pimelea spicata*. The BODP anticipated that the offset delivered would be calculated using the 'Other compensatory ($)' section of the EPBC Act offsets assessment guide as a back-calculation of the percentage of the total offset requirement for Cumberland Plain Woodland that would be met by the $10 million of dedicated funding for the Greening Australia Native Seed Production Area. Consultation with Environment has also confirmed that the quantum of EPBC Act offset can also be expressed in terms of equivalent biodiversity credits. The offset calculations presented in chapter 3 of this 2020 BODP Implementation Report and that will be presented in future Implementation Reports are expressed in terms of biodiversity credits and therefore an alternative approach is required to confirm the offset contribution of other compensatory measures.

The approach to calculating offset contributions associated with other compensatory measures will be as follows:

1. The number of ecosystem credits associated with the Orchard Hills Offset Area and purchased by Infrastructure (i.e. direct offsets) will be calculated as a percentage of the total ecosystem credits required to offset the impacts of WSI.
2. Once at least 90% of the total requirement for each matter requiring offsetting has been secured (pending retirement) as direct offsets the total cost of direct offsets will be calculated, comprising:
   - The relative cost of each ecosystem credit generated at the Orchard Hills Offset Area as a proportion of the total cost of $70 million for 11,689 ecosystem credits generated at the Orchard Hills Offset Area x the total number of each ecosystem credit type secured (pending retirement).
   - The relative cost of each of the ecosystem credits purchased by Infrastructure as a proportion of the total cost for each ecosystem credit type purchased x the total number of each ecosystem credit type secured (pending retirement).
3. The cost of the Greening Australia Seed Production Area of $10 million will be calculated as a percentage of the total cost of securing direct offsets.

4. The ‘percentage of total offset requirement from other compensatory measures’ calculated at step 3 will be expressed as a proportion of the total number of each ecosystem credit required to offset the impacts of WSI,
5. The number of ecosystem credits equivalent to the value of compensatory measures calculated at step 4 will be added to the total number of each ecosystem credit secured (pending retirement) as direct offsets.

The Greening Australia native seed production program would deliver biodiversity offsets for Cumberland Plain Woodland and for certain plants, animals and their habitat. Other compensatory offset calculations would be applied for ecosystem credits associated with vegetation of the Cumberland Plain that would be directly benefited by the production of seed at the Greening Australia Seed Production Area (i.e. the woodland and forest vegetation types HN528, HN529, HN512 and HN526, but not freshwater wetlands, HN630).

Spreadsheets documenting the direct offsets obtained and the approach to offset calculations for other compensatory measure have also been provided to the auditor along with this 2020 BODP Implementation Report. The auditor has verified the formulae and data provided in these spreadsheets along with the summary of offset contributions presented in this 2020 BODP Implementation Report. Recommendations from the auditor’s review have been incorporated when calculating the quantum of offset provided by the Orchard Hills Offset Area. The approved approach to calculating the quantum of offset associated with other compensatory measures will be applied to future BODP Implementation Reports.

The approved BODP confirmed that the TFPP will be presented as a compensatory measure for *Pimelea spicata.* Direct offsets for *Pimelea spicata* are likely to be secured through the purchase of biodiversity credits and so the same approach outlined for the Cumberland Seed Hub as a compensatory measure for Cumberland Plain Woodland is likely to be used to calculate the offset contribution of the TFPP.

These other compensatory measures have been substantially delivered in the 2020 BODP implementation period as documented in Section 2.3 and 2.4 of this report. The contribution of other compensatory measures as offsets for Cumberland Plain Woodland and for associated plants, animals and their habitat is presented in Section 3. However, since greater than 90 per cent of all direct offsets for *Pimelea spicata* have not yet been secured and costed it is not possible to calculate the value of other compensatory measures for this species. The offset contribution from the TFPP, and any other compensatory measures, would be confirmed at the conclusion of the implementation of the BODP and documented in the final BODP implementation audit report.

1.7 Qualifications

1.7.1 Suitably Qualified Biodiversity Expert (GHD)

Ben Harrington (GHD) is the Suitably Qualified Expert who was responsible for the preparation of the BODP in accordance with Airport Plan Condition 30(5). Ben is the technical lead of GHD’s biodiversity offset group and an accredited assessor under the NSW BC Act. He has extensive experience preparing biodiversity offset assessments for major projects in accordance with the EPBC Act Offsets Policy, FBA and NSW Environmental Offsets Policy. Ben is a recognised industry specialist in the application of the former BioBanking assessment methodology and in developing offset strategies.

Ben has over 17 years of experience conducting ecological surveys and assessments in NSW, including over 15 years of experience in environmental consulting. He has extensive field survey and project experience on the Cumberland Plain, including at the airport site and at ~20 approved BSA sites.

Kath Chesnut (GHD) was responsible for finalising the report and offset calculations after the end of the implementation reporting period. Kath meets the criteria for a suitably qualified expert being a senior ecologist and an accredited assessor under the NSW BC Act, with over 11 years of experience as an ecological consultant in NSW during which time she has completed numerous projects on the Cumberland Plain.

Qualifications of GHD staff that provided input to this BODP implementation report or undertook recent field surveys and provided inputs to the BODP are provided in Table 4. Flora and fauna surveys were conducted under a Section 132C scientific licence (SL100146) issued under the NSW *National Parks and Wildlife Act 1974* and complied with GHD's animal ethics Research Authority requirements.

Table 4 Qualifications of GHD staff

Name	Position/Role	Qualifications	Years' experience
Ben Harrington	Technical Director – Biodiversity / technical lead for offset assessments, site surveys, credit calculations and reporting	BSc, MSc (Physical Geography) NSW BAM Assessor Accreditation (number 17023)	17+ years
Jayne Tipping	Technical Director – Biodiversity / direction and technical review	BSc, MEnvLaw	25+ years
Malith Weerakoon	Ecologist / desktop assessment, site surveys, data processing.	BSc, MPhil. (Zoology)	6+ years
Dan Williams	Technical Director –biodiversity offsetting / offset vendor consultation and technical review	B. App. Sc. NSW BAM Assessor Accreditation (number 17025)	19+ years
Kath Chesnut	Reporting assistance, credit calculations	BEnvSc (Hons) NSW BAM Assessor Accreditation (number 17031)	11+ years
Hannah Urwin	Graduate Environmental Scientist / site surveys	BSc (Plant science)	2+ years
Isabel Lyons	Graduate Ecologist / site surveys	BSc (Environmental Biology)	2+ years

1.7.2 Independent auditor

Alex Cockerill (WSP) has been subcontracted by GHD on behalf of Infrastructure as the Suitably Qualified Expert responsible for auditing this 2020 BODP implementation report. Environment approved Alex Cockerill as the independent auditor prior to the commencement of the audit in accordance with Condition 30 (12) of the Airport Plan.

Alex has more than 19 years' experience in botanical and terrestrial ecological research, ecological impact assessment and conservation landscape management. He is responsible for managing large scale environmental impact assessment projects, including the coordination of field staff, preparation of reports, agency negotiations and ongoing facilitation of projects towards positive outcomes.

He is an Accredited BAM Assessor and recognised expert in the application of the BAM in NSW, regularly providing support to the NSW Government as a third-party reviewer. He has acted as an independent ecological expert participating in compliance audits on behalf of State and Commonwealth governments and as an Expert Witness on flora and vegetation matters in the NSW Supreme Court, NSW Land and Environment Court and the Victorian Court of Arbitration and Tribunal.

Alex previously completed the independent verification of the 2019 BODP Implementation Report, the Orchard Hills Initial Ecological Survey report and the Biodiversity Assessment Reports (BARs) for WSI in accordance with the Airport Plan conditions.

Table 5 Qualifications of independent auditor

Name	Position/Role	Qualifications	Years' experience
Alex Cockerill (WSP)	Ecology National Team Executive / Independent verifier	BSc (Hons) NSW BAM Assessor Accreditation	19+ years

2. Offset Implementation Activities

2.1 Orchard Hills Offset Area

2.1.1 Overview of proposal

Infrastructure has made arrangements with Defence for establishing an offset site at the Defence Establishment Orchard Hills (DEOH). DEOH is an explosive ordnance depot located approximately 50 kilometres west of central Sydney that is owned, used and managed by Defence. DEOH is managed for Defence capability purposes, Defence training activities and the use and safe storage of explosives. Approximately 1370 hectares of DEOH is recorded on the Commonwealth Heritage List as a Commonwealth Heritage Place for its natural heritage values (refer to Figure 4a and b). The Heritage Place is subject to the comprehensive environmental protection framework set out in the EPBC Act under the control of the Environment Minister.

A Memorandum of Understanding (MOU) was entered into between Defence and Infrastructure that includes provisions that are additional to any Commonwealth Heritage Listing requirements relating to the Offset Area. The MOU provides for:

- The area and boundaries of the Offset Area to be formalised, with a core area of no less than 900 hectares and any other additional areas agreed between Defence and Infrastructure
- The preparation of an 'Initial Ecological Survey' report (GHD 2020a) which describe the biodiversity values of the offset area and the quantum of direct offset associated with its conservation and management.
- An Offset Plan (GHD 2020b) which would be funded and implemented over a period of 20 years to provide measurable ecological improvements to the quality of habitat for the affected threatened biota and plants, animals and their habitat at the Offset Area, consistent with the EPBC Act Offsets Policy and through the implementation of biodiversity management actions.
- Various monitoring, record keeping, reporting and auditing arrangements to be put in place, consistent with the BODP and the Airport Plan.
- The Orchard Hills Offset Area to be maintained following completion of the improvements, so as to retain long-term benefits of the quality improvements following implementation of the Offset Plan.

The objectives of the Offset Plan are to improve the quality of habitat for the affected threatened biota and plants, animals and their habitat in the Offset Area in order to help meet the requirements of the BODP. Specifically, the Offset Plan management actions will be designed to achieve the following objectives:

a. 'Future quality with offset' score that is two greater than the 'Start quality' score that is defined in the Initial Ecological Survey for the area of Cumberland Plain Woodland.

b. 'Future quality with offset' score that is one greater than the 'Start quality' score that is defined in the Initial Ecological Survey for the area of habitat for the Swift Parrot and Grey-headed Flying-fox in the Offset Area.

c. 'Future quality with offset' score for the area of poorer quality Cumberland Plain Woodland in the Offset Area that is at least:

    i) as high as the quality score for the Cumberland Plain Woodland in the Stage 1 Construction Impact Zone (6 out of 10).

ii) two greater than the 'Start quality' score that is defined in the Initial Ecological Survey for the area of poorer quality Cumberland Plain Woodland in the Offset Area.

d. Site value scores with active restoration and management at least equal to the scores defined in the Initial Ecological Survey to confirm the quantum of offset for plants, animals and their habitat as calculated with the BBAM.

e. Averted risk, management of threats and site context score improvements in areas that do not comprise habitat but that would contribute to achieving the core offset objectives a-d listed above (GHD 2020b).

The baseline site quality scores for affected threatened biota and start and future site value scores for plants, animals and their habitat are defined in the Initial Ecological Survey report. The biodiversity credit value of the species and habitats at the Orchard Hills Offset Area has been confirmed using the BBAM means of quantifying offset contributions. This approach allows direct comparison with the NSW FBA methodology credit calculations included in the BODP. The Orchard Hills Offset Area Initial Ecological Survey report, including the assessment of the quantum of direct offset delivered by the Orchard Hills Offset Area, has been independently verified (GHD 2020a).

Despite this initial confirmation, the independent audit of this 2020 BODP Implementation Report found that the principle of 'existing obligations and management actions' as defined by section 12.10 of the NSW BioBanking Assessment Methodology (OEH, 2014) should be applied to credits generated within the CHL area at the Orchard Hills Offset Area. There is no industry-accepted standard discount rate for publicly owned land under the NSW BioBanking Assessment Methodology (OEH 2014); instead, a range of values have been applied over time to projects assessed using this methodology. To provide consistency with the current methodology for determining the number and type of biodiversity credits that would be generated at a site, a 20% discount rate was applied, based on the guidance provided in Table 9 of the BAM 2020 (DPIE 2020b), which is the current industry standard for publicly owned land. This standard was considered appropriate given the lack of consistent precedents of discount rates on other publicly owned land. As a result of this discount, Infrastructure has an unexpected shortfall for some offset obligations. This shortfall is explained in more detail below.

The Offset Area and any other agreed areas will be actively managed as an offset for WSI for the period required to achieve the Offset Objectives outlined above, which is expected to be up to 20 years from the date that delivery of the offset commenced in September 2018. Defence would implement the plan, including completion of all monitoring, reporting and auditing requirements. Once the quality improvements have been achieved, Defence would continue to manage the Offset Area so as to maintain the long-term benefits of the quality improvements.

2.1.2 Summary of 2020 implementation activities

Initial ecological survey and Offset Plan

GHD ecologists completed the following activities during the 2020 period to confirm the baseline condition, quantum of offset and management approach for the Orchard Hills Offset Area:

- Submission of a draft Initial Ecological Survey report for independent verification.
- Site inspection by the independent verifier and review of the survey and draft Initial Ecological Survey report against audit criteria.
- Finalisation of the Initial Ecological Survey report by GHD ecologists, including:
  - Updated mapping and assessment in response to independent verifier comments and changes to the Offset Area boundary and layout arising from Defence activities

  - Updated management unit definition and mapping
  - Assessment and GIS analysis according to the BBAM
  - Updated EPBC Act offset assessment guide calculations and BBAM credit calculations.
- Publication of a final, independently verified Initial Ecological Survey report including the final offset calculations for the site that are included in this report.
- Consultation with Defence on the development and implementation of the Offset Plan.
- Arrangements for the review and independent verification of the Offset Plan, prepared by GHD (2020b) on behalf of Defence.

Additional detail regarding the activities that were implemented for the Orchard Hills Offset Area are presented in the Initial Ecological Survey report (GHD 2020a) and the Offset Plan (GHD 2020b).

The 2019 BODP Implementation report included a preliminary assessment of the quantum of offset obtained from the Orchard Hills Offset Area based on the unverified results of the Initial Ecological Survey (GHD 2020a). This 2020 BODP Implementation report includes the final, confirmed quantum of offset obtained from the Orchard Hills Offset Area based on the independently verified results presented in the Initial Ecological Survey report (GHD 2020a), along with the findings of the audit of this report. The confirmed quantum of offsets expected to be generated at the Orchard Hills Offset Area (as presented in the Initial Ecological Survey report (GHD 2020a) has been adjusted to reflect a 20% reduction in the number of credits generated at a publicly owned site where there is an in-perpetuity existing conservation obligation, as per the BAM (2020).

The confirmed quantum of offset is presented in Section 3.2.

Biodiversity Working Group

On 21 September 2018, representatives from the Department of Defence (Defence) and Infrastructure signed the Orchard Hills MOU and a Biodiversity Working Group was formed. The Biodiversity Working Group's role includes reviewing the progress of the site and associated documentation and the development and implementation of the Defence Biodiversity Offset Plan.

The working group met on a number of occasions during the reporting period and a summary of those meetings are below.

Meeting 1 (25 September 2019)

Representatives from Defence and Infrastructure attended this meeting and the main discussion points included:

- Process map of BODP and the NSW Strategic Impact Assessment.
- Timelines for delivery of major Orchard Hills reports, public communications and activities.
- Agreement to the Statement of Requirement at Orchard Hills.
- Details of the Statement of Requirements for procuring lead contractor for biodiversity restoration.
- Agreement to prepare a joint brief to include biodiversity improvements, opportunities, jobs, Indigenous participation, local impacts and other relevant Cities Deals linkages.
- Discussion on the potential to translocate *Pimelea spicata* plants collected from the WSI site (see section 2.3) to Orchard Hills.

- Update on the status of the quantum of biodiversity offsets acquired to date.
- Discussion about consultation with Environment and their satisfaction with the biodiversity offsetting to date.

This meeting included a site visit WSI. The tour and discussion of the airport included the Construction Impact Zone, the Environmental Conservation Zone, streamlines, surface water management, environmental management and areas of cultural significance and artefacts.

Meeting 2 (26 March 2020)

Biodiversity Working Group Representatives from Defence and Infrastructure attended this meeting and the main discussion points included:

- EPBC Act review - the Major Transport and Infrastructure Projects (MT&IP) division of Infrastructure provided a submission to Environment to inform the review.
- Review of the draft Offset Plan and provision of comments.
- Development of the scope of works for implementing the augmentation of the Orchard Hills biodiversity offsetting area.

Meeting 3 (5 June 2020)

Biodiversity Working Group Representatives from Defence and Infrastructure attended this meeting and the main discussion points included:

- Finalise the draft scope of work for the Orchard Hills Offset site.
- Commence processes for procurement for the statement of works.
- Arrange independent review and verification of the Offset Plan.
- Respond to the comments on the review of the Offset Plan.
- Prepare for the final Offset Plan.

Meeting 4 (14 September 2020)

Biodiversity Working Group Representatives from Defence and Infrastructure attended this meeting and the main discussion points included:

- Defence to decide on improvements to the Offset Plan and update accordingly.
- Defence and Infrastructure to develop a timeline for procurement and reporting requirements from August to August.
- Defence and Infrastructure to further develop the Communication Strategy; including talking points, contingency planning, social media, media strategy, funding impacts (deliverables).
- The approach to drafting a joint brief to Ministers about biodiversity offsetting and biodiversity augmentation.
- Arrangements for assessment of tenders for the statement of works.

This meeting was held after the reporting period, but the above information is included for completeness.

Credit calculation adjustments following boundary change of the Orchard Hills Offset Area

Since completion of the Initial Ecological Survey Report (GHD 2020a), there has been a minor boundary change to the Orchard Hills Offset Area. This has resulted in an increase to the offset area of about 27 hectares. This change in boundary has resulted in a slight increase to the number of credits that could potentially be generated at the Orchard Hills Offset Area, when

compared to the results presented in the Initial Ecological Survey Report (GHD 2020a). The change in the number of credits relates to ecosystem credits, as well as species credits determined using species polygons (refer to Figure 6).

Credit calculation adjustments following audit of this 2020 BODP Implementation Report

The credit calculations provided to the auditor of this 2020 BODP Implementation Report reflected the results of the Initial Ecological Survey report (GHD 2020a), which had been independently verified. Despite this verification, upon review of this 2020 BODP Implementation Report, the auditor made the observation that the concept of 'existing obligations and management actions' as defined by section 12.10 of the NSW BioBanking Assessment Methodology (OEH 2014) should apply to any credits (ecosystem or species) generated within the CHL area at the Orchard Hills Offset Area (explained in greater detail below).

The CHL area at Orchard Hills is listed as 'Orchard Hills Cumberland Plain Woodland, The Northern Rd, Orchard Hills, NSW, Australia', and it is included on the CHL as it supports some of the "*least disturbed and largest remaining remnant of Cumberland Plain Woodland*" (DAWE 2021). Figure 4a and b shows the site layout of the Orchard Hills Offset Area, including the portion of the site included in the CHL. Listing on the CHL requires that "*Commonwealth agencies must make plans to protect and manage the Commonwealth Heritage values of Commonwealth Heritage places*" (s.341A of the EPBC Act). The CHL is the subject of a Heritage Management Plan (Godden Mackay Logan, 2013), which was prepared to meet this EPBC Act requirement, as well as various other management plans relating to the maintenance of biodiversity values on site. Given the existence of these plans, and the requirement under the EPBC Act that a Commonwealth Agency (ie, Defence) manage those values, the auditor determined that there was indeed 'existing obligations and management actions'.

As part of this observation, the auditor recommended that a discount rate be applied to all credits generated within the CHL area (refer to Figure 4a and b and Figure 6a and b). No formal comment was made by the auditor on an appropriate discount rate to apply. There is no industry-accepted standard discount rate for publicly owned land under the NSW BioBanking Assessment Methodology (OEH 2014); instead, a range of discount rates have been applied over time to projects assessed using the NSW BioBanking Assessment Methodology (OEH 2014). To provide consistency with the current methodology for determining the number and type of biodiversity credits that would be generated at a site, it was decided by GHD that a 20% discount rate should be applied, based on the standards provided in Table 9 of the BAM 2020 (DPIE 2020b). The credits presented in this report reflect the application of that discount.

As a result of the discount, Infrastructure has an unexpected shortfall for some offset obligations, when compared to the calculations presented in the 2019 BODP Implementation Report and the Initial Ecological Survey report (GHD 2020a) of the credits expected to be generated at the Orchard Hills Offset Area.

An additional observation resulting from the audit of this 2020 BODP Implementation Report, related to the use of credits generated in management units of the Orchard Hills Offset Area where vegetation was proposed to be managed as native grassland or scrub, without revegetation of midstorey or canopy species. The auditor has recommended that use of credits generated in these management units should only contribute to the offset contribution for Grey-headed Flying-fox or Swift Parrot foraging habitat if it can be demonstrated that natural regeneration in these areas is going to result in the establishment of treed habitat suitable for these species. Monitoring and review of the success (or otherwise) of natural regeneration in these areas should be carried out via the 5-year review of the Orchard Hills Offset Plan and audits of future BODP Implementation Reports.

Figure 5 shows the management units at the Orchard Hills Offset Area. Management Unit C corresponds with the action 'maintain and enhance native grassland or scrub'. These areas

should be the focus of review and audit as indicated above, and, if it appears that natural regeneration of overstorey and midstorey species within Management Unit C is unlikely to occur, then the number of credits contributed by the Orchard Hills Offset Area should be adjusted accordingly. Table 5-1 of the DEOH Offset Plan notes that the management of Unit C would focus on "*facilitating natural regeneration of areas towards woodland or forest structure while maintaining areas of species rich grasslands*", amongst other actions.

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Defence Establishment Orchard Hills
- Offset Area
- Easement
- Commonwealth Heritage List Area
- Fire trail
- Unsealed road / track
- Waterway
- No crossing

Department of Infrastructure, Transport, Regional Development and Communications
2020 BODP Implementation Report

Job Number	23-16681
Revision	Final
Date	10 Oct 2021

Orchard Hills Offset Area Site Layout Northern buffer area

Figure 4a

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Level 15, 133 Castlereagh Street Sydney NSW 2000 **T** 61 2 9239 7100 **F** 61 2 9239 7199 **E** sydmail@ghd.com.au **W** www.ghd.com.au

Data source: Aerial Imagery - Nearmap 2021 (image date - 08/06/2020, image extracted - 03/07/2020), Offset sites - GHD 2017; General topo - NSW LPI DTDB 2015 & 2012; Roads & tracks - Department of Defence. Created by:jrprice

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Defence Establishment Orchard Hills
- Offset Area
- Easement
- Commonwealth Heritage List Area
- Fire trail
- Unsealed road / track
- Waterway
- No crossing

Department of Infrastructure, Transport, Regional Development and Communications
2020 BODP Implementation Report

Job Number	23-16681
Revision	Final
Date	10 Oct 2021

Orchard Hills Offset Area Site Layout Southern buffer area

Figure 4b

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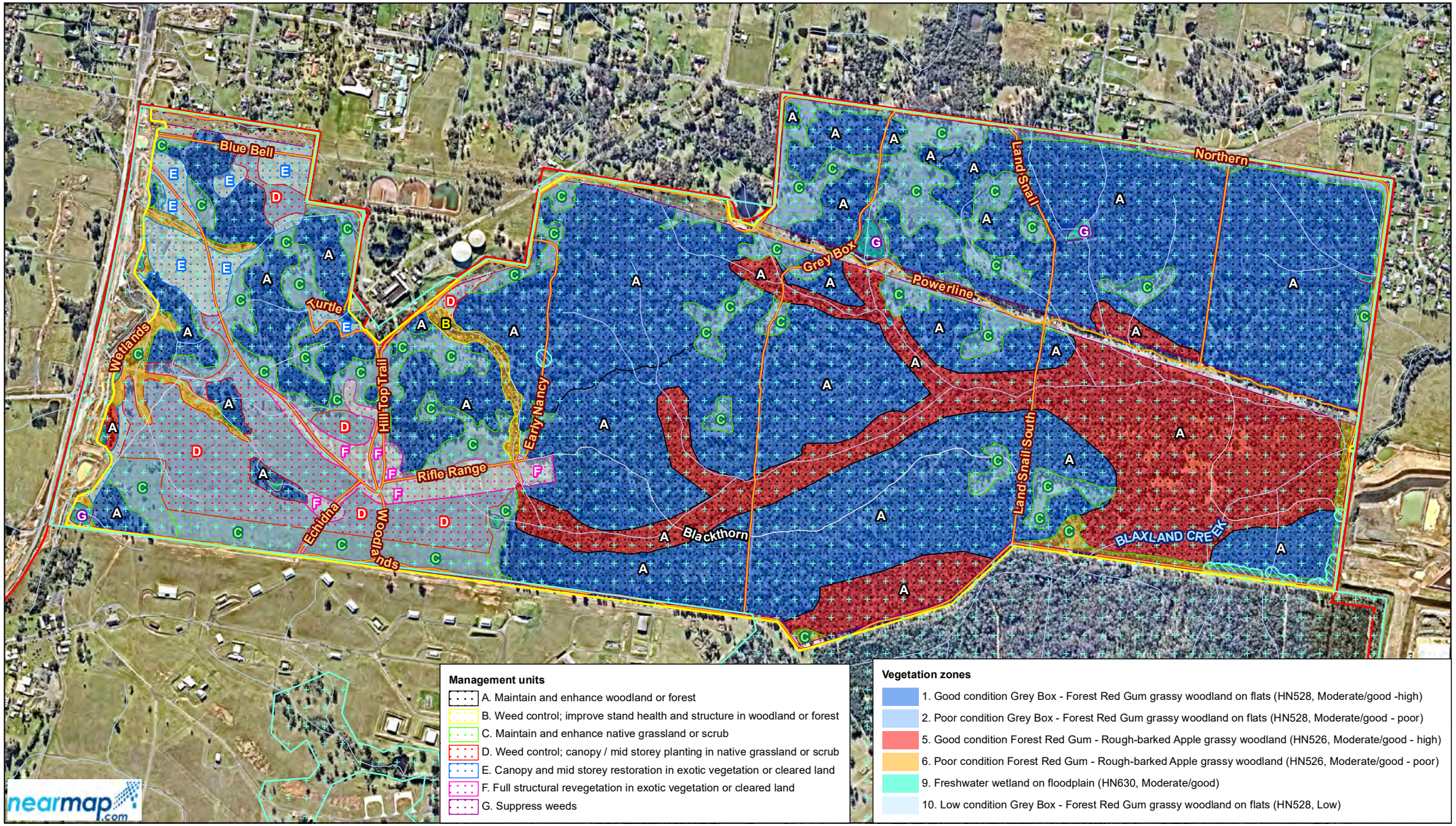

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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Defence Establishment Orchard Hills
- Offset Area
- Commonwealth Heritage List Area
- Threatened flora habitat
- Waterways
- Fire trail
- Unsealed road / track

Department of Infrastructure, Transport, Regional Development and Communications
2020 BODP Implementation Report

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Revision Final
Date 10 Oct 2021

Orchard Hills Offset Area
Management Units - Northern buffer area

Figure 5a

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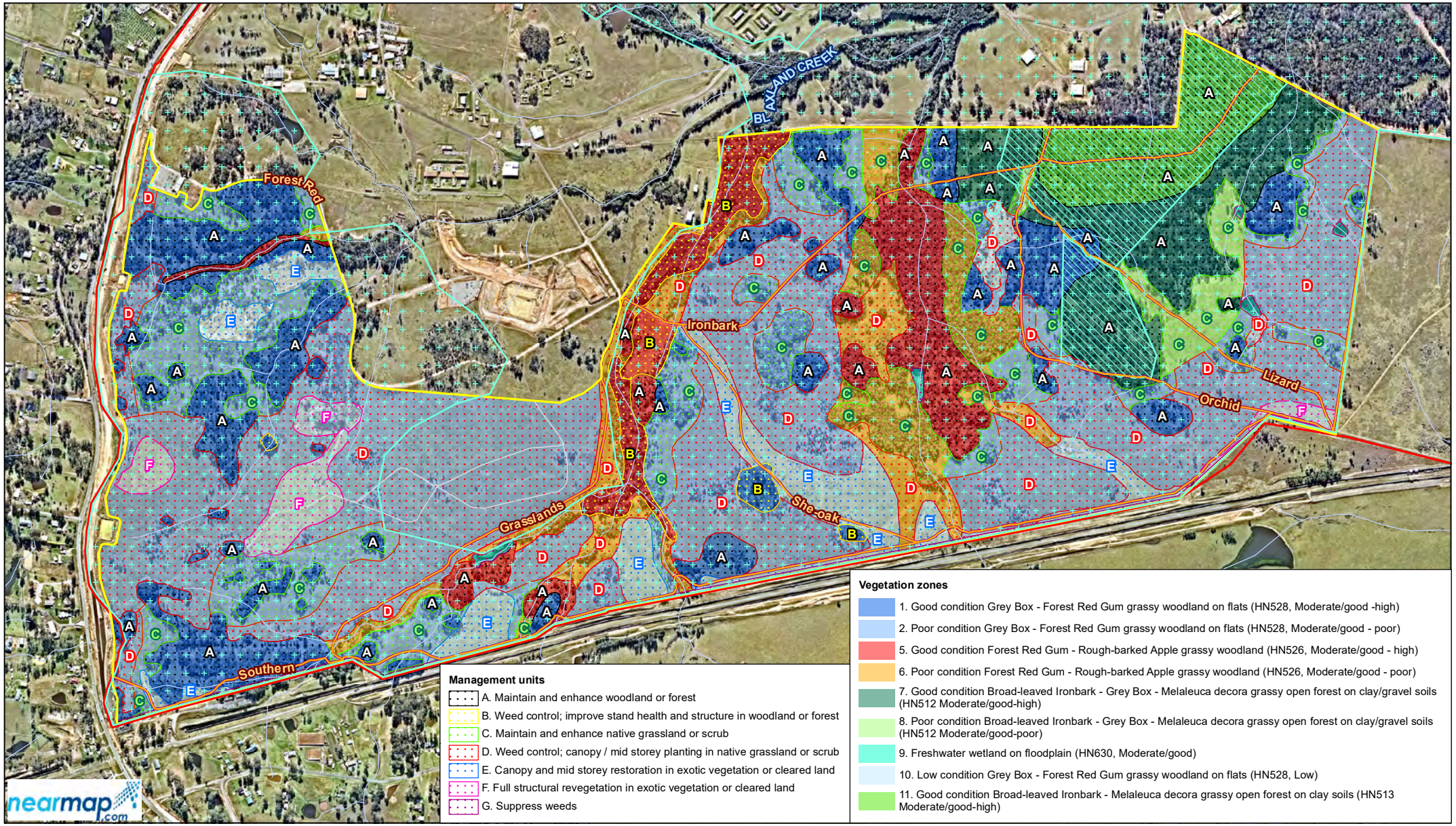

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Map Projection: Transverse Mercator
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Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Defence Establishment Orchard Hills
- Offset Area
- Commonwealth Heritage List Area
- Threatened flora habitat
- Waterways
- Fire trail
- Unsealed road / track

Department of Infrastructure, Transport, Regional Development and Communications
2020 BODP Implementation Report

Job Number	23-16681
Revision	Final
Date	10 Oct 2021

Orchard Hills Offset Area
Management Units - Southern buffer area Figure 5b

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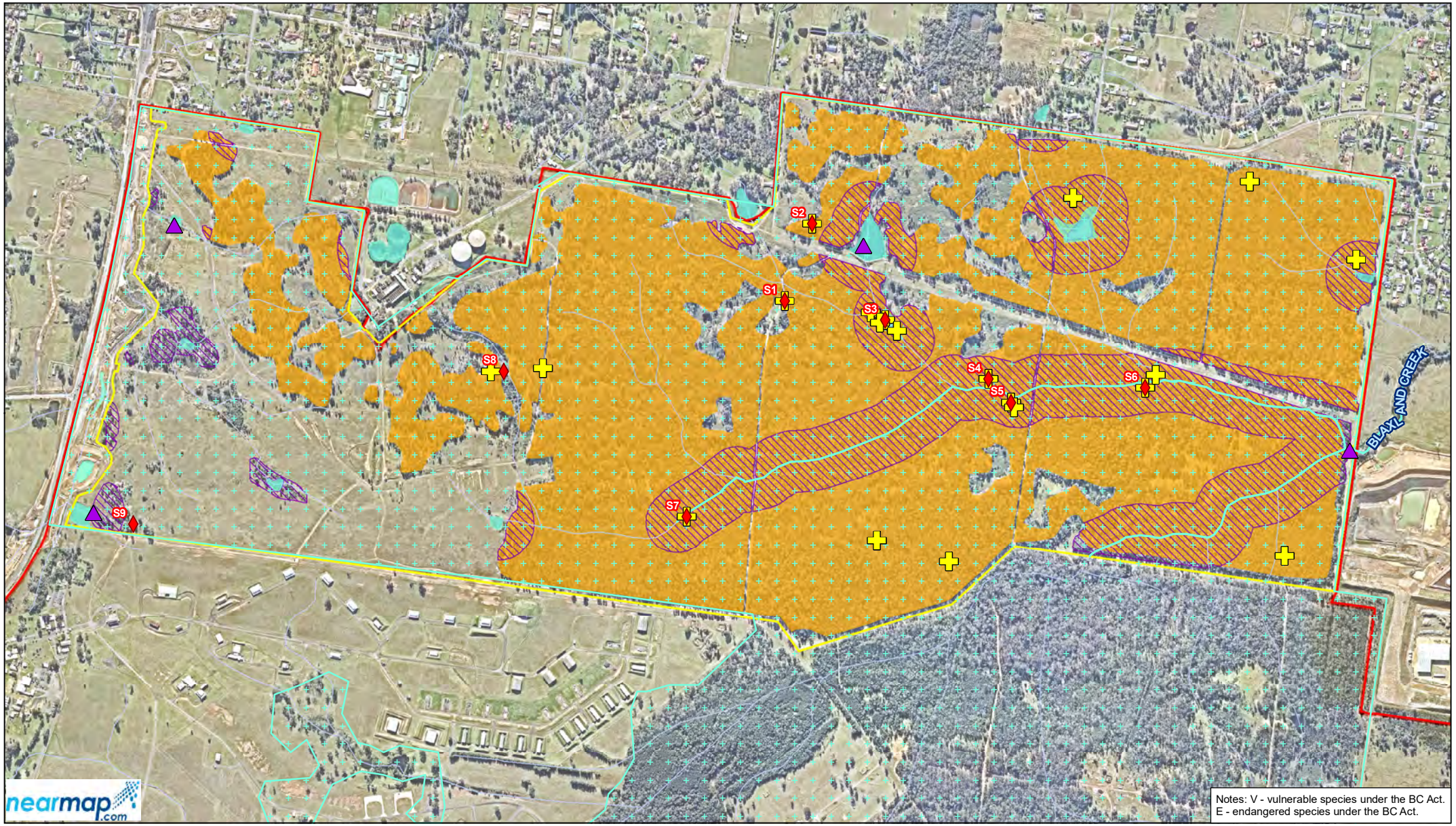

Paper Size A4

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Defence Establishment Orchard Hills
- Offset Area
- Commonwealth Heritage List Area
- Waterways
- Permanent waterway (within 100m)
- Permanent waterbody (within 100m)
- Rapid species credit assessment

Threatened species

- Cumberland Plain Land Snail (E)
- Southern Myotis (V)
- Cumberland Plain Land Snail species polygon
- Southern Myotis species polygon

GHD

Department of Infrastructure, Transport, Regional Development and Communications
2020 BODP Implementation Report

Job Number	21-26204
Revision	A
Date	10 Oct 2021

Orchard Hills Offset Area Species Polygons - Northern buffer area

Figure 6a

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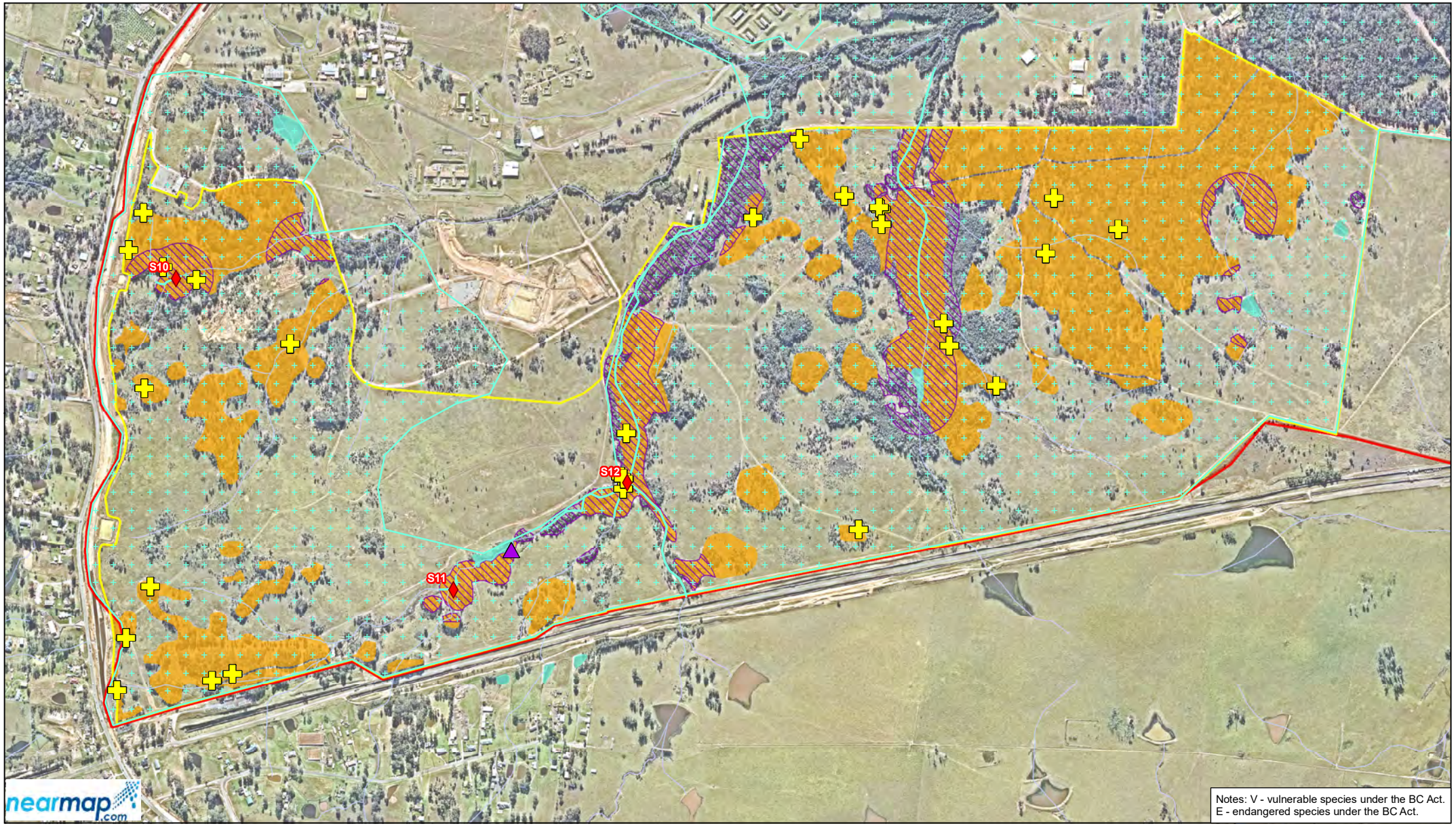

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Defence Establishment Orchard Hills
- Offset Area
- Commonwealth Heritage List Area
- Waterways
- Permanent waterway (within 100m)
- Permanent waterbody (within 100m)
- Rapid species credit assessment

Threatened species

- Cumberland Plain Land Snail (E)
- Southern Myotis (V)
- Cumberland Plain Land Snail species polygon
- Southern Myotis species polygon

GHD

Department of Infrastructure, Transport, Regional Development and Communications
2020 BODP Implementation Report

Job Number 21-26204
Revision A
Date 10 Oct 2021

Orchard Hills Offset Area Species Polygons - Southern buffer area

Figure 6b

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Data source: Aerial Imagery - Nearmap 2021 (image date - 08/06/2020, image extracted - 03/07/2020), Offset sites - GHD 2017, Cumberland Plain Conservation - OEH 2016; General topo - NSW LPI DTDB 2015 & 2012. Created by:jrprice

2.2 Purchase of biodiversity credits

2.2.1 Overview of proposal

As outlined in section 6.2 of the BODP, purchase and retirement of credits was proposed as a means of delivering direct offsets. NSW biodiversity credits (credits generated by either the biobanking or biodiversity assessment method) could contribute to the offset requirement of the BODP.

Biodiversity credits would be purchased and retired to satisfy the remaining direct offset requirement of the BODP, once the offsets generated at the Orchard Hills Offset Area have been calculated.

The NSW biodiversity credit scheme is discussed in greater detail below. Identifying suitable biodiversity credits entails a desktop assessment and consultation process, which has been ongoing since the BODP was approved. This involves identifying potential stewardship sites that could, or existing stewardships sites that do, generate biodiversity credits that would satisfy the offset requirements of the BODP, as discussed in Section 2.2.2.

Biodiversity credit schemes

The NSW Biodiversity Offset Scheme (BOS) – and Biodiversity Assessment Methodology (BAM), formerly known as BioBanking, provides a mechanism for biodiversity offset sites to be securely titled under a legally binding conservation covenant known as a Biodiversity Stewardship Agreement (BSA), formerly known as a BioBanking agreement. This system expresses the conservation gain delivered through conservation and management of the offset site in terms of biodiversity credits and provides rules for the like-for-like trading of credits to offset the impacts of a development. A developer can purchase and retire biodiversity credits from a BSA site to secure an offset.

A BSA is the strongest conservation covenant available on private land in NSW and, along with the BAM, provides for sound calculation of offset contributions, a management plan, secure and performance-based funding, monitoring and oversight by the NSW Biodiversity Conservation Trust (BCT, formerly Nature Conservation Trust). This combination of attributes makes the BOS an effective means of delivering direct offsets and the purchase of appropriate biodiversity credits through the scheme will make a substantial contribution to the implementation of the BODP. Members of the Biodiversity Experts Group were generally supportive of this approach.

The FBA methodology includes flexibility with respect to some ‘like for like’ criteria for direct offsets. This flexibility allows trading of ecosystem credits for closely related vegetation types if they are in the same vegetation class and are at least as extensively cleared (ie have the same or greater conservation significance).

All references to credits in this report are to BioBanking Assessment Method (BBAM) credits, noting that sites assessed more recently with the Biodiversity Assessment Method (BAM) would feature different credit generation rates and prices. BBAM credits can be directly compared with the credit calculations presented in the BODP.

2.2.2 Summary of 2020 implementation activities

Identification of offsets

A broad desktop assessment and consultation program was performed throughout the preparation of the BODP to identify potential direct offsets for WSI. This desktop assessment process will continue through the implementation phase of the BODP up until the full quantum of biodiversity offsets are implemented in accordance with the plan.

The inputs to the desktop assessment conducted in the 2020 implementation period include:

- The 'Biodiversity credits register' (OEH 2020a), which identifies existing BSA sites with biodiversity credits that could offset impacts on the affected threatened biota and that are available for sale.
- The 'Expression of interest register' (OEH 2020b), which identifies potential offset sites that could generate suitable biodiversity credits in the future.
- Available biodiversity assessment reports for existing and potential offset sites, which describe the biodiversity values of the sites and confirm the extent and quality of habitat for the affected threatened biota.
- Consultation with private landowners, ecological consultants, the Biodiversity Conservation Trust (BCT) and other stakeholders to identify or to describe potential offset sites.

While retaining a focus on value for money for any credits purchased, the following biodiversity criteria were used to confirm direct offset sites during the 2020 implementation period:

- Presence of occupied *Pimelea spicata* habitat or habitat for other species-credit species.
- Presence of habitat for the Grey-headed Flying-fox based on the presence of known food tree species and critical habitat criteria listed in recovery plans for the species.
- Presence of habitat for the Swift Parrot based on the presence of known food tree species and critical habitat criteria listed in recovery plans for the species.

Presence of other biodiversity values appropriate to offset the airport's impacts on plants, animals and their habitats (for example *Myotis macropus* habitat or freshwater wetlands (HN630 and tradeable vegetation types). Tradeable vegetation types have been identified for HN630 in the Statement of assessment of reasonable equivalence of biodiversity credits obtained by Infrastructure for outstanding offset obligations as being:

- Coastal Freshwater Lagoons with a percent cleared value ≥70% and <90%.
- Coastal Freshwater Lagoons vegetation class.
- Freshwater Wetlands vegetation formation.
- Within the Cumberland and any IBRA subregion that adjoins the subregion within which the development occurs and any such subregion that is within 100 km of the outer edge of the impact site.
- Land that is within the Cumberland Conservation Corridor or other identified priority conservation lands or wildlife corridors or that could connect fragmented patches of habitat.
- Land that is already set aside as a BSA site and that has suitable biodiversity credits for sale; that is likely to be set aside as a BSA site or otherwise protected under a conservation covenant; or that may be available for sale and would be suitable for the purposes of establishing a new offset site.

Section 10.5.4 of the FBA (OEH ,2014a) provides for circumstances where the offset rules and supplementary measures for offsets of ecosystem credits can be varied, or the 'variation rules'. These rules allow a consent authority to approve a variation to the offset rules, by allowing ecosystem credits created for a PCT from the same vegetation formation as the required credit type to be used, if:

a) all reasonable steps to secure a matching ecosystem credit have been taken by the proponent.

b) the required ecosystem credit is not for a PCT associated with a CEEC listed on the TSC Act or an ecological community listed on the EPBC Act.

c) the PCT from the same vegetation formation has a percent cleared value of the PCT in the major catchment area equal to or greater than the percent cleared of the PCT to which the required ecosystem credit relates.

d) where the required ecosystem credit is for a PCT that is associated with a CEEC/EEC, the PCT from the same formation is also associated with an CEEC/EEC.

GHD have maintained a 'register of offsets' throughout the implementation phase of the BODP including location, ownership, biodiversity values and available credits data for candidate offset sites.

Data was compiled from the NSW BioBanking Credits Register, direct consultation with landowners and available reports. The register of offset sites was updated and maintained with the results of the desktop review and initial consultation.

Purchase of credits

As foreshadowed in section 6.2.1 of the BODP, Infrastructure purchased a tranche of biodiversity credits in 2020 as a way of securing a proportion of its offset obligation. The method of purchase utilised by Infrastructure was via direct approaches to landholders.

Successful vendors needed to satisfy both Infrastructure's price and location requirements. That is, the offers needed to be under the agreed capped price and the credits offered had to be associated with areas which Infrastructure considers could connect fragmented patches of habitat. In addition, they must be value for money. Other considerations included:

- Infrastructure's 'targets' for number of credits to be purchased (as noted above), which took account of the offset obligations under the BODP and offsets secured during the 2019 BODP implementation period.
- The consideration of package offers, whereby Infrastructure was offered the opportunity to purchase the credits at a substantially lower 'per credit' price subject to all credits being purchased in a single transaction.

The outcome of this process was that Infrastructure purchased:

- 29 *Dillwynia tenuifolia* species credits purchased from the Castlereagh biobank (agreement ID BA375).
- 4 PCT 781/ HU533 ecosystem credits that can be presented as offsets for freshwater wetlands (HN630) from the BA393 biobank.

The total cost was $19,237.62 (GST Inc.) across purchase dates in April and August 2020. Credit transfer reports confirming the purchase of the credits by Infrastructure have been provided to the auditor.

The direct offset sites associated with the tranche of biodiversity credits purchased in the 2019/2020 financial year are shown on Figure 3 series. The quantum of offset associated with the credits purchased in 2020 is presented in Section 3.2.as part of the total quantum of direct offsets secured.

Assessment of offset sites

Each of the offset sites associated with the tranche of biodiversity credits purchased in the 2020/2021 financial year were approved Biodiversity Stewardship Sites assessed under the former BioBanking assessment methodology 2014 (BBAM). As such they did not require any additional survey or assessment to confirm the quantum of offset.

Confirmation and securing of offsets

Infrastructure purchased a substantial tranche of biodiversity credits in March and July 2019 as a way of securing a proportion of its offset obligation. These 'tranche 1' credit purchases were made prior to the confirmation of the quantum of offset from other sources and were documented in the 2019 BODP Implementation report. Notably the 2019 report included a preliminary assessment of the quantum of offset secured at the Orchard Hills Offset Area and did not account for the quantum of offset associated with other compensatory measures (GHD 2019). As flagged in the 2019 report, ownership of credits was transferred from vendors to Infrastructure. However, Infrastructure has not yet retired the credits. The appropriate number of credits will be retired by Infrastructure, once the total offset requirement has been obtained. Any surplus credits could be transferred to another party by Infrastructure, if there is a surplus at the end of the BODP Implementation process.

Section 3.2 of this 2020 BODP Implementation report includes the confirmed quantum of offset obtained to date, including greater than 100% of the total offset requirement for some matters. In some instances, purchases of greater than 100% of the total offset requirement for some matters was unavoidable, in order to secure certain types of credits that were sold as part of a 'bulk lot'. Infrastructure have also already fully funded the Greening Australia Cumberland Seed Hub which may contribute up to 10% of the total offset requirement as other compensatory measures (refer to Section 3.3). Infrastructure will secure the required quantum of offset and so any surplus tranche 1 credits may not be retired and may instead be transferred to another party and/or used to offset the impacts of another development proposal, at Infrastructure's discretion.

A summary of the tranche 1 credits to be secured (pending retirement) in the 2020 BODP implementation period is presented in Table 6. The outcome is that the following credits were secured (pending retirement) in the 2020 BODP implementation period:

- 3,805 HN529 ecosystem credits that also comprise Cumberland Plain Woodland and Grey-headed Flying-fox habitat and Swift Parrot foraging habitat.
- 254 HN526 ecosystem credits that also comprise Grey-headed Flying-fox habitat and Swift Parrot foraging habitat.

The contribution of the tranche 1 credits obtained in 2020 to the total quantum of offset in the 2020 BODP Implementation period is presented in Section 3.2.

Table 6 Tranche 1 credits to be secured

Credit type	Total Tranche 1	Montpelier biobanks (BA336, BA235, BA358, BA399)	Williamswood (BA147)	Lot 502 Roscrea (BA256)	Sunnyside (BA321)	Hardwicke stage 2 (BA213)	Cawdor Heights (BA284)	Hampden Vale (BA250)	Flaggy Creek stage 2 (BA354)
HN529 and HN528 ecosystem credits secured in 2020	3,805	528	163	0	295	1,277	409	794	339
HN526 ecosystem credits secured in 2020	254	0	248	6	0	0	0	0	0
Total credits secured in 2020	**4,059**	**528**	**411**	**6**	**295**	**1,277**	**409**	**794**	**339**

Notes: HN529 and HN528 ecosystem credits comprise Cumberland Plain Woodland and Grey-headed Flying-fox habitat and Swift Parrot foraging habitat; and HN526 ecosystem credits also comprise Grey-headed Flying-fox habitat and Swift Parrot foraging habitat; assuming credits may be traded without regard to the current condition of the vegetation zone(s) associated with the credits as discussed in section 1.6.1, as these areas will become treed in the future, as a result of proposed management actions.

2.3 Threatened flora propagation program

2.3.1 Overview of proposal

As part of the work required to meet the Airport Plan biodiversity conditions, the Australian Botanic Gardens, Mount Annan (ABGMA) and Royal Botanic Gardens and Domain Trust (RBGDT) have been engaged by GHD as a sub-consultant to deliver a Threatened Flora Propagation Program (TFPP) (refer to ABGMA, 2019).

Located in Western Sydney, ABGMA is the native plant garden of the Royal Botanic Garden, Sydney, and specialises in the conservation and seed storage of NSW threatened species. The RBGDT Evolutionary Ecology section is responsible for genomic studies across native species and application of genomic technology to ecosystems, including threatened species. They are currently expanding a new flagship project, Restore & Renew, and using technical and analytical approaches developed to support the management and conservation of threatened species.

Condition 33 of the Airport Plan requires the delivery of a TFPP, developed in consultation with Environment, OEH (now the BCD), and ABGMA. The offset package, as presented in the finalised 2016 airport EIS, had previously recommended that the BODP include consideration of the salvage and propagation of the known local populations of *Pultenaea parviflora* and *Marsdenia viridiflora* subsp. *viridiflora* and any other threatened plants detected at the airport site (GHD 2016b). Consultation with Environment during the preparation of the offset package for the 2016 airport EIS confirmed that the TFPP may be considered as a proportion of the other compensatory measures component of the BODP. To qualify for this approach, the program must be undertaken as part of a sound scientific framework, with adequate monitoring and reporting that genuinely increases the knowledge and understanding of the species (DSEWPaC 2012).

The TFPP meets the requirements for other compensatory measures presented in Appendix A of the EPBC Act Offsets Policy with respect to *Pimelea spicata* because it:

- Will improve the viability of *Pimelea spicata*, by:
  - improving the effectiveness and knowledge of propagation techniques for the species; and
  - maintaining an *ex situ* population of the species and providing cuttings and seed to help establish or expand populations of the species across Western Sydney, including for restoration and rehabilitation projects across western Sydney.
- Is transparent (through monitoring and reporting requirements included in the contract between ABGMA and GHD and reporting in the Department's BODP reports), scientifically robust (through best-practice collection, production and genetic analysis techniques) and timely (in that stage 1 of the TFPP commenced in mid-2017, over one year prior to the expected commencement of main construction works for the airport).
- Is being undertaken by a suitably qualified organisation, in ABGMA and RBGDT.
- Targets actions identified in the *Pimelea spicata* R. Br. Recovery Plan (DEC 2005b). Specifically the genetic research will help address limits to current knowledge and research questions identified in the recovery plan that will assist in the effective conservation of *Pimelea spicata* (DEC 2005b).

The approved BODP presents the TFPP (AGBMA, 2019) as a compensatory measure for the affected threatened species *Pimelea spicata* based on the above criteria and by extension for populations of *Marsdenia viridiflora* subsp. *viridiflora* and *Pultenaea parviflora* on Commonwealth Land.

The Stage 1 TFPP included collection of threatened plant material from the WSI site and seed germination and cutting trials with the aim of producing up to 500 plants of *Pultenaea parviflora*, 500 plants of *Marsdenia viridiflora* subsp. *viridiflora* and 1000 plants of *Pimelea spicata* in 50 mm forestry tube size pots. The Stage 1 TFPP included testing of a number of seed and cutting treatments to help identify the optimal approach to propagation of the species. The program would also directly contribute to translocation and ecosystem restoration activities by providing source populations of these threatened plants (as referenced in section 8.5 of the Western Sydney Airport Biodiversity Construction Environmental Management Plan (Biodiversity CEMP).

In addition to the requirements of Condition 33 of the Airport Plan, Infrastructure funded the delivery of a broader *Pimelea spicata* research and conservation works program as a compensatory measure for the airport (the Stage 2 TFPP). The RBGDT Evolutionary Ecology section delivered a regional-scale genetic research project to help understand the ecology of *Pimelea spicata* and assist with its conservation (RBGDT, 2019). The objectives of the project were to assess genetic diversity and genetic structure across the remaining distribution of *Pimelea spicata* and investigate possible association between genetic and geographic / environmental diversity.

Infrastructure have also arranged for ABGMA to expand the TFPP to help establish a longer-term potted *ex situ Pimelea spicata* collection at the Mount Annan nursery. This potted collection would provide a source of cutting material to support any future translocation or amenity planting of the *Pimelea spicata* population from the WSI site once the plants are removed. The proposal is for a potted collection of around 100 plants, comprising 30 genetic individuals, informed by the results of the genetic study and selected to minimise kinship and maximise genetic diversity.

2.3.2 Summary of 2020 implementation activities

Threatened flora propagation activities during the 2020 BODP implementation period were connected to the Stage 2 TFPP *ex situ* potted *Pimelea spicata* population. Establishment and maintenance of the potted *Pimelea spicata* population commenced in the 2018/19 Financial Year along with the delivery of the genetic research program but was subject to the suitability of seasonal conditions for cutting collection.

ABGMA botanists coordinated with RBGDT researchers in April 2019 to identify, sample and tag *Pimelea spicata* at the WSI site and the existing *ex situ* potted WSI collection at Mount Annan. Genomic data drawn from the RBGDT research was used to identify the number of propagules (ie plant material used for the purpose of propagation) and the genotypes that would be targeted to assemble a nursery population based on maximising genetic diversity and fitness.

Severe summer 2019-2020 drought conditions across western Sydney were a major impediment to the harvest of suitable cutting propagation material for the project. As a drought response, the WSI *Pimelea spicata* population has limited above ground vegetative material and individual plants are reduced to the underground lignotuber.

The ABGMA nursery conducted a site inspection on 8 November 2019 to locate and tag target genotypes as determined by genetic study. Only small amounts of above ground foliage were observed and plant material was water stressed and unsuitable for cutting propagation. Propagation of target genotypes was postponed until a substantial rain event had occurred and plants had resprouted.

An inspection was undertaken in February 2020 to gauge the health of the *Pimelea spicata* population and to help coordinate collection activities with the implementation of a related threatened flora translocation program by WSA and future construction at WSI. The inspection revealed limited above ground plant material suitable for collection.

An additional collection was scheduled for March 10th 2020, where material was soft but successfully collected and bagged as a clonal collection, recording NSW numbers and tagged.

Cuttings were returned to the Nursery, where a total of 1689 cuttings were processed across 49 accessions. Throughout the 2020 BODP implementation period in August 2020, the following plant materials were processed and held at the ABGMA:

- 1689 *Pimelea spicata* cuttings were processed across all genetically sampled individuals.
- 449 *Pimelea spicata* in 140 ml round pots, comprising 46 genetically representative genets from the genetic study.
- Up to 100 plants will be selected to form part of the long-term ex situ population. The 100 individuals will be selected to ensure maximum genetic diversity.
- 6100 *Pimelea spicata* seed comprising four collections held in Plant Bank for future research or conservation programs and to help safeguard genetic material representative of the population of the species at WSI.

Once the *ex situ* population has been collected and established, funding would be provided to maintain the collection for a period of five years.

2.4 Greening Australia seed collection and production program

2.4.1 Overview of proposal

In accordance with Condition 32 of the Airport Plan, Infrastructure has entered into an agreement with Greening Australia to contribute funds to the organisation's Cumberland Seed Hub program in Western Sydney. The objective of the program is to deliver a reliable source of native seed for ecological restoration work, with the primary focus on species associated with Cumberland Plain Woodland. Native seed collection includes harvest from Cumberland Plain Woodland and other native plant communities at the WSI site.

The Cumberland Seed Hub project is based around the Richmond High Diversity Production Area and Processing Facility supported by wild collection and other production areas throughout Western Sydney. The hub utilises traditional agricultural techniques to maximise seed yields from around 120 native plant species and is the only high-diversity native seed production facility in the region (Greening Australia 2016). The Cumberland Seed Hub facilitated by the agreement with Infrastructure will enhance conservation actions at offset sites and restoration programs that would directly benefit the species and plant communities affected by the airport. The seed supply program was presented in the BODP as a compensatory measure that contributes to the offset requirement for Cumberland Plain Woodland, *Pimelea spicata* and for plants, animals and their habitats by facilitating ecological restoration of these species and their habitats at offset sites and other lands across Western Sydney.

The agreement with Infrastructure will help Greening Australia increase the output of their seed production areas and the volume of wild collection to facilitate restoration of up to 100 hectares a year by the end of the five-year agreement period (Greening Australia 2016). The Cumberland Seed Hub will continue to operate and to help maintain Cumberland Plain Woodland through the provision of native species-rich seed for many years after the conclusion of the agreement with Infrastructure. The hub infrastructure and stock plants will be maintained by Greening Australia using alternative funding sources on an ongoing basis.

The Richmond High Diversity Production Area and Processing Facility includes a population of *Pimelea spicata* that has been used to harvest cuttings for use in restoration projects. The *Pimelea spicata* production population consists of approximately 50 plants collected from two wild populations at Prospect Reservoir and Narellan. To date, these cuttings have been

successfully used to enhance a Greening Australia complex grassy woodland restoration site at Parrot Farm, Narellan. The number and diversity of source populations of *Pimelea spicata* production plants will increase through the implementation of the program, including source plants from the WSI site produced by the TFPP and held by ABGMA (see Section 2.3).
The Cumberland Seed Hub will continue to operate and to help maintain the viability of *Pimelea spicata* through provision of native plants characteristic of Cumberland Plain vegetation types, as well as *Pimelea spicata* for revegetation projects for many years after the conclusion of the agreement with Infrastructure.

2.4.2 Summary of 2020 implementation activities

With regard to the Greening Australia seed collection and production program, Infrastructure has entered into a contract with Greening Australia for these services, as required under Condition 32(1) of the Airport Plan. The contract details a scheme of annual reports, project plan updates and contractual milestones over the five years of the agreement.

As per condition 32 of the Airport Plan Infrastructure entered into an agreement with Greening Australia in 2017 to contribute funds to the organisation's Native Seed Production Area (SPA) program in Western Sydney. The program focussed on the collection and production of native seed from threatened vegetation communities found on the Cumberland Plain, including native plant communities found at the airport site.

A key focus of the SPA program was to relocate facilities from the existing 4.5-hectare seed production paddock to a leased 15 hectare site nearby on the Western Sydney University campus. For the 12 months from August 2019 to August 2020 a number of key milestones centered on this relocation were completed, namely:

- Installation of in-field and localised irrigation systems.
- Purchase and installation of racking, benches, large format weed matting and raised container beds.
- Connection of potable water and mains electricity to site.
- Installation of septic tank and system.
- Installation of ablution facilities and staff amenities room.
- Installation of a solar windmill for dam aeration.
- Manufacture and installation of a nursery shade house.
- Supply and installation of nursery growing tunnels.
- Supply and installation of seed drying tunnels.
- Installation of seed processing operations shed.
- Installation of machinery shed.

Other activities completed at the SPA included:

- Ongoing maintenance of the existing 4.5-hectare restoration paddock, cropping zones and herb and forbs production areas.
- Development and implementation of field trials for improved weed control techniques, soil and water profile applications and further innovation around alternate restoration techniques.
- Continuation and expansion of wild seed harvest program.

Significant progress on the new SPA is expected over the 2020/21 reporting period, including:

- All beds to be fully planted out by March 2021.
- Purchase of harvesting equipment.
- Installation of humidity controlled cool room.
- Installation of propagation houses.
- Application of recycled water from a drainage network of rainfall fed tanks, a dam, an overflow capture from the dam for water re-use and a windmill aeration system.
- Confirmation of the footprint of the new site which is double the area of the original site set aside for native seed production for restoration projects in the region.

2.5 Research, restoration and rewilding programs

The BODP provides that Infrastructure may also deliver biodiversity offsets for the airport through other forms of direct offsets that deliver a clear conservation outcome but are not linked to a parcel of land that could be secured under an appropriate conservation covenant.

The EPBC Act Offsets Policy acknowledges that, in some situations, there may be difficulties in permanently securing a site for conservation purposes due to the existing tenure of the land, but that there is still the potential to treat such proposals as direct offsets. The Offsets Policy states that such situations will be considered by Environment on a case-by-case basis and, where the security of an offset is diminished, the risk to any protected matters, and subsequently the magnitude of offsets required, will increase (DSEWPaC 2012).

No research, restoration or rewilding programs were undertaken in the 2019-2020 reporting period, but they may be considered for the longer-term implementation of the BODP, through an agreed arrangement or procurement.

Any potential restoration and rewilding projects would consider Niche's restoration and rewilding options analysis paper developed in early 2019 for Infrastructure, the work undertaken by Defence at the Orchard Hill's offset site and Greening Australia restoration projects.

3. Offsets Secured

3.1 Overview of direct offsets secured or confirmed in 2020

The following direct offsets were secured (pending retirement of credits) during the 2020 BODP implementation period:

- 29 *Dillwynia tenuifolia* species credits purchased from the Castlereagh biobank (agreement ID BA375).
- 4 PCT 781/ HU533 ecosystem credits that can be presented as offsets for Freshwater wetlands (HN630) from the BA393 biobank site.

In addition, the quantum of offset associated with the Offset Area at Defence Establishment Orchard Hills was confirmed through the independent technical review of the Initial Ecological Survey report (GHD 2020a). Despite this initial confirmation, the independent audit of this 2020 BODP Implementation Report found that the principle of 'existing obligations and management actions' as defined by section 12.10 of the NSW BioBanking Assessment Methodology (OEH, 2014) should be applied to credits generated within the Commonwealth Heritage List area at the Orchard Hills Offset Area. As such, a 20% discount rate was applied to all credits generated within this portion of the site, in line with the standards set out in Table 9 of the BAM 2020 (DPIE, 2020b) for publicly owned land (refer to Section 2.1.2).

The airport site, Orchard Hills Offset Area and the direct offset sites associated with biodiversity credits purchased in the 2019 and 2020 BODP implementation period are shown on Figure 3 series.

3.2 Total quantum of direct offsets

The total quantum of offset for the affected threatened biota and for plants, animals and their habitat secured in the 2020 BODP implementation period is summarised in Table 7. Consultation with Environment has confirmed that in implementing the BODP, the relative contributions of each offset proposal can be determined through either the EPBC Act offset assessment guides or credit calculations using NSW methodologies. As such Table 7 includes a summary of the ecosystem credits that are equivalent to the protected matters 'Cumberland Plain Woodland' and 'Grey-headed Flying-fox habitat and Swift parrot foraging habitat'.

Notably the quantum of offset secured in the 2019 and 2020 implementation years includes approximately:

- 103 percent of the total offset requirement for Cumberland Plain Woodland (HN528 and HN529).
- 84 percent of the total offset requirement for River Flat Eucalypt Forest (HN526).
- 197 percent of the total offset requirement for Shale-gravel Transition Forest (HN512).
- 102 percent of the total offset requirement for Grey-headed Flying-fox habitat and Swift parrot foraging habitat and each of the component vegetation and ecosystem credit types in the WSI impact area.
- 100 percent of the total offset requirement for the species credit matters Cumberland Plain Land Snail, *Pultenaea parviflora* and the *Marsdenia viridiflora* subsp. *viridiflora* endangered population.

At this stage of the implementation of the BODP there are remaining offsets to be secured for *Dillwynia tenuifolia*, *Pimelea spicata,* River Flat Eucalypt Forest (HN526), Freshwater Wetlands on Floodplains (HN630) and Southern Myotis.

The percentage of offsets that have been secured differs in this 2020 BODP Implementation Report from those presented in the 2019 BODP Implementation Report for the following reasons:

- The numbers presented in the 2019 BODP Implementation Report were based on EPBC Act offset guide calculations, while the numbers presented in this 2020 BODP Implementation Report are based on FBA credits.
- Boundary changes at the Orchard Hills Offset Area following review and audit of the draft Initial Ecological Survey, resulting in modifications to the number and type of credits generated.

3.3 Other compensatory measures

The approved BODP confirmed that the Greening Australia Native Seed Production Area will be presented as a compensatory measure once 90% of the total offset requirement has been secured as direct offsets. At this stage of the implementation of the BODP, the 90% minimum for direct offsets of the total offset requirement has not been secured, and so the value of the Greening Australia Seed Production Area program as a compensatory measure has not yet been calculated. Once the 90% threshold is reached, offset calculations will be expressed in terms of biodiversity credits using the approach outlined in Section 1.6.2 for ecosystem credits associated with vegetation of the Cumberland Plain that would be directly benefited by the production of seed at the Greening Australia Seed Production Area (i.e. the woodland and forest vegetation types HN528, HN529, HN512 and HN526, but not freshwater wetlands, HN630 or species credits).

Spreadsheets documenting the direct offsets secured and offset calculations for other compensatory measures have been provided to the auditor along with this 2020 BODP Implementation Report. The auditor has verified the formulae and data provided in these spreadsheets along with the summary of offset contributions presented in this 2020 BODP Implementation Report. Revisions have been made to credit generation calculations where necessary based on the findings of the auditor. The offset calculations for the Greening Australia Seed Production Area as a compensatory measure will be reported in future Implementation Reports once the 90% direct offsets minimum threshold is reached.

3.4 Contribution to regional conservation priorities

Condition 30.(7) of the Airport Plan states that the BODP should capitalise wherever possible on opportunities to improve connectivity or contribute to Commonwealth, state or local government initiatives to secure offsets with strategic value.

Land within the Orchard Hills Offset Area is recorded on the Commonwealth Heritage List as a Commonwealth Heritage Place for its natural heritage values. Implementation of the Offset Plan (GHD in prep b) over a period of 20 years will provide measurable ecological improvements to the quality of habitat for the affected threatened biota and plants, animals and their habitat at the Offset Area, consistent with the EPBC Act Offsets Policy and building on the Commonwealth Heritage Place listing.

The Orchard Hills Offset Area is located within the Cumberland Conservation Corridor, which is a community-developed proposal that recognises the biodiversity value of conservation and especially connectivity of habitat on the Cumberland Plain. The majority of the Orchard Hills offset site is also recognised as a conservation priority in the *Biodiversity Investment*

Opportunities Map, Mapping Priority Investment Areas for the Cumberland Subregion (BIO Map) (OEH 2015). As such, the Orchard Hills Offset Area represents the conservation of habitat with strategic value.

The EPBC Act offset areas secured up to the end of the 2020 BODP implementation period include 945.32 hectares of land recognised as a conservation priority in BIO Map (OEH 2015). Implementation of the BODP has ensured the following:

- Conservation and improvement of 647.32 hectares of 'core habitat' comprising EPBC Act Cumberland Plain Woodland and other better condition vegetation with a near-natural structure within regional biodiversity corridors.
- Restoration of 505.82 hectares of poorer quality Cumberland Plain Woodland and other derived grassland or scrub and associated increase in the extent and connectivity of habitat within and adjoining these priority lands.

Conservation and management of these areas also:

- Contributes to the following recovery objective and actions identified in the recovery plan for the Grey-headed Flying-fox (DEE 2017):
  - Objective 1: Identify, protect and enhance native foraging habitat critical to the survival of the Grey-headed Flying-fox.
  - Action 1.4: Increase the extent and viability of foraging habitat for the Grey-headed Flying-fox that is productive during winter and spring by planting appropriate species.
- Contributes to the following recovery objectives and actions identified in the recovery plan for the Swift Parrot:
  - Objective 1: To achieve a demonstrable sustained improvement in the quality and quantity of Swift Parrot habitat to increase carrying capacity.
  - Action 2 – Manage and protect Swift Parrot habitat at the landscape scale (Saunders and Tzaros 2011).

The locations of the offset areas in the context of the WSI site and strategic conservation corridors in the Cumberland Plain region are shown on Figure 3 series.

The EPBC Act offset areas secured up to the end of the 2020 BODP implementation period include additional land associated with *Dillwynia tenuifolia* habitat and freshwater wetlands. Conservation and management of these areas, as secured through the purchase of biodiversity credits, would further contribute to regional conservation priorities.

Collectively the direct offsets obtained and secured in the 2020 BODP implementation period will help conserve habitat with strategic value, through the conservation of over 1193 hectares of habitat.

Table 7 Total quantum of offset secured in the 2019 and 2020 BODP implementation periods

Credit type	Credits required [1]	Credits provided by Orchard Hills Offset Area [2]	% provided by Orchard Hills offset area [5]	Biodiversity credits obtained in 2020	Total obtained at end of 2020 BODP implementation period (credit equivalent) [5]	Total BODP implementation % of total requirement [5]
Ecosystem credits						
Total Cumberland Plain Woodland (HN528 high, medium, poor and low and HN529 high and poor)[3]	12,746	9,351	73%	3,805	13,156	103%
Total River Flat Eucalypt Forest (HN526 high, poor and low)	2,661	1,979	74%	254	2,233	84%
Total Shale-gravel Transition Forest (HN512 high and poor and HN513 high)	359	709	197%	0	709	197%
Total equivalent ecosystem credits for Grey-headed Flying-fox habitat and Swift Parrot foraging habitat[3, 4]	15,766	12,039	76%	4,059	16,098	102%
Freshwater wetland (HN630)	926	41	4%	4	45	5%
Species credits						
Pimelea spicata	n/a	0	0%	0	0	0%
Cumberland Plain Land Snail	2,441	2,799	115%	0	2,799	115%
Dillwynia tenuifolia	540	409	76%	29	438	81%
Marsdenia viridiflora subsp. *viridiflora* endangered population	5,800	14,512	250%	0	14,512	250%
Pultenaea parviflora	60	7,486	12477%	0	7,486	12477%
Southern Myotis	1,617	759	47%	0 [6]	759	47%

Notes: 1) based on Framework for Biodiversity Assessment credit calculations in the approved BODP (DIRD 2018). All credits expressed as FBA/BBAM credits.

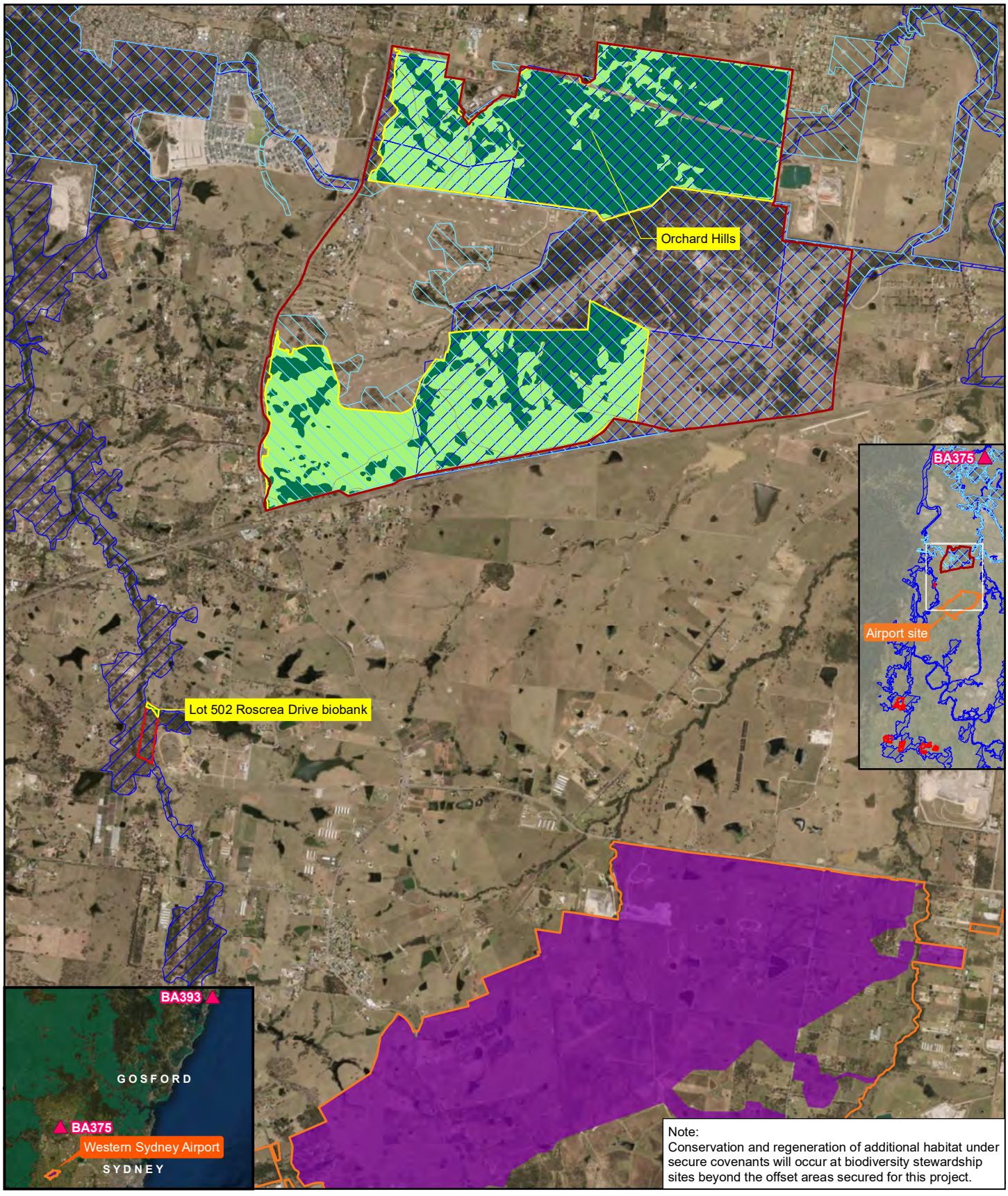
2) based on the approved Orchard Hills Initial Ecological Survey Report as updated to reflect addition of land to the Offset Area and discounting of credit generation rates for existing management obligations. All credits expressed as FBA/BBAM credits.

3) assuming credits may be traded without regard to the current condition of the vegetation zone(s) associated with the credits and whether or not the vegetation zone(s) comprise: Cumberland Plain Woodland patch size and condition thresholds as stated in the listing advice for the community (TSSC 2008); or Grey-headed Flying-fox habitat and Swift Parrot foraging habitat in their current condition.

4) this includes the offset requirement for both Grey-headed Flying-fox habitat and Swift Parrot foraging habitat, that have been obtained through the offsetting of Cumberland Plain Woodland.

5) pink indicates an offset deficit, green indicates credit obligations have been met.

6) Infrastructure obtained 458 Southern Myotis species credits in September 2021



LEGEND

- Airport site
- Stage 1 construction impact zone
- Cumberland Conservation Corridor
- Priority conservation lands (BIO Map)
- Defence Establishment Orchard Hills
- Biodiversity stewardship site boundary
- Offset areas secured in 2020
- 2020 BODP implementation period offset sites
- Conservation of core habitat
- Regeneration and improvement of habitat connectivity

Paper Size A4

0 0.5 1 2

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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Department of Infrastructure, Transport, Regional Development and Communications
2020 BODP Implementation Report

Job Number 21-26204-11
Revision A
Date 10 Oct 2021

Contribution to regional conservation

Figure 7a

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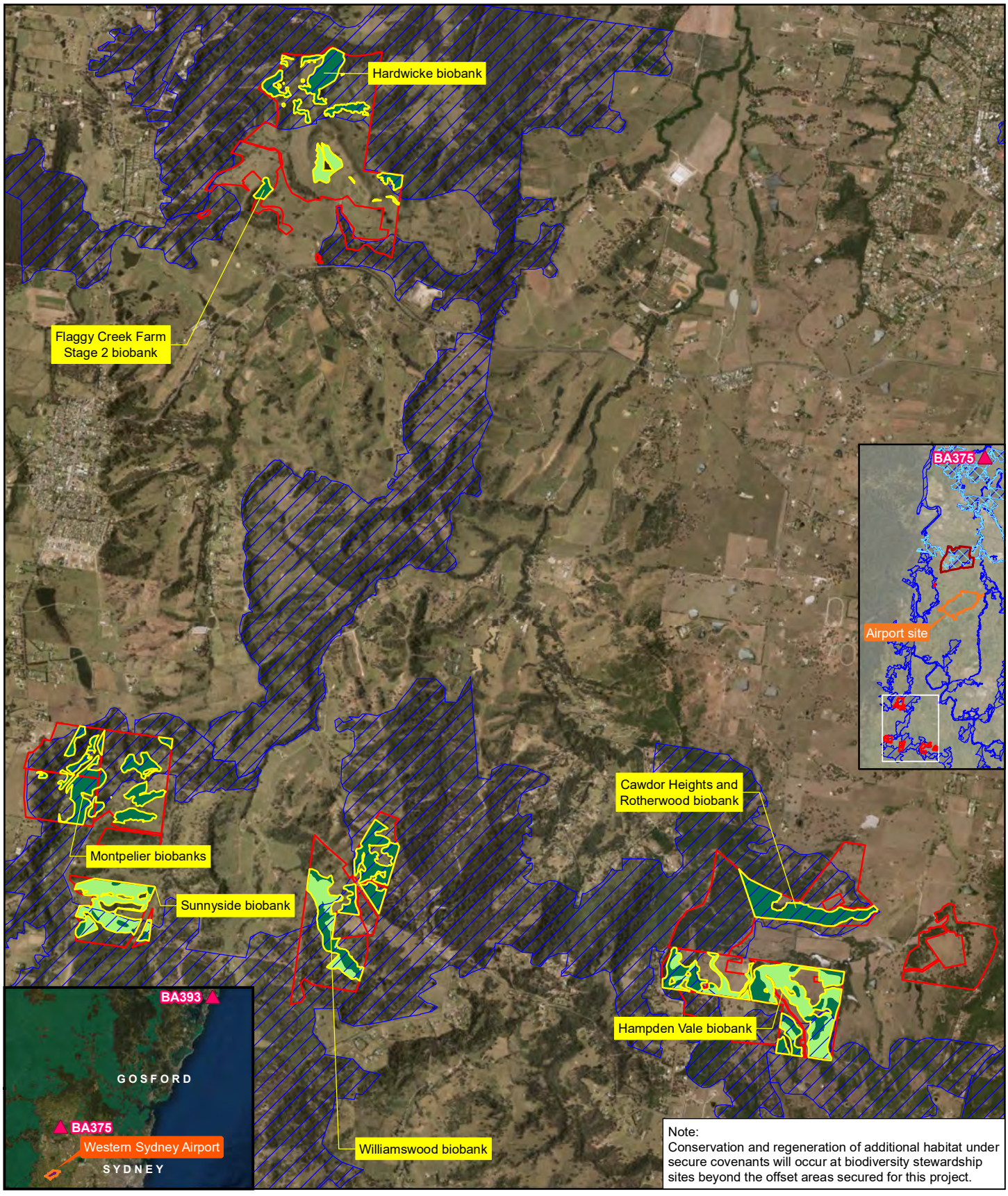
Data source: Aerial Imagery - Sixmaps & esri 2021 (Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, © Department of Customer Service 2020), Offset sites - GHD 2017, Cumberland Plain Conservation - OEH 2016, Airport layout data - WSU 2016. Created by:jrprice.



LEGEND

- Airport site
- Stage 1 construction impact zone
- Cumberland Conservation Corridor
- Priority conservation lands (BIO Map)
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Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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GHD

Department of Infrastructure, Transport, Regional Development and Communications
2020 BODP Implementation Report

Job Number 21-26204-11
Revision A
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Contribution to regional conservation

Figure 7b

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Data source: Aerial Imagery - Sixmaps & esri 2021 (Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, © Department of Customer Service 2020), Offset sites - GHD 2017, Cumberland Plain Conservation - OEH 2016, Airport layout data - WSU 2016. Created by:jrprice.

4. Independent Audit

4.1 Overview

Infrastructure must implement the approved BODP and ensure that an independent audit of the BODP implementation is conducted in respect of:

- The 12-month period commencing with the approval of the BODP.
- Each subsequent 18-month period until all biodiversity offsets required by the BODP have been secured or implemented.
- Submit a report of each audit that is carried out to Environment within six months of the end of the period in respect of which the audit was conducted.

This 2020 BODP implementation report is for the 12-month period commencing with the approval of the BODP, specifically 25 August 2019 to 25 August 2020. The purpose of this 2020 BODP implementation report is to demonstrate to an auditor how Infrastructure is delivering the offset proposal presented in the BODP in accordance with the Airport Plan conditions. This report has been prepared to satisfy condition 39(3) of the Airport Plan.

Alex Cockerill (WSP) has been subcontracted by GHD on behalf of Infrastructure as the Suitably Qualified Expert responsible for auditing this 2020 BODP implementation report. Environment approved Alex Cockerill as the independent auditor prior to the audit.

Audit criteria were provided to Environment in December 2020, which was prior to the formal commencement of the audit when the final draft of this 2020 BODP implementation report was submitted to the auditor on 3rd February 2020. Environment have approved the auditor and audit criteria.

This 2020 BODP implementation report has been audited and submitted to Environment. An independent audit report has been provided to Environment, including confirmation that the actions implemented by Infrastructure during the period and the offset assessments presented in this report are in accordance with the BODP and the Airport Plan conditions.

Audit criteria, a summary of the outcome of the independent audit and compliance with the Airport Plan conditions are presented below.

4.2 Compliance with audit criteria

There were no non-compliances identified as part of the audit. A summary of compliance with audit criteria is provided in Table 8. A full checklist of compliance and auditor comments against each requirement is provided in the independent audit report that has been provided to Environment.

Table 8 Summary of compliance with audit criteria

Compliance Indicator	Compliance Finding (Y/O/N/NA)
Condition 30(10) The Infrastructure Department must implement the approved Biodiversity Offset Delivery Plan on behalf of the Commonwealth	
The Infrastructure Department must implement the approved Biodiversity Offset Delivery Plan on behalf of the Commonwealth	Observation (O)
Condition 30(6)The Biodiversity Offset Delivery Plan must:	
(a) be consistent with the EPBC Act Environmental Offsets Policy (2012) to the satisfaction of the Approver, including in particular:	Observation (O)
(i) offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter;	Observation (O)

Compliance Indicator	Compliance Finding (Y/O/N/NA)
(ii) offsets must be built around Direct Offsets but may include Other Compensatory Measures (including that the offsets must be 'like-for-like');	Compliant (Y)
(iii) offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs; and	Observation (O)
(iv) the identification of offsets must be informed by scientifically robust information and incorporate the precautionary principle in the absence of scientific certainty	Compliant (Y)
(b) include measures to offset impacts on foraging habitat for the Swift Parrot (*Lathamus discolor*) in addition to those species and ecological communities listed in the Biodiversity Offset Strategy provided as part of the EIS;	Observation (O)
(c) identify biodiversity credits (or other measure as appropriate) required to offset the total impacts of the Stage 1 Development on biodiversity, determined in accordance with the relevant policies;	Observation (O)
(d) provide evidence that the required biodiversity credits (or other measure as appropriate) can be secured in accordance with the relevant policies;	Observation (O)
(e) provide evidence that the arrangements for managing the Direct Offsets will be provided through mechanisms that are enduring, enforceable and auditable; and	Compliant (Y)
(f) if any Other Compensatory Measures are proposed, provide details of those measures along with a justification of why they should be considered acceptable.	Compliant (Y)
Condition 30 (11) The Infrastructure Department must	
(a) ensure that an independent audit of its compliance with condition 30(10) is conducted in respect of;	Compliant (Y)
(i) the 12-month period commencing with the approval of the Biodiversity Offset Delivery Plan; and	Compliant (Y)
(ii) each subsequent 18-month period until all biodiversity offsets required by the Biodiversity Offset Delivery Plan have been secured or implemented; and	Not applicable (NA)
(b) submit a report of each audit that is carried out to the Environment Department within six months of the end of the period in respect of which the audit was conducted.	Compliant (Y)

Table 9 Compliance finding ratings

Compliance finding rating	Description
Compliant (Y)	Infrastructure has been found to comply with the specific requirement of a plan or condition of approval.
Observation (O)	Infrastructure has been found to be compliant with the specific requirement of an approval condition or plan, although issues relevant to that requirement were noted.
Not compliant (N)	Infrastructure has been found to have not met the specific requirement of a plan or condition of approval.
Not applicable (NA)	A specific requirement of a condition of approval or plan relevant to the site falls outside the scope of the audit, is addressed or duplicated by another audit condition or has not been triggered.

A number of observations were made during the audit when reviewing the Final Draft 2020 BODP Implementation Report and biodiversity offset and area calculations. These observations were determined to not affect compliance against the agreed audit requirements protocol (**Error! Reference source not found.**), however observations and recommendations have b een provided. Audit observations on the Final Draft report, GHD responses and cross

references to where these observations have been addressed in this Final Report are summarised in Table 10 below.

It is also recommended that in future compliance reporting, evidence (i.e. documented dates) that the credits transferred are now retired, should be provided.

Based on the review of available documentation and observations made during the audit, Infrastructure are meeting compliance criteria for the Implementation of the BODP in accordance with the Airport Plan conditions.

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Table 10 Summary of audit observations

Compliance reference number	Compliance indicator	Audit observations	GHD response
Condition 30(10) The Infrastructure Department must implement the approved Biodiversity Offset Delivery Plan on behalf of the Commonwealth			
1	The Infrastructure Department must implement the approved Biodiversity Offset Delivery Plan on behalf of the Commonwealth	Observations cited within the 2020 BODP Implementation report include; The word “secured” is used in the 2020 BODP implementation report to describe purchased and transferred credits to the Department under the NSW biobanking scheme. However, until these credits are retired, they are not considered secured. It is recommended the wording throughout the 2020 BODP implementation report identifies credits as secured only once the credits have been retired. Consideration should be given to revising and/or updating the currently approved BODP to be consistent with the biodiversity values described within the Initial Ecological Survey report and corresponding NSW FBA and BBAM credit calculations meeting the offset liability within the BODP.	Text updated throughout this report to reflect the comment that offsets are not ‘secure’ until they have been retired. The word ‘secure’ has been replaced with ‘obtained’. Text added to section 5.1 and 5.2 noting that proof of retirement would be included in future compliance reporting. No changes or updates to the approved BODP are proposed.
Condition 30(6) The Biodiversity Offset Delivery Plan must:			
2	(a) be consistent with the EPBC Act Environmental Offsets Policy (2012) to the satisfaction of the Approver, including in particular:	This requirement is considered throughout the approved BODP. Consistency with specific criteria is demonstrated further in Chapter 9 of the approved BODP. The calculation of the offset requirements for Stage 1 development impacts and the proposed offsets in the BODP has used a consistent EPBC 'offsets assessment guide' spreadsheet and NSW FBA and BBAM. The BODP was approved by DoEE (now DAWE) on 24 August 2018. The 2020 BODP Implementation report incorporates an assessment of each offset with either the EPBC Act Environmental Offsets Policy (2012) or the NSW FBA / BBAM (currently replaced with the NSW Biodiversity Offset Scheme (BOS) under the NSW Biodiversity Conservation Act 2016 (NSW). DAWE have provided correspondence (email dated 1/10/2020 sent from Kate Gowland) approving the use of the NSW BOS for the quantification	The Department of Defence has provided feedback on this observation, noting “*The improvement period specified in the MOU is twenty years. However, terms of the duration of the MoU include a commitment for the ongoing maintenance of values after the completion of the MoU and the fact that Defence must continue to comply with clauses 6 (Requirements for conservation of the Offset Area) and 11 Arrangements following implementation of Offset Plan. The contract and scope developed for implementation of the plan specify a requirement for development of a maintenance plan to direct ongoing upkeep of values after cessation of the improvement period”*.

Compliance reference number	Compliance indicator	Audit observations	GHD response
		and delivery of the project's offsets in the 2020 BODP Implementation report. Ecosystems and Species credits have been purchased from offsets sites secured under the NSW Biobanking Scheme, or BOS in perpetuity. The DEOH Offset area is proposed for conservation management through a MOU between Defence and Infrastructure and the implementation of the DEOH Offset Plan (GHD 2020). The tenure of this site will be maintained by Defence. There is some inconsistency between the MOU, DEOH Offset Plan and 2020 BODP Implementation report in regard to the proposed mechanism for security and commitment to management of the proposed DEOH offset area beyond the MOU Offset Improvement Period. In particular, the DEOH Offset Plan states; '*the MOU also provides for the conservation of the Offset Area (in the state achieved by the end of the Improvement Period) in perpetuity*.' It is noted that the projects impacts are permanent and the policy states '*secured for at least the same duration as the impact on the protected matter arising from the action*'. However, it is also recognised that the BODP was approved by DoEE (Now DAWE) on 24 August 2018 and in doing so DAWE have accepted the intent of the MOU for in perpetuity protection as meeting the policy requirements. It is recommended the 2020 BODP implementation report clarifies and confirms how the DEOH Offset Plan is to implemented and secured by Defence beyond the MOU Offset Improvement Period and addresses Section 7.2.1 of the EPBC Act Environmental Offsets Policy (2012).	This response demonstrates Defence's commitment to the ongoing management of the biodiversity values of the Orchard Hills Offset Area. In addition, the MOU states that the DEOH Offset Area will "*be permanent*[ly] *conserved*" (refer to Part F(a), pp 4 of the MOU). No additional clarification is considered necessary.
3	(i) offsets must deliver an overall conservation outcome that improves or maintains the	The BODP provides evidence that the proposed offsets deliver an overall conservation outcome that improves or maintains the viability of the protected matters. This was approved by DoEE on 24 August 2018. The 2020 BODP Implementation report outlines offsets delivered and generally consistent with the BODP.	The auditor does not require any change to current credit calculations as part of this observation, however this should be readdressed to coincide with the 5-year review of the Orchard Hills Offset Plan. If it is apparent that midstorey and overstorey regeneration within MU C (refer to

Compliance reference number	Compliance indicator	Audit observations	GHD response
	viability of the protected matter;	Difference between the BODP and the 2020 BODP Implementation report include changes in the quantification of offsets from the EPBC offset calculations to the use of NSW FBA and BBAM credit calculations. The differences in the approach to quantification are justified and reflect changes in NSW offset policy currently endorsed by the Commonwealth for assessing and providing offset for MNES. The application of the NSW BOS has also been endorsed in correspondence with the DAWE specifically for the project (email dated 1/10/2020 sent from Kate Gowland). The quantification of offsets in terms of NSW FBA and BBAM credits also allows for the residual credit liabilities to be converted to BAM credits under the current NSW BOS. A conversion has formally been provided under the *Statement of assessment of reasonable equivalence* by DPIE in accordance with clause 22(3) of the Biodiversity Conservation (Savings and Transitional) Regulation 2017. The FBA and BBAM credit calculations for the Orchard Hills offset area have been provided for each ecosystem condition class. These calculations were consistent with those presented in the final, independently verified Initial Ecological Survey report (GHD 2020). As confirmed between GHD and DAWE, offsets for Cumberland Plain Woodland can be expressed in terms of equivalent ecosystem credits. These ecosystem credits may be counted towards the quantum of offsets for the community regardless of the condition and whether vegetation at the offset site meets the patch size and condition thresholds in the listing advice for the community (TSSC 2008) so long as the vegetation being offset generates credits. Grassland areas of PCT 849 and PCT 835 will generate ecosystem credits as the proposed management actions detailed in the DEOH Offset Plan (including weed and overabundant native fauna maintenance) will improve the current condition of the grasslands over time and contribute to a gain in biodiversity value in accordance with BBAM. As such,	Figure 5) will not be sufficient to provide habitat for the Grey-headed Flying-fox or Swift Parrot, then it may be necessary to recalculate the total number of credits generated at the Orchard Hills Offset Area, and, if necessary, obtain or purchase additional credits to address any potential shortfall. Future BODP Implementation reports should continue to include this review as an anticipated action going forward. If revisions to credit calculations are necessary in the future, the default increase from 0 to 1 for overstorey and midstorey should be removed (ie, the value should remain as 0) for all areas of Management Unit C. It may also be appropriate to exclude credits generated within areas of Management Unit C from the contribution to offsets for the Grey-headed Flying Fox and Swift Parrot, if future reviews indicate that no suitable habitat for these species is present within Management Unit C.

Compliance reference number	Compliance indicator	Audit observations	GHD response
		ecosystem credits generated by grassland areas can be used to fulfill credit obligations for these PCTs. Following detailed review of the DEOH Offset Plan it is noted there are multiple references to potentially competing management outcomes in regard to the maintenance of natural grassland and providing for the natural regeneration of canopy and midstory. In particular, Section 4.3.3 of the DEOH Offset Plan states; '*The strategy should include maintenance of areas of species rich native grasslands or scrub*' and further '*areas to be maintained as grassland*'. This management strategy is described for Management Unit (MU) C in Table 5.1 as 'Maintain and enhance native grassland or scrub'. However, Table 5.2 the DEOH Offset Plan also proposes to facilitate the natural regeneration of canopy and midstorey within MU C through the following management actions. — Weed control — Application of ecological fire management — Management of human disturbance — Erosion Control — Retention of regrowth and remanent native vegetation (specifically to develop a regeneration and revegetation strategy which provides for fine scale mapping of extent of natural regeneration with an overall objective of canopy cover of greater than 10% when measured across continuous patches) Supplementing the above is an additional management action under 12.9.1.7 of the BBAM: — Control feral and/or overabundant native herbivores The DEOH Offset Plan also includes specific performance criteria with an overall objective of establishing canopy cover of >10% when measured across continuous patches of the community. The current BBAM credit calculations for these areas of poor condition grassland within MU C have generated credits on the assumption the minimum management actions required under the Section 12.9 of BBAM	

Compliance reference number	Compliance indicator	Audit observations	GHD response
		will be undertaken, including active and or natural regeneration to reinstated a canopy and mid-storey layers and deliver the default increase scores for Over-storey (OS) and Mid-storey (MS) cover. If such regeneration was to be excluded or unsuccessful the OS and MS attribute gain would require reduction in accordance with Section 12.2 of the BBAM. It is the opinion of the independent auditor that areas of natural grassland within MU C are unlikely to naturally regenerate a canopy structure without the additional provision of assisted plantings outlined in Table 5.2 for other areas and MUs. Despite this view it is acknowledged the DEOH Offset Plan does include management actions within MU C to facilitate natural regeneration. Furthermore, the DEOH Offset Plan also includes detailed requirements for monitoring and reporting on the progress of these action in meeting the offset objectives in chapter 6. Given the implementation of the DEOH Offset Plan will be the subject of future 5 yearly reviews and further independent audits of the BODP implementation, there is likely to be sufficient transparency on BODP implementation, performance of the Offset Plan and quantification of the BBAM calculations generated from the offset site. The approved BODP and DEOH Initial Ecological Survey report excluded the use of the poor condition PCTs 849 and PCT 835 as an offset for the habitat for Swift Parrot and Grey-headed Flying-fox based on 'Like for Like' requirements of the EPBC Act Environmental Offset Policy. The FBA and BBAM calculation in the 2020 BODP Implementation report have included all areas of PCT 835 and PCT 849 as offset for the habitat for Swift Parrot and Grey-headed Flying-fox. It is acknowledged that while these areas don't meet the 'Like for Like' requirements of the EPBC Act Environmental Offset Policy, the endorsed NSW BOS under the BC Act includes areas of habitat for ecosystem species regardless of the condition. The NSW BOS assumes ecosystem credits are generated from the improvements of areas in poor condition either through natural or	

Compliance reference number	Compliance indicator	Audit observations	GHD response
		active regeneration and will provide habitat for these ecosystem species over time. The use of ecosystem credits for the Swift Parrot and Grey-headed Flying-fox is therefore reasonable where the management units provide for natural or active regeneration of habitat for these ecosystem species over time. The specific habitat components of PCT 835 and PCT 849 for the Swift Parrot and Grey-headed Flying-fox are the presence of winter flowering trees for foraging. If the proposed management of the Orchard Hill offset area includes areas of actively maintained grasslands without canopy, it is unreasonable to include these areas within the species ecosystem credits. DAWEs endorsement of the use of ecosystem credits under the NSW BOS (or in this case FBA) to meet the BODP credit liabilities of the Swift Parrot and Grey-headed Flying-fox, states; '*It is assumed that untreed areas can be restored to eventually become treed and suitable as habitat. Certainly, this was the original intention of restoration activities to be carried out at Orchard Hills under agreement between Infrastructure and Department of Defence.*' Therefore, the performance of the proposed natural regeneration of canopy OS and MS within grassland areas of MU C, will require specific focus by future BODP implementation audits and DEOH Offset Plan 5 year review to ensure the assumed natural regeneration and corresponding credit calculations for MU C are adequately providing offsets for the Swift Parrot and Grey-headed Flying-fox as currently proposed.	
4	(iii) offsets must be additional to what is already required, determined by law or planning regulations, or	The Orchard Hills offset area is recognised under the Memorandum of Understanding (MOU) as providing additional conservation requirements and security to its current existing land use, which is currently managed for Defence capability purposes, Defence training activities and the use and safe storage of explosives. The management of the Orchard Hills offset area under DEOH Offset Plan, will be funded and implemented to provide measurable ecological	Existing management obligations resulting from the Commonwealth Heritage Listing applicable to Defence Establishment Orchard Hills have been considered in the context of Section 12.10 of the BBAM. Much of the Orchard Hills Offset Area falls within an area listed on the Commonwealth Heritage

Compliance reference number	Compliance indicator	Audit observations	GHD response
	agreed to under other schemes or programs; and	improvements consistent with the EPBC Act Environmental Offsets Policy. The MOU between Defence and Infrastructure includes provisions that are stated as additional to any Commonwealth Heritage Listing requirements relating to the Orchard Hills offset area. The existing plans and documents related to conservation management within the DEOH include a number of existing management actions that are considered 'basic maintenance of values'. Some of these actions could be considered as existing conservation obligations requiring the credits calculated from the Orchard Hills offset area to have a discount percentage applied in accordance with subsection 12.10 of the BBAM. The existing conservation obligations include but are not limited to; — Weed control — Application of ecological fire management — Manage human disturbance It is recommended that the 2020 BODP Implementation report includes a review of the existing management plans and actions for DEOH and an appropriate assessment of management actions required for existing conservation obligations against the specific criteria of subsection 12.10 of the BBAM. If the assessment identifies that a discount percentage is required for the existing conservation obligations, the BBAM Biobanking credit calculation should be reviewed in accordance with discounts for each action in Table 10 of the BBAM with appropriate justification.	List. The listing largely relates to the site supporting some of the "least disturbed and largest remaining remnant of Cumberland Plain Woodland" (DAWE 2021). Listing on the CHL requires that "Commonwealth agencies must make plans to protect and manage the Commonwealth Heritage values of Commonwealth Heritage places" (s.341A of the EPBC Act). The CHL is the subject of a Heritage Management Plan (Godden Mackay Logan, 2013), which was prepared to meet this EPBC Act requirement, as well as various other management plans relating to maintenance of biodiversity values on site. Given the existence of these plans, and the requirement under the EPBC Act that a Commonwealth Agency (ie, Defence) manage those values, it could be considered that there are 'existing obligations and management actions' that relate to the site. In line with Section 12.10.1.5 of the BBAM, where an offset site is proposed on land where there are existing conservation obligations, biodiversity credits must be discounted. Management for conservation at the Orchard Hills Offset Area was sporadic prior to the signing of the MOU, and was limited to the minimum required to meet the statutory obligations associated with management of the CHL. The management actions proposed for the Orchard Hills Offset Area have been planned to ensure proposed management is additional to any management actions already in place, to

Compliance reference number	Compliance indicator	Audit observations	GHD response
			achieve specific conservation outcomes relating to the offset requirements of WSI. It was considered appropriate by the consent authority (DAWE) to use land at Defence Establishment Orchard Hills as part of the offset for WSI, and so biodiversity credits have been generated at the site in line with the approved BODP. Under BBAM (OEH 2014), there is no standard precedent discount rate that is broadly applied to credits generated on publicly owned lands that have existing conservation obligations. Instead, a range of discounts have been applied to publicly-owned lands where offset sites have been established. To provide consistency with the currently accepted methodology for quantifying the number and type of biodiversity credits generated at a site (BAM; DPIE 2020), Table 10 of the BAM has been reviewed against the existing management obligations for land within the CHL area (ie, land to which an existing conservation obligation applies). The only statutory requirement is preparation of a management plan (as required by the EPBC Act). A Heritage Management Plan has been prepared for the site (Godden Mackay Logan, 2013), as outlined above, however given the site is Commonwealth-owned, there are no other statutory management requirements which apply. Despite this, in recognition of some voluntary management actions that have been completed on site, the standard 20% discount rate that is applied to publicly owned lands (as per Table 9 of the BAM) has been applied to

Compliance reference number	Compliance indicator	Audit observations	GHD response
			credits generated within the CHL area of the Orchard Hills Offset Area.
5	(iv) the identification of offsets must be informed by scientifically robust information and incorporate the precautionary principle in the absence of scientific certainty	A detailed independent review of the DEOH Initial Ecological Survey report was completed in June 2020, and has been attached, see Appendix A [of the audit report]. A brief summary of the reviews finding are provided below; Minor changes/recommendations regarding the survey methodology. Small changes to vegetation mapping were recommended due to inconsistencies found during the field inspections, included; — Changes mapping to Cumberland Plain Woodland (HN 528) rather than Shale Gravel Transitional Forest (HN 512) which it was currently mapped (At RA4) — Areas of Poor condition HN528 revised to Low condition HN 528 — Areas of HN528 in northern offset (associated with RA 28 and 29) to be revised to low condition — Areas of good condition HN526 revised to poor condition HN526 — Exclusion from the offset; an area of Poor Condition HN528, recently cleared and associated with a construction compound. In total, the field verification confirmed the vegetation mapping to be consistent across 37/45 or 82% of the sampled RA sites The recommendations were generally addressed and can be found in Section 7 of DEOH Initial Ecological Survey report (GHD, 2020a).	No response needed.
6	(b) include measures to offset impacts on foraging habitat for the Swift Parrot (*Lathamus discolor*) in	The approved BODP and DEOH Initial Survey report excluded the use of the poor condition PCTs 849 and PCT 835 as an offset for the habitat for Swift Parrot and Grey-headed Flying-fox based on 'Like for Like' requirements of the EPBC Act Environmental Offset Policy. The FBA and BBAM calculation in the 2020 BODP Implementation report have included all areas of PCT 835 and PCT 849 as offset for the habitat for Swift Parrot. It is acknowledged that while these areas don't meet the	The auditor does not require any change to current credit calculations as part of this observation, however this should be readdressed to coincide with the 5-year review of the Orchard Hills Offset Plan. If it is apparent that midstorey and overstorey regeneration within MU C (refer to Figure 5) will not be sufficient to provide habitat for the Grey-headed Flying-fox or Swift Parrot,

Compliance reference number	Compliance indicator	Audit observations	GHD response
	addition to those species and ecological communities listed in the Biodiversity Offset Strategy provided as part of the EIS;	'Like for Like' requirements of the EPBC Act Environmental Offset Policy, the endorsed NSW BOS under the BC Act includes areas of habitat for ecosystem species regardless of the condition. The NSW BOS assumes ecosystem credits are generated from the improvements of areas in poor condition either through natural or active regeneration and will provide habitat for these ecosystem species over time. The use of ecosystem credits for the Swift Parrot and Grey-headed Flying-fox is therefore reasonable under the NSW FBA, BBAM and BOS where the management units provide for natural or active regeneration and will provide habitat for these ecosystem species over time. The specific habitat components of PCT 835 and PCT 849 for the Swift Parrot and Grey-headed Flying-fox is the presence of winter flowering trees for foraging. If the proposed management of the Orchard Hill offset area includes areas of actively maintained grasslands without canopy, it is unreasonable to include these areas within the species ecosystem credits. DAWEs endorsement of the use of ecosystem credits under the NSW BAM (or in this case FBA/BBAM) for the BODP credit liabilities of the Swift Parrot and Grey-headed Flying-fox, states: '*It is assumed that untreed areas can be restored to eventually become treed and suitable as habitat. Certainly, this was the original intention of restoration activities to be carried out at Orchard Hills under agreement between Infrastructure and Department of Defence*.' Therefore, the performance of the proposed natural regeneration of canopy OS and MS within grassland areas of MU C, will require specific focus by future BODP implementation audits and DEOH Offset Plan 5 year review to ensure the assumed natural regeneration and corresponding credit calculations for MU C are adequately providing offsets for the Swift Parrot and Grey-headed Flying-fox as currently proposed.	then it may be necessary to recalculate the total number of credits generated at the Orchard Hills Offset Area, and, if necessary, obtain or purchase additional credits to address any potential shortfall. Future BODP Implementation reports should continue to include this review as an anticipated action going forward. If revisions to credit calculations are necessary in the future, the default increase from 0 to 1 for overstorey and midstorey should be removed (ie, the value should remain as 0) for all areas of Management Unit C. It may also be appropriate to exclude credits generated within areas of Management Unit C from the contribution to offsets for the Grey-headed Flying Fox and Swift Parrot, if future reviews indicate that no suitable habitat for these species is present within Management Unit C.
7	(c) identify biodiversity credits (or other	The biodiversity credits (or other measure as appropriate) required to offset the total impacts of the Stage 1 was previously approved by DoEE	The observations made by the auditor of this 2020 BODP Implementation Report necessitated a revision to the number and type of credits

Compliance reference number	Compliance indicator	Audit observations	GHD response
	measure as appropriate) required to offset the total impacts of the Stage 1 Development on biodiversity, determined in accordance with the relevant policies;	for the EIS, including preliminary calculation of Orchard hills offset area within the BODP. The assumptions and criteria used to determine the offset liability for the impact under the EPBC Offset policy calculator, are consistent with the assumptions for determining the quantum of the offset from the projects impacts. Infrastructure has subsequently assessed and quantified all offsets in regard to the NSW FBA and BBAM calculator and BAM (using the statements of equivalence issued by DPIE) consistent with advice from DAWE. The conversion of all offset obligations to BBAM credits (using the FBA calculator) and BAM credits (using the credit equivalence issued by DPIE) and their corresponding costs provide a consistent measure of evaluation against the credits liability in the BODP. This will enable the department to justify the adequacy of all credits sourced, regardless of type, for the project and confirm that the credit liability has been met. The BODP Implementation report outlines in Section 1.6 a method to evaluate the equivalent credit contribution of 'Other compensatory measures' and in particular the $10,000,000 contribution to Greening Australia Native Seed Production Area. The method provides a logical and reasonable approach to quantifying the Other compensatory measures. The previous observations in relation to revising the BBAM credit calculations for the Orchard Hill offset area to reflect the areas of maintained grassland and an assessment of management actions required for existing conservation obligation under BBAM also relate to this condition. Any changes in relations to the BBAM credit calculations arising from these recommendations will require a revision to the Tables 6 and 7 of	generated at the Orchard Hills Offset Area, which resulted in a reduction in the total number of offsets generated at the site. This resulted in a shortfall of credits, and as such, the calculation of the contribution of other compensatory measures has been removed from this 2020 BODP Implementation Report, as less than 90 percent of the total number of required credits have been secured (refer to section 1.6.2). As such, 'Table 7' referred to by the auditor has been removed from this report, and Table 6 has been adjusted to remove reference to the contribution of other compensatory measures. It is expected that these tables will be updated and/or included in future BODP Implementation Reports once the 90 percent direct offset requirement has been reached.

Compliance reference number	Compliance indicator	Audit observations	GHD response
		the current 2020 BODP Implementation report or if applicable, a future BODP Implementation report.	
8	(d) provide evidence that the required biodiversity credits (or other measure as appropriate) can be secured in accordance with the relevant policies;	While evidence was cited for all credit transfers within 2020 BODP Implementation report, no evidence was provided that these credits were subsequently retired and secured. It is recommended that in future compliance reporting that evidence (documented dates) that the credits are now retired should be provided.	Text updated throughout this report to reflect the comment that offsets are not 'secure' until they have been retired. Text added to section 5.1 noting that proof of retirement would be included in future compliance reporting.

4.3 Compliance with Airport Plan Conditions

Section 3.10 of the Airport Plan sets out the conditions to be complied with in relation to the Stage 1 development of WSI, including the conditions specified in the notice given by the Environment Minister in response to a draft Airport Plan. Conditions that relate to the requirements for the preparation and implementation of the BODP are detailed in Table 11 along with reference to where each condition is addressed in this report and related reports.

Table 11 Airport Plan conditions related to BODP implementation

No.	Environmental Condition	Where addressed in this 2020 BODP implementation report and related reports
30.(1)	The Infrastructure Department must: (a) prepare; and (b) submit to an Approver for approval; a Biodiversity Offset Delivery Plan in relation to the carrying out of the developments described in Part 3 of the Airport Plan.	The approved BODP (DIRD 2018).
30.(2)	The criteria for approval of the Biodiversity Offset Delivery Plan are that an Approver is satisfied that the Biodiversity Offset Delivery Plan: (a) takes into account: (i) sections 28.5.3.3 to 28.5.3.5 in Chapter 28 of the EIS; and (ii) the Biodiversity Offset Package in volume 4 of the EIS; and (iii) the EPBC Act Environmental Offsets Policy issued by the Environment Department in October 2012; and (b) is otherwise appropriate.	These requirements are referenced throughout the approved BODP.
30.(3)	The Site Occupier must not commence Main Construction Works until the Biodiversity Offset Delivery Plan has been approved in accordance with this condition.	The approved BODP.
30.(6)	The Biodiversity Offset Delivery Plan must:	
	(a) be consistent with the EPBC Act Environmental Offsets Policy (2012) to the satisfaction of the Approver.	This requirement is considered in the description of offset proposals throughout the approved BODP. Consistency with specific criteria is demonstrated in Chapter 9 of the approved BODP.
30.(7)	The Biodiversity Offset Delivery Plan should capitalise wherever possible on opportunities to improve connectivity or contribute to Commonwealth, state or local government initiatives to secure offsets with strategic value.	This requirement was considered in the process for procuring biodiversity credits documented in Sections 2.1, 2.2 and 3.1. The contribution of direct offset sites to connectivity and/or government initiatives is described in Section 3.4. This requirement was also considered at all stages of the process of planning the offset proposal described in the approved BODP and was a particular focus for

No.	Environmental Condition	Where addressed in this 2020 BODP implementation report and related reports
		the Experts Group as documented in section 4.1 and Chapter 5 of the approved BODP (DIRD 2018).
30.(8)	In preparing the Biodiversity Offset Delivery Plan, the Infrastructure Department must consult with local Aboriginal Land Councils and Aboriginal groups in Western Sydney, to identify complementary outcomes for biodiversity conservation and Aboriginal cultural heritage on the Cumberland Plain.	This requirement was considered at all stages of the process of identifying and assessing the offset proposals described throughout the approved BODP as well as the Aboriginal stakeholder consultation program documented in Section 4.2 (DIRD 2018).
30.(9)	The Infrastructure Department must provide the Environment Department with Shapefiles identifying the location and boundaries of each direct offset site within three months of legally securing and establishing management arrangements for the site, unless otherwise approved by an Approver.	Shape files for each EPBC Act offset area were provided to Environment within three months of legally securing and establishing management arrangements for each site.
30.(10)	The Infrastructure Department must implement the approved Biodiversity Offset Delivery Plan on behalf of the Commonwealth.	This 2020 BODP implementation report.
30.(11)	The Infrastructure Department must: (a) ensure that an independent audit of its compliance with condition 30(10) is conducted in respect of; (i) the 12-month period commencing with the approval of the Biodiversity Offset Delivery Plan; and (ii) each subsequent 18-month period until all biodiversity offsets required by the Biodiversity Offset Delivery Plan have been secured or implemented; and (b) submit a report of each audit that is carried out to the Environment Department within six months of the end of the period in respect of which the audit was conducted.	The independent audit report attached to this 2020 BODP implementation report.
30.(12)	For each audit, the independent auditor must be approved by an Approver prior to the commencement of the audit. Audit criteria must be agreed to by an Approver and the audit report must address the criteria to the satisfaction of an Approver.	The independent auditor has been approved by Environment. The audit criteria included in the independent audit report attached to this 2020 BODP implementation report. These audit criteria were provided to Environment in December 2020, prior to the commencement of the audit upon submission of the final draft of this 2020 BODP implementation report to the auditor on 3rd February.

No.	Environmental Condition	Where addressed in this 2020 BODP implementation report and related reports
30.(13)	If there is a change to the Construction Impact Zone after the Biodiversity Offset Delivery Plan is approved, a variation of the Biodiversity Offset Delivery Plan in relation to that change must be prepared by the Infrastructure Department and submitted for approval in accordance with condition 41 (Variation of Approved Plans), unless an Approver decides that the change is not material to biodiversity offset requirements.	No changes to the Construction Impact Zone have occurred since the BODP was approved.
30.(14)	The Infrastructure Department must review the Biodiversity Offset Delivery Plan every five years to ensure that the Biodiversity Offset Delivery Plan continues to meet the approval criteria for that plan. The Infrastructure Department must provide a report on the review to the Environment Minister. If the plan does not continue to meet the approval criteria, within three months of the provision of the report, the Infrastructure Department must prepare and submit for approval under condition 41(1), a variation to the Approved Plan to ensure it continues to meet the approval criteria.	Not applicable until 25 August 2023.
30.(15)	The Environment Minister may: (a) vary an approved Biodiversity Offset Delivery Plan; or (b) request in writing that the Infrastructure Department prepare and seek approval for a specified variation of an approved Biodiversity Offset Delivery Plan in accordance with condition 41(1), if the Environment Minister believes on reasonable grounds that: (c) this condition 30 has been contravened; and (d) the variation or the request for a specified variation (as the case may be) will address the contravention.	No variations to the approved BODP have been requested or are anticipated at present.
47. (3)	Following approval of the Biodiversity Offset Delivery Plan, the Infrastructure Department must report to the Environment Department every 12 months on its implementation until all biodiversity offsets and other compensatory measures under the Biodiversity Offset Delivery Plan have been secured or implemented. The Infrastructure Department must publish the report on its website.	This 2020 BODP implementation report which is for the 12-month period from 25 August 2019 to 25 August 2020.

5. Next Steps

5.1 Identification of additional offsets

The offsets obtained or purchased up to the end of the 2020 implementation period are described in Table 7 above. Additional direct offsets and potentially other compensatory measures will be identified and implemented to address the remaining biodiversity offset obligations. Once the full quantum of offsets has been obtained, all biodiversity credits would be retired, providing for security of the offsets in perpetuity. Proof of this retirement would be included in future compliance reporting.

Calculations of the remaining quantum of offsets still required are expressed as both FBA/BBAM and BAM credit amounts where this information is available. These calculations are based on the Statement of assessment of reasonable equivalence of biodiversity credits provided by NSW DPIE to Infrastructure (refer to Appendix B). The credit equivalence statements provide transparent processes for securing BAM credits in the future.

It is recommended that Infrastructure apply to DPIE for an additional Statement of assessment of reasonable equivalence of biodiversity credits for the matters not included on the original statement, but for which there is now a shortfall based on the findings of the audit of this 2020 BODP Implementation Report, namely River Flat Eucalypt Forest (HN526) ecosystem credits and *Dillwynia tenuifolia* species credits.

Investigations of additional offset proposals would focus on shortfalls in the quantum of offset obtained for particular species and communities, which at this stage of the implementation of the BODP include *Pimelea spicata,* River Flat Eucalypt Forest (HN526), freshwater wetlands on floodplains (HN630), *Dillwynia tenuifolia* and Southern Myotis species credits. The quantum of offset remaining to be obtained for these species and communities is presented in Table 12.

The Airport Plan conditions and BODP allow for offsets to be delivered in accordance with the FBA and NSW BioBanking scheme (now NSW BOS and related BAM). Where offsets are not available, a proponent may request a variation to the trading rules, if they can demonstrate that reasonable steps to source the required quantum of the offsets have been taken. The offset requirement for Freshwater wetlands (HN630) has not been able to be sourced according to the credit trading rules of the FBA, but all reasonable steps to secure the offsets have been taken. As such, the outstanding offset requirement for this matter may need to be sourced using the variation rules. The variation rules allow for some flexibility in sourcing offsets, such as not restricting suitable credits to those within the same IBRA subregion.

Table 12 includes the outstanding offset obligation expressed in terms of FBA/BBAM credits, which was the metric used in the impact calculations in the BODP. The offset shortfall is also shown in terms of BAM credits, noting that these offsets are more likely to be obtained from biodiversity stewardship sites that were established since 2017 and assessed with the BAM.

Table 12 Outstanding offset requirement, including BAM credit equivalent where available

Credit type	FBA/BBAM Credits required [1]	BAM Credit equivalent [2]	Outstanding FBA/BBAM credit requirement	Outstanding BAM credit equivalent requirement
River Flat Eucalypt Forest (HN526)	2,661	Not available	428	Not available
Freshwater wetland (HN630) ecosystem credits [3]	926	545	881	519
Pimelea spicata species credits	107,068	53	107,068	53
Dillwynia tenuifolia species credits	540	Not available	102	Not available
Southern Myotis species credits [4]	1,617	1,617	670	670

Notes: 1) based on the approved BODP.

2) based on the *Statement of assessment of reasonable equivalence of biodiversity credits* (DPIE 2020a), refer to Appendix B.

3) outstanding Freshwater wetland (HN630) BAM equivalent calculated based on the ratio of total FBA/BBAM:BAM credits for the total requirement (926/545 = 0.59 ; 0.59 x 881 = 519).

4) for Southern Myotis species credits, the *Statement of assessment of reasonable equivalence of biodiversity credits* states "Matching credits are available on the BioBanking credits register for Southern Myotis (*Myotis macropus*) from BioBanking Agreements BA 331, BA341, BA424 and BA383. In accordance with the approved method there is no recalculation of the equivalent credit number (DPIE 2020a, p3), refer to Appendix B.

A number of candidate offset sites or direct restoration programs have already been considered but were not purchased or obtained in this period because the owners had not yet obtained a biodiversity stewardship agreement or other management arrangements had not been confirmed. Further identification of offsets and consultation will take place up until the full quantum of biodiversity offsets are implemented in accordance with the BODP.

Throughout the preparation and implementation of the BODP, a broad desktop assessment and consultation program was performed, and the register of potential offset sites has been maintained.

Proposed or existing BSA sites containing potential direct biodiversity offsets would be located, and:

- Each relevant site would be assessed to confirm the extent and quality of habitat matching the WSI offset requirement (that is the offset area).
- If a site is already subject to a BSA, then the biodiversity credits linked to the offset area would be purchased and retired.
- If a site is not yet subject to a BSA, the site would be assessed using the BAM, the site owner would enter into a BSA, and the biodiversity credits linked to the offset area would be purchased and retired.

Longer term options for other compensatory measures are discussed in Section 7.4 of the BODP. These may include options for conservation, research, educational and training programs, including Aboriginal land management, to help meet offset requirements. Biodiversity

offsets using these alternative mechanisms may be delivered through a range of existing and future programmes, projects and policies. Key considerations will include that any other compensatory measures must directly benefit the protected matter to be affected, must be based on sound ecological survey and assessment, and must be additional to any existing funding for conservation programmes.

Anticipated BODP implementation activities linked to the offset proposals identified to date, and the process for identifying additional offsets outlined above, are presented below for the next annual implementation period.

In line with the observations made during the audit of this 2020 BODP Implementation Report, it is recommended that a review of the success or otherwise of natural midstorey and overstorey regeneration within Management Unit C (refer to Figure 5 series) be addressed in future Implementation Reports, coinciding with the 5- year review of the Orchard Hills Offset Plan. If it is apparent that midstorey and overstorey regeneration within MU C (refer to Figure 5) will not be sufficient to provide habitat for the Grey-headed Flying-fox or Swift Parrot, then it may be necessary to recalculate the total number of credits generated at the Orchard Hills Offset Area, and, if necessary, obtain or purchase additional credits to address any potential shortfall.

If revisions to credit calculations are necessary in the future, the default increase from 0 to 1 for overstorey and midstorey should be removed (ie, the value should remain as 0) for all areas of Management Unit C. It may also be appropriate to exclude credits generated within areas of Management Unit C from the contribution to offsets for the Grey-headed Flying Fox and Swift Parrot, if future reviews indicate that no suitable habitat for these species is present within Management Unit C.

5.2 Anticipated 2021 BODP implementation activities

The 2021 BODP implementation period will be the third 12-month period following approval of the BODP, specifically 25 August 2020 to 24 August 2021. The BODP activities that are anticipated to be implemented during the 2021 period include:

- Delivery of offset arrangements for an Offset Area of at least 900 hectares at Defence Establishment Orchard Hills, including:
  - Verification of the implementation of the Offset Plan (GHD 2020b) by Defence including review and approval of an annual report; and
  - Participation in the Orchard Hills Biodiversity Working Group and consultation with Defence on the implementation of the Offset Plan.
- Preparation of an addendum to the Initial Ecological Survey Report (GHD 2020a) with an update on the total number and type of credits generated at the Orchard Hills Offset Area, based on the recommendations arising from the audit of the credits presented in this 2020 BODP Implementation Report, in particular:
  - Acknowledgement that a discount of 20% should be applied to credits generated within the CHL area at Orchard Hills, in line with the standards set out in Table 9 of the BAM 2020 (DPIE, 2020b) for publicly owned land.
- Continued synthesis of existing information and consultation with various offset vendors to identify and secure direct offsets.
- Continued implementation of Stage 2 of the threatened flora propagation program, including maintenance of the *ex situ Pimelea spicata* population to support conservation of the species.
- Continued implementation of the Greening Australia seed collection and production program required by Condition 32 of the Airport Plan.

- Consideration of suitable research, restoration and rewilding programs as appropriate.
- Preparation of a ‘2021 BODP implementation report’ and submission to Environment in accordance with Condition 39 of the Airport Plan.
- Arrangements for submission of a ‘2021 BODP implementation audit report’ to Environment in accordance with Condition 30 (11) of the Airport Plan.

At the time that this 2020 BODP Implementation Report was being prepared, Infrastructure obtained 458 Southern Myotis species credits in September 2021. More detail regarding these credits would be provided in the next Implementation Report.

The timing and content of the audit report and any future BODP implementation reports would depend on the quantum of offset obtained or purchased through the 2021 BODP implementation period and whether there were any remaining offsets required at 25 August 2021.

Once the full quantum of offsets are obtained, all biodiversity credits that have been purchased would be retired, guaranteeing their security in perpetuity.

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Appendix A – Independent Audit Report

DEPARTMENT OF INFRASTRUCTURE, TRANSPORT, REGIONAL DEVELOPMENT AND COMMUNICATIONS

SEPTEMBER 2021

INDEPENDENT AUDIT ON THE IMPLEMENTATION OF THE WESTERN SYDNEY INTERNATIONAL AIRPORT BIODIVERSITY OFFSET DELIVERY PLAN (BODP) - AUGUST 2019 TO FEBRUARY 2021

Question today
Imagine tomorrow
Create for the future

Independent Audit on the Implementation of The Western Sydney International Airport Biodiversity Offset Delivery Plan (BODP) - August 2019 to February 2021

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REV	DATE	DETAILS
Rev A	19.02.2021	Draft
Rev B	20.07.2021	Second draft – incorporation of Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) comments
Rev C	13.08.2021	Final draft – incorporation of DITRDC comments
Rev D	30.9.2021	Final

	NAME	DATE	SIGNATURE
Prepared by:	Clementine Watson Alex Cockerill	30.9.2021	
Reviewed and Approved by:	Alex Cockerill	30.9.2021	

TABLE OF CONTENTS

GLOSSARY

BAM	The NSW Biodiversity Assessment Methodology (OEH 2016)
BAR	Biodiversity Assessment Report
BBAM	The NSW BioBanking Assessment Methodology (OEH 2014).
BC Act	Biodiversity Conservation Act 2017 (NSW)
BCT	NSW Biodiversity Conservation Trust (BCT, formerly Nature Conservation Trust)
Biobank site	Land that is designated by a biobanking agreement to be a biobank site.
Biobanking agreement	An agreement entered into between the landowner and the NSW Environment Minister under the previous NSW BBAM and Biodiversity Offset Scheme
BioBanking Trust Fund	The Trust Fund established under Part 7A of the TSC Act to hold funds from the sale of credits under the previous NSW BBAM and Biodiversity Offset Scheme
Biodiversity credit	A unit of biodiversity value to measure specific development impacts or conservation gains in accordance with the FBA, the BBAM or the BAM. Includes ecosystem credits or species credits.
Biodiversity credit report	Specifies the number and type of biodiversity credits required to offset the impacts of a Major Project in accordance with the FBA or that would be generated through conservation and management of an offset site under a BioBanking agreement or a BSA.
Biodiversity offset delivery plan (BODP)	This plan, which sets out the specific actions to be taken to meet the offset conditions for the airport as set out in the Airport Plan.
Biodiversity offsets	Specific measures that are put in place to compensate for impacts on biodiversity values
Biodiversity Stewardship Agreement (BSA)	An agreement made under Division 2 of Part 5 of the BC Act
Biodiversity Stewardship Site (BSS)	Land that is designated by a Biodiversity Stewardship Agreement to be a Biodiversity Stewardship Site. Equivalent to the former 'biobank site'.
BOS	NSW Biodiversity Offset Strategy
CEEC	Critically endangered ecological community.
Defence	The Australian Government Department of Defence
Department of Infrastructure, Transport, Regional Development and Communications (the Department)	The Australian Government Department responsible for preparing and implementing this BODP
DAWE	Department of Agriculture, Water and the Environment
DoE	Department of Environment (formerly Department of the Environment and Energy). Now called the DAWE.
DoEE	Department of the Environment and Energy (DoEE). Now called the DAWE.

DSEWPaC	The former Department of Sustainability, Environment, Water, Populations and Communities, now called the DAWE.
DPI	The NSW Department of Primary Industries.
Ecosystem credit	The class of biodiversity credits created or required for the impact on EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur within a vegetation type according to the BBAM, FBA and BAM.
EEC	Endangered ecological community
EIS	Environmental Impact Statement
Environment Department	The Australian Government Environment Department currently called the Department of Agriculture, Water and the Environment.
EPBC Act	The Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FBA	The Framework for Biodiversity Assessment (OEH 2014a). The methodology to assess impacts on biodiversity that is used to assess all biodiversity values on the development site for a Major Project under the NSW Environmental Planning and Assessment Act 1979 (EPA Act) and in accordance with The NSW Biodiversity Offsets Policy for Major Projects (OEH 2014a).
FM Act	The Fisheries Management Act 1994 (NSW)
Food tree	A tree species that is recognised as being of value as a foraging resource for a given fauna
Habitat tree	A tree that is recognised as being of value as a shelter, roosting and/or nesting resource for fauna species. Includes hollow-bearing trees, stags (standing dead trees) and trees with nests or other signs of fauna occupancy.
Migratory species	Species that are listed as migratory under the EPBC Act.
MOU	The Memorandum of Understanding (MOU) that was entered into between Defence and Infrastructure that inter alia provides for the definition of an Offset Area of no less than 900 hectares at Defence Establishment Orchard Hills (DEOH) and its conservation and management to function as a biodiversity offset for WSI.
NPWS	The NSW National Parks and Wildlife Service
OEH	The NSW Office of Environment and Heritage
Orchard Hills	Defence Establishment Orchard Hills
Offsets assessment guide	The spreadsheet offset calculator that accompanies the EPBC Act Offsets Policy (DSEWPaC 2012).
PCT	PCT Plant community type
Species credit	The class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates according to the BBAM, FBA and BAM.
The EPBC Act Offsets Policy	The Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy October 2012 (DSEWPaC 2012)
TEC	Threatened ecological community listed under the EPBC Act and/or the BC Act.
TSC Act	The Threatened Species Conservation Act 1995 (NSW), which was repealed and replaced by the BC Act August 2017
WSI Airport	The site for Sydney West Airport as defined in the Airports Act, now known as Western Sydney International (Nancy Bird Walton) Airport (WSI).

1 PROJECT BACKGROUND

The Australian Government announced on 15 April 2014 that Badgerys Creek will be the site for the new Western Sydney Airport (the airport). The site is approximately 1768 hectares of land, acquired by the Commonwealth through the 1980s and 1990s. The airport will provide both domestic and international services once airport operations commence in 2026.

Approval for the construction and operation of the airport is controlled by the Airports Act 1996 (Cth) (Airports Act). The Airports Act provides for the preparation of a Western Sydney Airport Plan (Airport Plan), which will serve as the authorisation for the development of the airport. The Airport Plan was created identifying a staged development of the airport, providing details of the initial development being authorised, as well as a long-term vision of the airport over a number of stages. The Airport Plan was determined by the Minister for Urban Infrastructure on 5 December 2016

The Airport Plan contains a number of conditions that require measures to reduce potential biodiversity impacts and offset unavoidable residual impacts. Condition 30 of the Airport Plan requires the preparation of a Biodiversity Offset Delivery Plan (BODP) to compensate for residual significant impacts associated with the Stage 1 development of the Airport. The BODP (which was approved on 24 August 2018) outlines a number of direct offsets and supplementary measures to be implemented by the Department of Infrastructure, Transport, Regional Development and Communication (the Department) in order to offset the biodiversity impacts of construction of Stage 1 of the Airport. Offsets must be secured and implemented in accordance with the BODP, condition 30 of the Airport Plan and the *Environment Protection and Biodiversity Conservation (EPBC) Act* Environmental Offsets Policy.

GHD has assisted the Department in the preparation and the implementation of the BODP. Sub-condition 39(3) of the Airport Plan states that following approval of the BODP, the Department must report to Department of Agriculture, Water and the Environment (DAWEDAWE) every 12 months on its implementation until all biodiversity offsets and other compensatory measures identified in the BODP have been secured or implemented. Each BODP implementation report will outline the activities undertaken in the previous 12 months to identify and deliver biodiversity offsets and the quantum of offset that has been secured. GHD has assisted the Department with the compilation of BODP implementation reports in accordance with this sub-condition (GHD, 2020).

As required by sub-condition 30(11) of the Airport Plan, Alex Cockerill of WSP has been engaged as a suitably qualified subconsultant to audit the implementation of the BODP. This includes verifying all GHD reports, credit calculations and other deliverables as required in GHD's role assisting the Department with the implementation of the BODP. The main focus of this independent audit of the implementation of the BODP will be on accuracy of the offset calculations presented and consistency with the approved BODP, EPBC Act Offsets Policy and Airport Plan conditions.

This independent audit of the implementation of the BODP for the period between 25 August 2019 to 25 February 2021 relies on the detailed site inspections and field surveys undertaken on 21 May 2020 by Alex Cockerill, as part of the independent review of:

- the Orchard Hills Offset Area EPBC Act Offsets Policy Ecological Survey Report (see Appendix A of this report); and,
- the DEOH Offset Plan (GHD, 2020).

1.1.1 BIODIVERSITY OFFSET DELIVERY PLAN

The Airport Plan conditions required the Department to prepare for approval a BODP to compensate for significant residual impacts associated with the construction and development of the airport. The BODP was prepared in accordance with the requirements set out in condition 30 of the Airport Plan, including that the BODP takes into account:

- sections 28.5.3.3-28.5.3.5 in Chapter 28 of the Environmental Impact Statement for the airport;
- the Biodiversity Offset Package in volume 4 of the EIS; and,

- the EPBC Act 1999 Environmental Offsets Policy issued by the Environment Department in October 2012 (EPBC Act Offsets Policy).

The BODP was approved by the Department of the Environment and Energy on 24 August 2018. For more detail on the staged process of delivering a Biodiversity Offset package and then the Biodiversity Offset Delivery Plan refer to Figure 1.1 below.

Biodiversity offsets are required for significant residual impacts of WSI on:

- The threatened species and communities listed under the EPBC Act (affected threatened biota):
    - Cumberland Shale Plains Woodland and Shale-Gravel Transition Forest (Cumberland Plain Woodland) listed as a critically endangered ecological community (CEEC) under the EPBC Act. Construction of WSI would require the permanent removal of 141 hectares;
    - Grey-headed Flying-fox (*Pteropus poliocephalus*) listed as a vulnerable under the EPBC Act. Construction of WSI would remove 187.8 hectares of potential foraging habitat;
    - Swift Parrot (*Lathamus discolor*) listed as a critically endangered species under the EPBC Act. Construction of WSI would remove 187.8 hectares of potential winter foraging habitat;
    - Spiked Rice-flower (*Pimelea spicata*) listed as an endangered species under the EPBC Act. Construction of WSI is likely to have a significant impact on *Pimelea spicata* through the complete removal of this population and 2.94 hectares of occupied habitat.; and
- Other plants, animals and their habitat on Commonwealth Land, including threatened biota listed under the New South Wales (NSW) *Biodiversity Conservation Act 2016* (BC Act).

The EPBC Act Offsets Policy requires biodiversity offset sites to be secured under a legally binding conservation covenant (or other appropriate mechanisms) and the calculation of offsets for impacts on the affected threatened biota using the 'offsets assessment guide' spreadsheet. The guide calculates the percentage of the total requirement for the individual protected matter that would be delivered by an offset proposal. Further to this, offsets for significant residual impacts on plants, animals and their habitat have been calculated with reference to the NSW Framework for Biodiversity Assessment (FBA) methodology (Office of Environment and Heritage, 2014). The FBA is based on the NSW Biodiversity Banking and Offsets Scheme (BioBanking) credit calculator and assessment methodology (Office of Environment and Heritage, 2014), which was the methodology used to calculate offsets for major projects in NSW at the time that the airport EIS was prepared.

1.1.2 BODP IMPLEMENTATION REPORT

In accordance with sub-condition 39(3) of the Airport Plan, the Department is required to report to the Environment Department every twelve months on its implementation of the BODP, until all biodiversity offsets and other compensatory measures under the BODP have been secured or implemented. GHD has prepared has been engaged to prepare the implementation report on behalf of the Department, for the period 25 August 2019 through to 24 August 2020. The Department is required to publish this report on its website once it has been finalised.

The 2020 BODP implementation report (GHD, 2021) demonstrates how the Department has delivered on the requirements of the BODP, in accordance with the Airport Plan conditions, including:

- A description of activities undertaken to identify, secure and quantify direct offsets;
- A description of the other compensatory measures that have been delivered and steps taken to identify additional measures;
- Calculations of the quantum of direct biodiversity offsets secured for the airport based on information presented in the BODP and detailed biodiversity assessments for offset sites.

A summary of the BODP implementation activities that have been implemented during the reporting period comprise of:

- Synthesis of existing information and consultation with various offset vendors to identify and secure direct offsets;
- Establishment of the Offset Area at Defence Establishment Orchard Hills (DEOH), including execution of a Memorandum of Understanding to secure at least 900 hectares of land as an offset, completion of an EPBC Act Offsets Policy Initial Ecological Survey and consultation with Defence on the preparation of the DEOH Offset Plan for management of the site;
- Purchase of biodiversity credits to secure direct offsets for Cumberland Plain Woodland, the Grey-headed Flying-fox and Swift Parrot foraging habitat and for various plants, animals and their habitat;
- Finalisation of the threatened flora propagation program required by Condition 33 of the Airport Plan, delivery of a Pimelea spicata genetic research program and initial stages in the establishment of an ex situ *Pimelea spicata* population to support conservation of the species;
- Continued implementation of the Greening Australia seed collection and production program required by Condition 32 of the Airport Plan;
- Consideration of potential research, restoration and rewilding programs; and
- Other activities include discussions with key stakeholders from governments, private industry, and communities.

GHD state that consultation with Environment has also confirmed that:

- The quantum of offset for both plants, animals and their habitat' and 'affected threatened biota' can be expressed in terms of equivalent biodiversity credits;
- Offsets for Cumberland Plain Woodland can be expressed in terms of equivalent ecosystem credits for vegetation types that may comprise an occurrence of the community, and may be counted towards the quantum of offset for the community regardless of the current condition of the vegetation that has generated the credits and whether vegetation at the offset site meets the patch size and condition thresholds stated in the listing advice for the community (TSSC 2008);
- Grey-headed Flying-fox habitat and Swift Parrot foraging habitat can be expressed in terms of equivalent ecosystem credits for any woodland or forest vegetation type that contains food trees for these species, and that ecosystem credits may be counted towards the quantum of offset regardless of the current condition of the vegetation that has generated the credits. Specifically that areas without trees can be restored to eventually become treed and suitable habitat for these species.

The EPBC Act offset areas secured up to the end of the 2020 BODP implementation period include 908 hectares of land recognised as a conservation priority in BIO Map (OEH 2015). GHD state that the implementation of the BODP has ensured the:

- Conservation and improvement of 624 hectares of 'core habitat' comprising EPBC Act Cumberland Plain Woodland and other better condition vegetation with a near-natural structure within regional biodiversity corridors; and
- Restoration of 416 hectares of poorer quality Cumberland Plain Woodland and other derived grassland or scrub and associated increase in the extent and connectivity of habitat within and adjoining these priority lands.

Collectively the direct offsets secured in the 2020 BODP implementation period will help conserve over 1080 hectares of habitat with strategic conservation value.

1.1.3 OTHER IMPORTANT DOCUMENTATION

This independent audit considers the following related documents;

- Independent Review of the Orchard Hills Offset Area Initial Ecological Survey Report (WSP, 2020) (see Appendix A)
- Independent Review of the DEOH Offset Plan (WSP, 2020)

- The Orchard Hills Offset Area Initial Ecological Survey Report (GHD 2020)
- Orchard Hills Offset Area plan (DEOH Offset plan) (GHD 2020).

This independent audit assesses the following related documents;

- Summary of Offset calculations provided by GHD (2021) (excel document called WSP 2020 and ongoing offset proposal calculations_201120.xlx)
- Correspondence from DAWE to the Department regarding the use of BAM (email dated 1/10/2020 sent from Kate Gowland)
- Draft meeting minutes Western Sydney International offset requirements meeting between DAWE, the Department, GHD and Clayton Utz (30 September 2020).
- the biodiversity assessment and offset package in the airport EIS (GHD, 2016)
- the updated biodiversity survey of the WSI site and impact calculations presented in the Western Sydney Airport Stage 1 Biodiversity Assessment Report Addendum (GHD, 2018); and
- the EPBC Act Offsets Policy (Department of Sustainability Environment Water Population and Communities, 2012).
- Western Sydney International Airport Threatened Flora Propagation Program Delivery Report (ABGMA, 2019);and
- Conservation genomics of *Pimelea spicata* (Spiked Rice-flower) in support of management and translocation activities (RBGDT, 2019,)
- Memorandum of Understanding (MoU), Agreement to conserve and manage a biodiversity offset area at DEOH, between The Department of Deference and the Department (Defence, 2018).
- Credit transfer reports (supplied by the Department) (including 2020 purchases)
- Spatial data (supplied by GHD)
- EPBC offset calculator assessment guides for all offset sites (supplied by the Department).

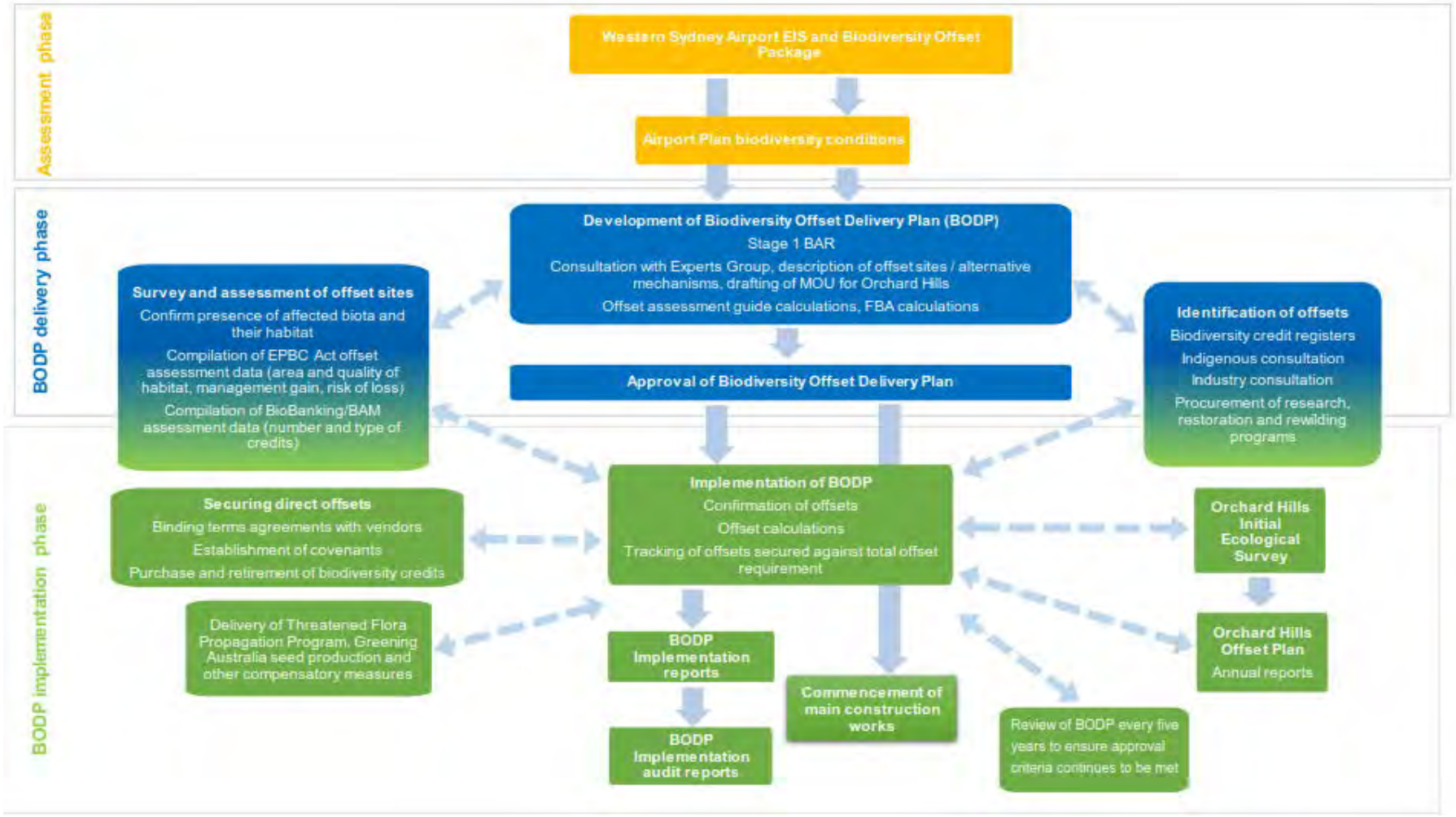

Figure 1.1 Implementation stages of the BODP

2 AUDIT DETAILS

2.1 AUDIT DETAILS

Table 2.1 Audit details

ASSESSMENT TITLE	INDEPENDENT VERIFICATION OF THE AIRPORT BODP
Client	Department of Infrastructure, Transport, Regional Development and Communications (previously The Department of Infrastructure, Transport, Cities and Regional Development)
Client Address	111 Alinga Street, CANBERRA ACT 2601
Client Telephone	1800 075 001
Main Auditee Contact	Kath Chesnut, Senior Ecologist – Biodiversity, GHD D +61 2 9239 7722 M +61 400 531 190 E kathryn.chesnut@ghd.com
Lead Auditor	Alex Cockerill
Auditor's Telephone	02 4929 8300

2.1.1 SUITABLY QUALIFIED EXPERT

Alex Cockerill (WSP) has been subcontracted by GHD on behalf of the Department as the Suitably Qualified Expert responsible for auditing the implementation of the BODP for the period between 25 August 2019 to 25 February 2021. The Department of Agriculture, Water and Environment (DAWE) approved Alex Cockerill as the independent auditor prior to the commencement of the audit in accordance with Condition 30(12) of the Airport Plan.

Alex has more than 20 years' experience in botanical and terrestrial ecological research, ecological impact assessment and conservation landscape management. He is responsible for managing large scale environmental impact assessment projects, including the coordination of field staff, preparation of reports, agency negotiations and ongoing facilitation of projects towards positive outcomes.

He is an Accredited BAM Assessor and recognised expert in the application of the BAM in NSW, regularly providing support to the NSW Government as a third-party reviewer. He has acted as an independent ecological expert participating in compliance audits on behalf of State and Commonwealth governments and as an Expert Witness on flora and vegetation matters in the NSW Supreme Court, NSW Land and Environment Court and the Victorian Court of Arbitration and Tribunal. Alex previously completed the independent verification of the Biodiversity Assessment Reports (BARs) for WSI in accordance with the Airport Plan conditions.

2.2 BODP DETAILS

A summary of the offset proposal presented in the BODP includes;

DIRECT OFFSETS

- Orchard Hills Offset Area; the Department has made an agreement with Defence and established an offset site at the Defence Establishment Orchard Hills (DEOH). A Memorandum of Understanding (MOU) was entered into between Defence and Infrastructure that includes provisions that are additional to any Commonwealth Heritage Listing requirements relating to the Offset Area.

  Based on preliminary offsets assessment guide calculations the Orchard Hills Offset Area could meet around:

- 63 % of the offset for Cumberland Plain Woodland from exiting EPBC condition TEC;
- 35 % of the offset for Cumberland Plain Woodland from poor condition vegetation to be improved through restoration to meet EPBC condition TEC
- 71% of the offset requirement for the Grey-headed flying-fox; and
- 47% of the offset requirement for Swift Parrot foraging habitat.

- Purchase of biodiversity credits through the NSW Biodiversity Offsets Scheme (BOS) (Office of Environment and Heritage, 2017); The quantum of offset that would be delivered is subject to the identification of suitable suites of credits sourced from appropriate offset sites. This purchasing of credits will be staged and is likely to deliver (based on preliminary site surveys):
  - at least 10% of the offset requirement for Cumberland Plain Woodland;
  - around 15 to 25% of the offset requirement for the Grey-headed Flying-fox;
  - up to 35% of the offset requirement for Swift Parrot foraging habitat; and
  - up to 60% of the offset requirement for *Pimelea spicata* when linked to an area of occupied habitat.
- Acquisition of strategic parcels of land that promote connectivity for the Cumberland Plain Corridor
- Restoration and rewilding programs; improve the extent, connectivity and condition of native vegetation and habitat in the Cumberland Plain on non-biodiversity stewardship sites.

OTHER COMPENSATORY MEASURES

- Threatened Flora Propagation Program (TFPP); Propagation, research program and in situ collection of threatened plants species found at the airport site (including *Pimelea spicata, Marsdenia viridiflora subsp. viridiflora* and *Pultenaea parviflora*). As required by Condition 33 of Airport Plan, the Australian Botanic Gardens, Mount Annan (ABGMA) and Royal Botanic Gardens and Domain Trust (RBGDT) have been engaged by GHD as a sub-consultant to deliver a Threatened Flora Propagation Program (TFPP). Stage 1 works of the TFPP have been completed, and the following plant materials have been collected for conservation work and research;
  - *Pimelea spicata* (190 plants in the nursery, 6,100 seeds held in PlantBank).
  - *Marsdenia viridiflora subsp. viridiflora* (560 plants, 108 seeds).
  - *Pultenaea parviflora* (500 plants, 50 seeds).
- Greening Australia seed collection and production program; In accordance with Condition 32 (1) of the Airport Plan, the Department has entered into an agreement with Greening Australia to contribute funds to the organisation's Cumberland Seed Hub program in Western Sydney. The objective of the program is to deliver a reliable source of native seed for ecological restoration work, with the primary focus on species associated with Cumberland Plain Woodland
- Longer term research and capacity building, including training

COMPLEMENTARY OUTCOMES

- Aboriginal land management; Secure long-term training and employment opportunities in land management and restoration for Aboriginal peoples in Western Sydney.

3 AUDIT PROCESS

3.1 AUDIT SCOPE

Condition 30 of the Airport Plan states:

> (10) The Infrastructure Department must implement the approved Biodiversity Offset Delivery Plan on behalf of the Commonwealth.
>
> (11) The Infrastructure Department must:
>
> (a) ensure that an independent audit of its compliance with condition 30(10) is conducted in respect of;
>
> (i) the 12-month period commencing with the approval of the Biodiversity Offset Delivery Plan; and
>
> (ii) each subsequent 18-month period until all biodiversity offsets required by the Biodiversity Offset Delivery Plan have been secured or implemented; and
>
> (b) submit a report of each audit that is carried out to the Environment Department within six months of the end of the period in respect of which the audit was conducted.
>
> (12) For each audit, the independent auditor must be approved by an Approver prior to the commencement of the audit. Audit criteria must be agreed to by an Approver and the audit report must address the criteria to the satisfaction of an Approver.

In accordance with sub-condition 30(12) of the Airport Plan, the independent auditor, for the implementation of the BODP during the period between 25 August 2019 to 25 February 2021, Alex Cockerill, was approved by DAWE on the 02/02/2021. The audit criteria was also agreed by DAWE on that date.

The audit process consisted of:

- a field inspection of the proposed DEOH Offset Site (on 21 May 2020);
- review of relevant background information and the *2020 BODP implementation report*; and,
- an audit interview.

During last year's BODP audit, the Orchard Hills Offset Area Initial Ecological Survey Report and DEOH Offset Plan were in preparation and therefore could not be reviewed. As such, an independent review of these documents was completed in mid to-late 2020 to verify the content of both reports and supporting documentation. The field inspection completed on 21 May 2020 of the proposed DOEH Offset Site is deemed relevant to and has been relied upon to inform the independent audit of the BODP as well as the review of the Orchard Hills Offset Area Initial Ecological Survey Report and DEOH Offset Plan .

3.2 AUDIT METHODOLOGY

3.2.1.1 AUDIT INTERVIEW

Audit interviews were conducted by the approved independent auditor (Alex Cockerill) on 11 February 2021, at which time key compliance requirements and site management issues were discussed specifically in relation to the audit criteria. See section 4.3 below for a summary of the audit interview.

The participants of this interview and their roles are listed in Table 3.1.

Table 3.1 Interview attendees

STAFF	ORGANISATION	TITLE
Alex Cockerill	WSP	Independent auditor
Kath Chestnut	GHD	Senior Ecologist - Biodiversity

Where possible, documents and data collected during the audit were reviewed during the interview. A number of documents used for the audit were reviewed off-site following the site audit interview.

Information obtained during the audit was verified where possible. For example, statements made by staff were verified by reviewing relevant documentation and/or site inspections.

3.2.1.2 FIELD INSPECTION OF THE PROPOSED DEOH OFFSET SITE

An initial site inspection of the Orchard Hills Offset Area was undertaken in March and November in 2019, by Alex Cockerill, as part of the 2019 BODP audit. Following the completion and submission of the Orchard Hills Offset Area Initial Ecological Survey Report and DEOH Offset Plan during 2020, an additional field inspection was undertaken on the 21 May 2020.

Specifically, the field inspection focused on vegetated areas and included both random meander surveys and rapid assessments (RA) as detailed below to complete:

- Vegetation zone identifications and boundary confirmations
- Review of plot and transect locations
- Review of field data collection points
- Review of general site condition and habitat for threatened species
- Review of management issues and proposed adequacy of management actions.

This field inspection (21 May 2020) has been relied upon for the purpose of this independent review of the *2020 BODP implementation report.*

3.2.2 RAPID ASSESSMENT

To assess biodiversity values, a total of 47 rapid assessments have now been undertaken throughout the Orchard Hills site on three occasions (in March and November 2019 and May 2020) (see appendix A if Appendix A). The rapid assessments incorporated methodologies from the Biobanking Assessment Methodology 2014 (BBAM), Biodiversity Assessment Methodology 2016 (BAM) and BioBanking Operation Manual prepared by Seidel & Briggs 2008 and included an additional assessment of weed species diversity, cover and native regeneration. The BioBanking Operation Manual (Seidel & Briggs, 2008) is an endorsed industry document which details the methodology of BioBanking methodology introduced in 2008. The data collected from the rapid assessments was used to review and assess the 'Start site value' scores for the proposed Orchard Hills Offset Area calculations in accordance with the EPBC Act Offsets Policy October 2012.

3.2.3 CONDITION AND QUALITY ASSESSMENT OF VEGETATION COMMUNITIES

The general condition of vegetation was assessed during the field surveys using parameters such as intactness, diversity, history of disturbance, weed invasion and health.

Three general categories were used to describe the condition of vegetation communities:

- **Good:** Vegetation still retains the species complement and structural characteristics of the pre-European equivalent. Such vegetation has usually changed very little over time and displays resilience to weed invasion due to intact groundcover, shrub and canopy layers.
- **Moderate:** Vegetation generally still retains its structural integrity but has been disturbed and has lost some component of its original species complement. Weed invasion can be significant in such remnants.
- **Low:** Vegetation that has lost most of its species and is significantly modified structurally. Often such areas have a discontinuous canopy of the original tree cover, with very few shrubs. Exotic species, such as introduced pasture grasses or weeds, replace much of the indigenous ground cover. Environmental weeds are often co-dominant with the original indigenous species.

3.3 REPORTING

The observations made during the field inspections (in 2019 and 2020) were reviewed and any outstanding information that was needed was clarified with GHD. The audit requirement checklists were completed following the receipt of outstanding information or clarification of data gaps. This report was then prepared to provide an overview of any compliance issues and any other observations made by the auditor during the audit.

3.4 DEFINITIONS

The determination of results from the audit was based on the definitions provided in Table 3.2.

Table 3.2 Audit definitions

RATING	DESCRIPTION
Compliant (Y)	The Department has been found to comply with the specific requirement of a plan or condition of approval.
Observation (O)	The Department has been found to be compliant with the specific requirement of an approval condition or plan, although issues relevant to that requirement were noted.
Not compliant (N)	The Department has been found to have not met the specific requirement of a plan or condition of approval.
Not applicable (NA)	A specific requirement of a condition of approval or plan relevant to the site falls outside the scope of the audit, is addressed or duplicated by another audit condition or has not been triggered.

4 AUDIT FINDINGS

This section provides an overview of the findings of the audit. A detailed assessment of compliance for each requirement of the approved audit protocol against the criteria is described in Appendix B

4.1 STATUS OF OPERATIONS

The following direct offset sites were purchased (it has been noted that these have not yet been retired) during the 2020 BODP implementation period (specifically 25 August 2019 to 25 August 2020):

- 29 *Dillwynia tenuifolia* species credits purchased by Infrastructure on 07 April 2020 from the Castlereagh biobank (Agreement ID BA375)
- 4 ecosystem credits of the PCT 781/ HU533 that can be presented as offsets for freshwater wetlands (HN630) were purchased by Infrastructure in 29 July 2020 from the Agreement ID BA393.

The outcome of the credit screening and selection process is that the following credits would be secured;

- 1,176 HN529 ecosystem credits that also comprise Cumberland Plain Woodland and Grey-headed Flying-fox habitat and Swift Parrot foraging habitat; and
- 254 HN526 ecosystem credits that also comprise Grey-headed Flying-fox habitat and Swift Parrot foraging habitat.

The quantum of offset claimed in the 2020 BODP implementation report as secured in the 2019 and 2020 implementation years includes:

- 100 percent of the total offset requirement for Cumberland Plain Woodland and each of the component vegetation and ecosystem credit types in the WSI impact area;
- 100 percent of the total offset requirement for Grey-headed Flying-fox habitat and Swift parrot foraging habitat and each of the component vegetation and ecosystem credit types in the WSI impact area; and
- 100 percent of the total offset requirement for the species credit matters Cumberland Plain Land Snail, *Dillwynia tenuifolia, Pultenaea parviflora* and the *Marsdenia viridiflora subsp. viridiflora* endangered population.

4.2 COMPLIANCE

There were no non-compliances identified as part of this audit (see Table 4.1). A full checklist of compliance and auditor comments against each requirement is provided in Appendix B.

Table 4.1 Summary of compliance

COMPLIANCE INDICATOR	COMPLIANCE FINDING[1]	COMPLIANCE REFERENCE NUMBER[2]
CONDITION 30(10) THE INFRASTRUCTURE DEPARTMENT MUST IMPLEMENT THE APPROVED BIODIVERSITY OFFSET DELIVERY PLAN ON BEHALF OF THE COMMONWEALTH		
The Infrastructure Department must implement the approved Biodiversity Offset Delivery Plan on behalf of the Commonwealth	**Observation (O)**	**1**
CONDITION 30(6) THE BIODIVERSITY OFFSET DELIVERY PLAN MUST:		
(a) be consistent with the EPBC Act Environmental Offsets Policy (2012) to the satisfaction of the Approver, including in particular:	**Observation (O)**	**2**

COMPLIANCE INDICATOR	COMPLIANCE FINDING[1]	COMPLIANCE REFERENCE NUMBER[2]
(i) offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter;	**Observation (O)**	**3**
(ii) offsets must be built around Direct Offsets but may include Other Compensatory Measures (including that the offsets must be 'like-for-like');	**Compliant (Y)**	**n/a**
(iii) offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs; and	**Observation (O)**	**4**
(iv) the identification of offsets must be informed by scientifically robust information and incorporate the precautionary principle in the absence of scientific certainty	**Compliant (Y)**	**5**
(b) include measures to offset impacts on foraging habitat for the Swift Parrot (*Lathamus discolor*) in addition to those species and ecological communities listed in the Biodiversity Offset Strategy provided as part of the EIS;	**Observation (O)**	**6**
(c) identify biodiversity credits (or other measure as appropriate) required to offset the total impacts of the Stage 1 Development on biodiversity, determined in accordance with the relevant policies;	**Observation (O)**	**7**
(d) provide evidence that the required biodiversity credits (or other measure as appropriate) can be secured in accordance with the relevant policies;	**Observation (O)**	**8**
(e) provide evidence that the arrangements for managing the Direct Offsets will be provided through mechanisms that are enduring, enforceable and auditable; and	**Compliant (Y)**	**n/a**
(f) if any Other Compensatory Measures are proposed, provide details of those measures along with a justification of why they should be considered acceptable.	**Compliant (Y)**	**n/a**
CONDITION 30 (11) THE INFRASTRUCTURE DEPARTMENT MUST		
(a) ensure that an independent audit of its compliance with condition 30(10) is conducted in respect of;	**Compliant (Y)**	**n/a**
(i) the 12-month period commencing with the approval of the Biodiversity Offset Delivery Plan; and	**Compliant (Y)**	**n/a**
(ii) each subsequent 18-month period until all biodiversity offsets required by the Biodiversity Offset Delivery Plan have been secured or implemented; and	Not applicable (NA)	**n/a**
(b) submit a report of each audit that is carried out to the Environment Department within six months of the end of the period in respect of which the audit was conducted.	**Compliant (Y)**	**n/a**

(1) Refer to Table 3.2 for audit compliance definitions

(2) Refer to Table 4.2 'Compliance reference number' for further detailed regarding specific audit findings and observations for each compliance indicator.

4.3 SUMMARY OF AUDIT OBSERVATIONS

A number of observations were made during the audit when reviewing the 2020 BODP implementation report and biodiversity credit and area calculations. These observations were determined to not affect compliance against the agreed audit requirements protocol (Appendix B), however observations and recommendations have been provided below (Table 4.2).

Table 4.2 Summary of audit observations

COMPLIANCE REFERENCE NUMBER	COMPLIANCE INDICATOR	AUDIT OBSERVATIONS
CONDITION 30(10) THE INFRASTRUCTURE DEPARTMENT MUST IMPLEMENT THE APPROVED BIODIVERSITY OFFSET DELIVERY PLAN ON BEHALF OF THE COMMONWEALTH		
1	The Infrastructure Department must implement the approved Biodiversity Offset Delivery Plan on behalf of the Commonwealth	Observations cited within the 2020 BODP Implementation report include; The word "secured" is used in the 2020 BODP implementation report to describe purchased and transferred credits to the Department under the NSW biobanking scheme. However, until these credits are retired, they are not considered secured. It is recommended the wording throughout the 2020 BODP implementation report identifies credits as secured only once the credits have been retired. Consideration should be given to revising and/or updating the currently approved BODP to be consistent with the biodiversity values described within the Initial Ecological Survey report and corresponding NSW FBA and BBAM credit calculations meeting the offset liability within the BODP.
CONDITION 30(6) THE BIODIVERSITY OFFSET DELIVERY PLAN MUST:		

2	(a) be consistent with the EPBC Act Environmental Offsets Policy (2012) to the satisfaction of the Approver, including in particular:	This requirement is considered throughout the approved BODP. Consistency with specific criteria is demonstrated further in Chapter 9 of the approved BODP. The calculation of the offset requirements for Stage 1 development impacts and the proposed offsets in the BODP has used a consistent EPBC 'offsets assessment guide' spreadsheet and NSW FBA and BBAM. The BODP was approved by DoEE (Now DAWE) on 24 August 2018. The 2020 BODP Implementation report incorporates an assessment of each offset with either the EPBC Act Environmental Offsets Policy (2012) or the NSW FBA / BBAM (currently replaced with the NSW Biodiversity Offset Scheme (BOS) under the NSW Biodiversity Conservation Act 2016 (NSW). DAWE have provided correspondence (email dated 1/10/2020 sent from Kate Gowland) approving the use of the NSW BOS for the quantification and delivery of the project's offsets in the 2020 BODP Implementation report. Ecosystems and Species credits have been purchased from offsets sites secured under the NSW Biobanking Scheme, or BOS in perpetuity. The DEOH Offset area is proposed for conservation management through a MOU between Defence and Infrastructure and the implementation of the DEOH Offset Plan (GHD 2020). The tenure of this site will be maintained by Defence. There is some inconsistency between the MOU, DEOH Offset Plan and 2020 BODP Implementation report in regard to the proposed mechanism for security and commitment to management of the proposed DEOH offset area beyond the MOU Offset Improvement Period. In particular, the DEOH Offset Plan states; *'the MOU also provides for the conservation of the Offset Area (in the state achieved by the end of the Improvement Period) in perpetuity.'* It is noted that the projects impacts are permanent and the policy states '*secured for at least the same duration as the impact on the protected matter arising from the action*'. However, it is also recognised that the BODP was approved by DoEE (Now DAWE) on 24 August 2018 and in doing so DAWE have accepted the intent of the MOU for in perpetuity protection as meeting the policy requirements. It is recommended the 2020 BODP implementation report clarifies and confirms how the DEOH Offset Plan is to implemented and secured by Defence beyond the MOU Offset Improvement Period and addresses Section 7.2.1 of the EPBC Act Environmental Offsets Policy (2012).

3	(i) offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter;	The BODP provides evidence that the proposed offsets deliver an overall conservation outcome that improves or maintains the viability of the protected matters. This was approved by DoEE on 24 August 2018. The 2020 BODP Implementation report outlines offsets delivered and generally consistent with the BODP. Difference between the BODP and the 2020 BODP Implementation report include changes in the quantification of offsets from the EPBC offset calculations to the use of NSW FBA and BBAM credit calculations. The differences in the approach to quantification are justified and reflect changes in NSW offset policy currently endorsed by the Commonwealth for assessing and providing offset for MNES. The application of the NSW BOS has also been endorsed in correspondence with the DAWE specifically for the project (email dated 1/10/2020 sent from Kate Gowland). The quantification of offsets in terms of NSW FBA and BBAM credits also allows for the residual credit liabilities to be converted to BAM credits under the current NSW BOS. A conversion has formally been provided under the *Statement of assessment of reasonable equivalence* by DPIE in accordance with clause 22(3) of the Biodiversity Conservation (Savings and Transitional) Regulation 2017. The FBA and BBAM credit calculations for the Orchard Hills offset area have been provided for each ecosystem condition class. These calculations were consistent with those presented in the final, independently verified Initial Ecological Survey report (GHD 2020). As confirmed between GHD and DAWE, offsets for Cumberland Plain Woodland can be expressed in terms of equivalent ecosystem credits. These ecosystem credits may be counted towards the quantum of offsets for the community regardless of the condition and whether vegetation at the offset site meets the patch size and condition thresholds in the listing advice for the community (TSSC 2008) so long as the vegetation being offset generates credits. Grassland areas of PCT 849 and PCT 835 will generate ecosystem credits as the proposed management actions detailed in the DEOH Offset Plan (including weed and overabundant native fauna maintenance) will improve the current condition of the grasslands over time and contribute to a gain in biodiversity value in accordance with BBAM. As such, ecosystem credits generated by grassland areas can be used to fulfill credit obligations for these PCTs.

		Following detailed review of the DEOH Offset Plan it is noted there are multiple references to potentially competing management outcomes in regard to the maintenance of natural grassland and providing for the natural regeneration of canopy and midstory. In particular, Section 4.3.3 of the DEOH Offset Plan states; *'The strategy should include maintenance of areas of species rich native grasslands or scrub'* and further *'areas to be maintained as grassland'*. This management strategy is described for Management Unit (MU) C in Table 5.1 as 'Maintain and enhance native grassland or scrub'. However, Table 5.2 the DEOH Offset Plan also proposes to facilitate the natural regeneration of canopy and mid-storey within MU C through the following management actions. — Weed control — Application of ecological fire management — Management of human disturbance — Erosion Control — Retention of regrowth and remanent native vegetation (specifically to develop a regeneration and revegetation strategy which provides for fine scale mapping of extent of natural regeneration with an overall objective of canopy cover of greater than 10% when measured across continuous patches) Supplementing the above is an additional management action under 12.9.1.7 of the BBAM: — Control feral and/or overabundant native herbivores The DEOH Offset Plan also includes specific performance criteria with an overall objective of establishing canopy cover of >10% when measured across continuous patches of the community. The current BBAM credit calculations for these areas of poor condition grassland within MU C have generated credits on the assumption the minimum management actions required under the Section 12.9 of BBAM will be undertaken, including active and or natural regeneration to reinstated a canopy and mid-storey layers and deliver the default increase scores for Over-storey (OS) and Mid-storey (MS) cover. If such regeneration was to be excluded or unsuccessful the OS and MS attribute gain would require reduction in accordance with Section 12.2 of the BBAM.

		It is the opinion of the independent auditor that areas of natural grassland within MU C are unlikely to naturally regenerate a canopy structure without the additional provision of assisted plantings outlined in Table 5.2 for other areas and MUs. Despite this view it is acknowledged the DEOH Offset Plan does include management actions within MU C to facilitate natural regeneration. Furthermore, the DEOH Offset Plan also includes detailed requirements for monitoring and reporting on the progress of these action in meeting the offset objectives in chapter 6. Given the implementation of the DEOH Offset Plan will be the subject of future 5 yearly reviews and further independent audits of the BODP implementation, there is likely to be sufficient transparency on BODP implementation, performance of the Offset Plan and quantification of the BBAM calculations generated from the offset site. The approved BODP and DEOH Initial Ecological Survey report excluded the use of the poor condition PCTs 849 and PCT 835 as an offset for the habitat for Swift Parrot and Grey-headed Flying-fox based on 'Like for Like' requirements of the EPBC Act Environmental Offset Policy. The FBA and BBAM calculation in the 2020 BODP Implementation report have included all areas of PCT 835 and PCT 849 as offset for the habitat for Swift Parrot and Grey-headed Flying-fox. It is acknowledged that while these areas don't meet the 'Like for Like' requirements of the EPBC Act Environmental Offset Policy, the endorsed NSW BOS under the BC Act includes areas of habitat for ecosystem species regardless of the condition. The NSW BOS assumes ecosystem credits are generated from the improvements of areas in poor condition either through natural or active regeneration and will provide habitat for these ecosystem species over time. The use of ecosystem credits for the Swift Parrot and Grey-headed Flying-fox is therefore reasonable where the management units provide for natural or active regeneration of habitat for these ecosystem species over time. The specific habitat components of PCT 835 and PCT 849 for the Swift Parrot and Grey-headed Flying-fox are the presence of winter flowering trees for foraging. If the proposed management of the Orchard Hill offset area includes areas of actively maintained grasslands without canopy, it is unreasonable to include these areas within the species ecosystem credits. DAWEs endorsement of the use of ecosystem credits under the NSW BOS (or in this case FBA) to meet the BODP credit liabilities of the Swift Parrot and Grey-headed Flying-fox, states;

COMPLIANCE REFERENCE NUMBER	COMPLIANCE INDICATOR	AUDIT OBSERVATIONS
		'It is assumed that untreed areas can be restored to eventually become treed and suitable as habitat. Certainly, this was the original intention of restoration activities to be carried out at Orchard Hills under agreement between Infrastructure and Department of Defence.' Therefore, the performance of the proposed natural regeneration of canopy OS and MS within grassland areas of MU C, will require specific focus by future BODP implementation audits and DEOH Offset Plan 5 year review to ensure the assumed natural regeneration and corresponding credit calculations for MU C are adequately providing offsets for the Swift Parrot and Grey-headed Flying-fox as currently proposed.

COMPLIANCE REFERENCE NUMBER	COMPLIANCE INDICATOR	AUDIT OBSERVATIONS
4	(iii) offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs; and	The Orchard Hills offset area is recognised under the Memorandum of Understanding (MOU) as providing additional conservation requirements and security to its current existing land use, which is currently managed for Defence capability purposes, Defence training activities and the use and safe storage of explosives. The management of the Orchard Hills offset area under DEOH Offset Plan, will be funded and implemented to provide measurable ecological improvements consistent with the EPBC Act Environmental Offsets Policy. The MOU between Defence and Infrastructure includes provisions that are stated as additional to any Commonwealth Heritage Listing requirements relating to the Orchard Hills offset area. The existing plans and documents related to conservation management within the DEOH include a number of existing management actions that are considered 'basic maintenance of values'. Some of these actions could be considered as existing conservation obligations requiring the credits calculated from the Orchard Hills offset area to have a discount percentage applied in accordance with subsection 12.10 of the BBAM. The existing conservation obligations include but are not limited to; — Weed control — Application of ecological fire management — Manage human disturbance It is recommended that the 2020 BODP Implementation report includes a review of the existing management plans and actions for DEOH and an appropriate assessment of management actions required for existing conservation obligations against the specific criteria of subsection 12.10 of the BBAM. If the assessment identifies that a discount percentage is required for the existing conservation obligations, the BBAM Biobanking credit calculation should be reviewed in accordance with discounts for each action in Table 10 of the BBAM with appropriate justification.

COMPLIANCE REFERENCE NUMBER	COMPLIANCE INDICATOR	AUDIT OBSERVATIONS
5	(iv) the identification of offsets must be informed by scientifically robust information and incorporate the precautionary principle in the absence of scientific certainty	A detailed independent review of the DEOH Initial Ecological Survey report was completed in June 2020, and has been attached, see Appendix A A brief summary of the reviews finding are provided below; Minor changes/recommendations regarding the survey methodology. Small changes to vegetation mapping were recommended due to inconsistencies found during the field inspections, included; — Changes mapping to Cumberland Plain Woodland (HN 528) rather than Shale Gravel Transitional Forest (HN 512) which it was currently mapped (At RA4) — Areas of Poor condition HN528 revised to Low condition HN 528 — Areas of HN528 in northern offset (associated with RA 28 and 29) to be revised to low condition — Areas of good condition HN526 revised to poor condition HN526 — Exclusion from the offset; an area of Poor Condition HN528, recently cleared and associated with a construction compound. In total, the field verification confirmed the vegetation mapping to be consistent across 37/45 or 82% of the sampled RA sites The recommendations were generally addressed and can be found in Section 7 of DEOH Initial Ecological Survey report (GHD, 2020).

COMPLIANCE REFERENCE NUMBER	COMPLIANCE INDICATOR	AUDIT OBSERVATIONS
6	(b) include measures to offset impacts on foraging habitat for the Swift Parrot (*Lathamus discolor*) in addition to those species and ecological communities listed in the Biodiversity Offset Strategy provided as part of the EIS;	The approved BODP and DEOH Initial Survey report excluded the use of the poor condition PCTs 849 and PCT 835 as an offset for the habitat for Swift Parrot and Grey-headed Flying-fox based on 'Like for Like' requirements of the EPBC Act Environmental Offset Policy. The FBA and BBAM calculation in the 2020 BODP Implementation report have included all areas of PCT 835 and PCT 849 as offset for the habitat for Swift Parrot. It is acknowledged that while these areas don't meet the 'Like for Like' requirements of the EPBC Act Environmental Offset Policy, the endorsed NSW BOS under the BC Act includes areas of habitat for ecosystem species regardless of the condition. The NSW BOS assumes ecosystem credits are generated from the improvements of areas in poor condition either through natural or active regeneration and will provide habitat for these ecosystem species over time. The use of ecosystem credits for the Swift Parrot and Grey-headed Flying-fox is therefore reasonable under the NSW FBA, BBAM and BOS where the management units provide for natural or active regeneration and will provide habitat for these ecosystem species over time. The specific habitat components of PCT 835 and PCT 849 for the Swift Parrot and Grey-headed Flying-fox is the presence of winter flowering trees for foraging. If the proposed management of the Orchard Hill offset area includes areas of actively maintained grasslands without canopy, it is unreasonable to include these areas within the species ecosystem credits. DAWEs endorsement of the use of ecosystem credits under the NSW BAM (or in this case FBA/BBAM) for the BODP credit liabilities of the Swift Parrot and Grey-headed Flying-fox, states: '*It is assumed that untreed areas can be restored to eventually become treed and suitable as habitat. Certainly, this was the original intention of restoration activities to be carried out at Orchard Hills under agreement between Infrastructure and Department of Defence.*' Therefore, the performance of the proposed natural regeneration of canopy OS and MS within grassland areas of MU C, will require specific focus by future BODP implementation audits and DEOH Offset Plan 5 year review to ensure the assumed natural regeneration and corresponding credit calculations for MU C are adequately providing offsets for the Swift Parrot and Grey-headed Flying-fox as currently proposed.

COMPLIANCE REFERENCE NUMBER	COMPLIANCE INDICATOR	AUDIT OBSERVATIONS
7	(c) identify biodiversity credits (or other measure as appropriate) required to offset the total impacts of the Stage 1 Development on biodiversity, determined in accordance with the relevant policies;	The biodiversity credits (or other measure as appropriate) required to offset the total impacts of the Stage 1 was previously approved by DoEE for the EIS, including preliminary calculation of Orchard hills offset area within the BODP. The assumptions and criteria used to determine the offset liability for the impact under the EPBC Offset policy calculator, are consistent with the assumptions for determining the quantum of the offset from the projects impacts. Infrastructure has subsequently assessed and quantified all offsets in regard to the NSW FBA and BBAM calculator and BAM (using the statements of equivalence issued by DPIE) consistent with advice from DAWE. The conversion of all offset obligations to BBAM credits (using the FBA calculator) and BAM credits (using the credit equivalence issued by DPIE) and their corresponding costs provide a consistent measure of evaluation against the credits liability in the BODP. This will enable the department to justify the adequacy of all credits sourced, regardless of type, for the project and confirm that the credit liability has been met. The BODP Implementation report outlines in Section 1.6 a method to evaluate the equivalent credit contribution of 'Other compensatory measures' and in particular the $10,000,000 contribution to Greening Australia Native Seed Production Area. The method provides a logical and reasonable approach to quantifying the Other compensatory measures. The previous observations in relation to revising the BBAM credit calculations for the Orchard Hill offset area to reflect the areas of maintained grassland and an assessment of management actions required for existing conservation obligation under BBAM also relate to this condition. Any changes in relations to the BBAM credit calculations arising from these recommendations will require a revision to the Tables 6 and 7 of the current 2020 BODP Implementation report or if applicable, a future BODP Implementation report.

COMPLIANCE REFERENCE NUMBER	COMPLIANCE INDICATOR	AUDIT OBSERVATIONS
8	(d) provide evidence that the required biodiversity credits (or other measure as appropriate) can be secured in accordance with the relevant policies;	While evidence was cited for all credit transfers within 2020 BODP Implementation report, no evidence was provided that these credits were subsequently retired and secured. It is recommended that in future compliance reporting that evidence (documented dates) that the credits are now retired should be provided.

4.4 RECOMMENDATIONS

In summary the key audit observations have recommended;

- The 2020 BODP implementation report clarifies how the DEOH Offset Plan is implemented and secured by Defence beyond the MOU in perpetuity and/or in accordance with Section 7.2.1 of the EPBC Act Environmental Offsets Policy (the policy) (2012).
- The 2020 BODP Implementation report includes a review of the existing management plans and actions for DEOH and an appropriate assessment of management actions required for existing conservation obligations using the specific criteria of subsection 12.10 of the BBAM. If the assessment identifies a discount percentage is required for the existing conservation obligations the FBA and BBAM credit calculation should be reviewed in accordance with discounts for each action in Table 10 of the BBAM with appropriate justification.
- The performance of the DEOH Offset Plan is required to be reviewed after 5 years of implementation. This review should clarify how competing MU C objectives of 'maintaining grasslands' and 'facilitating natural regeneration of areas towards woodland or forest structure' have been managed and more specifically evaluate the success of management actions outlined in Table 5.2 for establishing canopy OS and MS layers against the requirements under Section 12.9 BBAM.
- The proposed management actions for the natural regeneration of canopy within MU C of current DEOH Offset Plan is subject to specific review by future independent audits of the BODP implementation to confirm the BBAM credit calculations default increase scores for OS and MS cover within the CPW, Swift Parrot and Grey-headed Flying-fox are being met.
- The wording throughout the 2020 BODP implementation report identifies credits as secured, when only once the credits have been retired.
- Any changes in relations to the BBAM credit calculations arising from these recommendations will require a revision to the Tables 6 and 7 of the current 2020 BODP Implementation report or if applicable, a future BODP Implementation report.

4.5 CONCLUSIONS

Based on the review of available documentation and observations made during the audit, the Department are meeting compliance criteria for the Implementation of the BODP in accordance with condition 30 of the Airport Plan.

The 2020 BODP implementation report demonstrates Infrastructure's significant commitment to the biodiversity offsets obligations outlined within the BODP.

Consultation with DAWE has confirmed that in implementing the BODP, the relative contributions of each offset proposal can be determined through either the EPBC Act offset assessment guides or credit calculations using NSW methodologies. The 2020 BODP implementation report has revised the approach to quantifying contributions of each offset proposal by using the NSW BBAM credit calculation. This approach provides a logical and consistent method of balancing the projects credit liability and provides opportunity for the formal conversion (through a statement of equivalence) of the residual credit liabilities to BAM credits under the current NSW BOS.

Following a review of the final DEOH Offset Plan, potential minor inconsistencies in the proposed management strategies for the natural regeneration of MS and OS within the native grassland areas of MU C have been identified. The future success of establishing an OS and MS within this MU will require monitoring and review to ensure the current

BBAM credit calculations are accurately being quantified against the offset liabilities for CPW, Swift Parrot and Grey-headed Flying-fox.

The audit has also identified the need for further clarification and review of the application of management actions required for existing conservation obligations using the specific criteria in subsection 12.10 of the BBAM when using the NSW BBAM credit calculators to quantify the credits generated from the Orchard Hills offset area.

It is acknowledged that despite the identified inconsistencies in BBAM calculations, the implementation of the Orchard Hills DEOH Offset Plan will provide for significant conservation outcomes additional to the current obligations and provide long term conservation outcomes for the area.

4.6 LIMITATIONS

- This report has been developed from certain information provided by GHD at the request of and exclusively for the use and benefit of the Department (the Auditee).
- This report has been prepared in accordance with the scope of work/services set out in a contract, or as otherwise agreed, between the Auditor and the Auditee. In preparing this report, the Auditor has relied upon data, surveys, analyses, designs, plans and other information provided by the Auditee and other individuals and organisations, most of whom are referred to in the report (the data).
- The Auditor assumes no responsibility and will not be liable to any other person or organisation for, or in relation to any matter dealt with in this report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in this report.
- The Audit has examined the Auditee's compliance with the period from 25 August 2019 to 25 February 2021. The Auditor has relied on information provided by the Auditee. The Auditor expresses no opinion as to the accuracy, truth, sufficiency or legality of the information provided by the Auditee in respect of the Auditee's compliance standards.
- Neither the Auditor nor any member, associate or employee of WSP undertakes any responsibility for any injury, loss or damage claimed by the Auditee arising out of a claim by any third party against the Auditee in connection with this Report.

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APPENDIX A

ORCHARD HILLS OFFSET AREA ECOLOGICAL SURVEY REPORT - INDEPENDENT REVIEW

DEPARTMENT OF INFRASTRUCTURE, TRANSPORT, CITIES AND REGIONAL DEVELOPMENT

WESTERN SYDNEY INTERNATIONAL AIRPORT BIODIVERSITY OFFSET DELIVERY PLAN (BODP)

SURVEY REPORT INDEPENDENT REVIEW

JUNE 2020

Question today
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Western Sydney International Airport Biodiversity Offset Delivery Plan (BODP) Survey Report Independent Review

Department of Infrastructure, Transport, Cities and Regional Development

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REV	DATE	DETAILS
RevA	19/06/2020	Final document

	NAME	DATE	SIGNATURE
Prepared by:	Tanya Bangel Alex Cockerill	19/06/2020	
Reviewed by:	Alex Cockerill	19/06/2020	
Approved by:	Alex Cockerill	19/06/2020	

TABLE OF CONTENTS

GLOSSARY

BAM	Biodiversity Assessment Methodology
BAR	Biodiversity Assessment Report
BBAM	The NSW BioBanking Assessment Methodology (OEH 2014).
BC Act	Biodiversity Conservation Act 2017 (NSW)
BCT	NSW Biodiversity Conservation Trust (BCT, formerly Nature Conservation Trust)
Biobank site	Land that is designated by a biobanking agreement to be a biobank site.
Biobanking agreement	An agreement entered into between the landowner and the NSW Environment Minister under
BioBanking Trust Fund	The Trust Fund established under Part 7A of the TSC Act to hold funds from the sale of
Biodiversity credit	A unit of biodiversity value to measure specific development impacts or conservation gains in accordance with the FBA, the BBAM or the BAM. Includes ecosystem credits or species credits.
Biodiversity credit report	Specifies the number and type of biodiversity credits required to offset the impacts of a Major Project in accordance with the FBA or that would be generated through conservation and management of an offset site under a BioBanking agreement or a BSA.
Biodiversity offset delivery plan (BODP)	This plan, which sets out the specific actions to be taken to meet the offset conditions for the airport as set out in the Airport Plan.
Biodiversity offsets	Specific measures that are put in place to compensate for impacts on biodiversity values
Biodiversity Stewardship Agreement (BSA)	An agreement made under Division 2 of Part 5 of the BC Act
Biodiversity Stewardship Site (BSS)	Land that is designated by a Biodiversity Stewardship Agreement to be a Biodiversity Stewardship Site. Equivalent to the former 'biobank site'.
BOS	NSW Biodiversity Offset Strategy
CEEC	Critically endangered ecological community.
Defence	The Australian Government Department of Defence
Department of Infrastructure, Regional Development and Cities (the Department)	The Australian Government Department responsible for preparing and implementing this BODP
DoAWE	Department of Agriculture, Water and the Environment
DoE	Department of Environment (formerly Department of the Environment and Energy). now the DoAWE.
DoEE	Department of the Environment and Energy (DoEE). Now called the DoAWE.
DoPIE	Department of Planning, Industry and Environment (formerly Office of Environment and Heritage)

DSEWPaC	The former Department of Sustainability, Environment, Water, Populations and Communities, now called the DoAWE.
DPI	The NSW Department of Primary Industries.
Ecosystem credit	The class of biodiversity credits created or required for the impact on EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur within a vegetation type according to the BBAM, FBA and BAM.
EEC	Endangered ecological community
EIS	Environmental Impact Statement
EPBC Act	The Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FBA	The Framework for Biodiversity Assessment (OEH 2014a). The methodology to assess impacts on biodiversity that is used to assess all biodiversity values on the development site for a Major Project under the NSW Environmental Planning and Assessment Act 1979 (EPA Act) and in accordance with The NSW Biodiversity Offsets Policy for Major Projects (OEH 2014a).
FM Act	The Fisheries Management Act 1994 (NSW)
Food tree	A tree species that is recognised as being of value as a foraging resource for a given fauna
Habitat tree	A tree that is recognised as being of value as a shelter, roosting and/or nesting resource for fauna species. Includes hollow-bearing trees, stags (standing dead trees) and trees with nests or other signs of fauna occupancy.
Migratory species	Species that are listed as migratory under the EPBC Act.
MOU	The Memorandum of Understanding (MOU) that was entered into between Defence and Infrastructure that inter alia provides for the definition of an Offset Area of no less than 900 hectares at Orchard Hills and its conservation and management to function as a biodiversity offset for WSI.
NPWS	The NSW National Parks and Wildlife Service
OEH	The NSW Office of Environment and Heritage, now DPIE
Orchard Hills	Defence Establishment Orchard Hills
Offsets assessment guide	The spreadsheet offset calculator that accompanies the EPBC Act Offsets Policy (DSEWPaC 2012).
PCT	PCT Plant community type
Species credit	The class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates according to the BBAM, FBA and BAM.
The EPBC Act Offsets Policy	The Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy October 2012 (DSEWPaC 2012)
TEC	Threatened ecological community listed under the EPBC Act and/or the BC Act.
TSC Act	The Threatened Species Conservation Act 1995 (NSW), which was repealed and replaced by the BC Act August 2017
WSI Airport	The site for Sydney West Airport as defined in the Airports Act, now known as Western Sydney International (Nancy Bird Walton) Airport (WSI).

1 PROJECT BACKGROUND

Australian Government announced on 15 April 2014 that Badgerys Creek will be the site for the new Western Sydney Airport (the airport). The is site is approximately 1,768 hectares of land, acquired by the Commonwealth through the 1980s and 1990s. The airport will provide both domestic and international services once airport operations commence in 2026.

Western Sydney Airport Plan (Airport Plan) contains a number of conditions that require measures to reduce potential biodiversity impacts and offset unavoidable residual impacts. Condition 30 requires the preparation of a Biodiversity Offset Delivery Plan (BODP) to compensate for residual significant impacts associated with the Stage 1 development. The BODP (which was approved on the 24 August 2018) outlines a number of direct offsets and supplementary measures to be implemented by the Department in order to offset the biodiversity impacts of construction of Stage 1 of the Western Sydney Airport (the Airport). Offsets must be secured and implemented in accordance with the BODP, Airport Plan condition 30 and the EPBC Act Environmental Offsets Policy.

GHD has assisted the Department of Infrastructure, Regional Development and Cities (the Department) in the preparation and the implementation of the Biodiversity Offset Delivery Plan (BODP). Western Sydney Airport Plan Condition 39(3) states that following approval of the BODP, the Department must report to DoAWE every 12 months on its implementation until all biodiversity offsets and other compensatory measures identified in the BODP have been secured or implemented. Each BODP implementation report will outline the activities undertaken in the previous 12 months to identify and deliver biodiversity offsets and the quantum of offset that has been secured. GHD has assisted the Department with the compilation of BODP implementation reports in accordance with Airport Plan Condition 39(3) (GHD, 2020c).

As required with Airport Plan Condition 30(11), Alex Cockerill of WSP has been engaged as suitably qualified subconsultant to verify all of GHD reports, credit calculations and other deliverables as required in GHD's role assisting the Department with the implementation of the BODP. The main focus of this independent verification of the BODP implementation reports will be on accuracy of the offset calculations presented and consistency with the approved BODP, EPBC Act Offsets Policy and Airport Plan conditions.

A key component of the BODP is the delivery of the Orchard Hill offset Area. GHD have engaged Alex Cockerill of WSP to undertake an independent review of the Orchard Hills Offset Area Initial Ecological Survey Report and Offset Plan. This report presents the methodology and findings of an independent review conducted of these two documents to satisfy Condition 30(11).

1.1.1 WESTERN SYDNEY AIRPORT APPROVAL

The construction and operation of WSI was assessed in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Approval for the construction and operation of WSI is controlled by the *Airports Act 1996* (Airports Act) which provides for the preparation of an Airport Plan identifying a staged development of the airport.

1.1.2 BIODIVERSITY OFFSET DELIVERY PLAN

The Airport Plan conditions required The Department to prepare for approval a BODP to compensate for significant residual impacts associated with the construction and development of the WSI. The BODP was prepared in accordance with the requirements set out in condition 30 of the Airport Plan, including that the BODP takes into account the *EPBC Act 1999 Environmental Offsets Policy October 2012 (*EPBC Act Offsets Policy) (Department of Sustainability Environment Water Population and Communities, 2012). The BODP was approved by the Department of the Environment and Energy on 24 August 2018. For more detail on the staged process of delivering a Biodiversity Offset package and then the Biodiversity Offset Delivery Plan refer to Figure 2.1 below.

Biodiversity offsets are required for significant residual impacts of WSI on:

- The threatened species and communities listed under the EPBC Act (affected threatened biota):
  - Cumberland Shale Plains Woodland and Shale-Gravel Transition Forest (Cumberland Plain Woodland) listed as a critically endangered ecological community (CEEC) under the EPBC Act. Construction of WSI would require the permanent removal of 141 hectares;
  - Grey-headed Flying-fox (*Pteropus poliocephalus*) listed as a vulnerable under the EPBC Act. Construction of WSI would remove 187.8 hectares of potential foraging habitat;
  - Swift Parrot (*Lathamus discolor*) listed as a critically endangered species under the EPBC Act. Construction of WSI would remove 187.8 hectares of potential winter foraging habitat;
  - Spiked Rice-flower (*Pimelea spicata*) listed as an endangered species under the EPBC Act. Construction of WSI is likely to have a significant impact on *Pimelea spicata* through the complete removal of this population and 2.94 hectares of occupied habitat.; and
- Other plants, animals and their habitat on Commonwealth Land, including threatened biota listed under the New South Wales (NSW) Biodiversity Conservation Act 2016 (BC Act).

The EPBC Act Offsets Policy requires biodiversity offset sites to be secured under a legally binding conservation covenant (or other appropriate mechanisms) and the calculation of offsets for impacts on the affected threatened biota using the 'offsets assessment guide' spreadsheet. The guide calculates the percentage of the total requirement for the individual protected matter that would be delivered by an offset proposal. Further to this, offsets for significant residual impacts on plants, animals and their habitat have been calculated with reference to the NSW Framework for Biodiversity Assessment (FBA) methodology (Office of Environment and Heritage, 2014). The FBA is based on the NSW Biodiversity Banking and Offsets Scheme (BioBanking) credit calculator and assessment methodology (Office of Environment and Heritage, 2014), which was the methodology used to calculate offsets for major projects in NSW at the time that the airport EIS was prepared.

1.1.3 BODP IMPLEMENTATION REPORT

Western Sydney International Airport (WSI) BODP Implementation Report has been prepared by GHD on behalf of The Department to demonstrate to an auditor (WSP) that the Department has delivered the offset proposal presented in the BODP in accordance with the Airport Plan conditions (GHD, 2020c).

The 2019 BODP Implementation Report (prepared by GHD) presents BODP implementation activities undertaken by the Department during the first year following the approval of the BODP.

The purpose of this 2019 BODP implementation report (GHD, 2020c) is to demonstrate to an auditor how Infrastructure has delivered the offset proposal presented in the BODP in accordance with the Airport Plan conditions, including:

- A description of activities undertaken to identify, secure and quantify direct offsets;
- A description of the other compensatory measures that have been delivered and steps taken to identify additional measures;
- Calculation of the quantum of direct biodiversity offsets secured for the airport based on information presented in the BODP and detailed biodiversity assessments for offset sites.

A summary of the BODP implementation activities that have been implemented during the 2019 period comprise of:

- Synthesis of existing information and consultation with various offset vendors to identify and secure direct offsets;
- Establishment of the Offset Area at Defence Establishment Orchard Hills, including execution of a Memorandum of Understanding to secure at least 900 hectares of land as an offset, completion of an Initial Ecological Survey and consultation with Defence on the preparation of the Offset Plan for management of the site;

- Purchase of biodiversity credits to secure direct offsets for Cumberland Plain Woodland, the Grey-headed Flying-fox and Swift Parrot foraging habitat and for various plants, animals and their habitat;
- Finalisation of the threatened flora propagation program required by Condition 33 of the Airport Plan, delivery of a *Pimelea spicata* genetic research program and initial stages in the establishment of an ex situ *Pimelea spicata* population to support conservation of the species;
- Continued implementation of the Greening Australia seed collection and production program required by Condition 32 of the Airport Plan;
- Consideration of potential research, restoration and rewilding programs; and
- Other activities include discussions with key stakeholders from governments, private industry, and communities.

1.1.4 ORCHARD HILLS OFFSET AREA INITIAL ECOLOGICAL SURVEY REPORT

The Orchard Hills Offset Area Initial Ecological Survey Report (survey report) was prepared by GHD on behalf of The Department to quantify the value of an Offset Area at the Defence Establishment Orchard Hills for the implementation of the BODP for the airport (GHD, 2020a).

The report was prepared in accordance with Section 5.2 of the Memorandum of Understanding entered between the Department of Defence (Defence) and the Department specifically to:

- Describe the existing environment of the Offset Area, including the extent and condition of native plant communities and habitats present
- Confirm extent and quality of habitat for the affected biota regarding the EPBC Act Environmental Offset Policy and key diagnostic characteristics and condition thresholds specified in the Commonwealth Listing Advice on Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest threatened ecological community
- Calculate the biodiversity credits that would be generated at the Offset Area to offset impacts on biota
- Demonstrate that the Offset Area would help deliver the overall conservational outcomes of improving and maintaining EPBC Act protected matters consistent with the Environmental Offset Policy as required by the BODP (GHD, 2020a).

This survey report was a subject of the independent review completed to inform this report.

1.2 ORCHARD HILLS OFFSET AREA OFFSET PLAN

The Orchard Hills Offset Area Offset Plan (offset plan) was been prepared by GHD on behalf of The Department to drive the delivery of the offsets for Defence. The document includes the baseline quality, target quality and management actions which will be implemented across the Orchard Hills Offset Area to achieve the site objectives (GHD, 2020b).

The offset plan sets out the management actions and ongoing monitoring which will be carried out on the Orchard Hills Offset Area to achieve the required targets presented in the report within a 20-year timeframe of intensive management. Confirmation that the offsets have been delivered will be completed via the completion of a survey at the end of year 20. Following year 20 Defence will maintain the Offset Area to retain long-term benefits.

The offset plan was a subject of the independent review completed to inform this report.

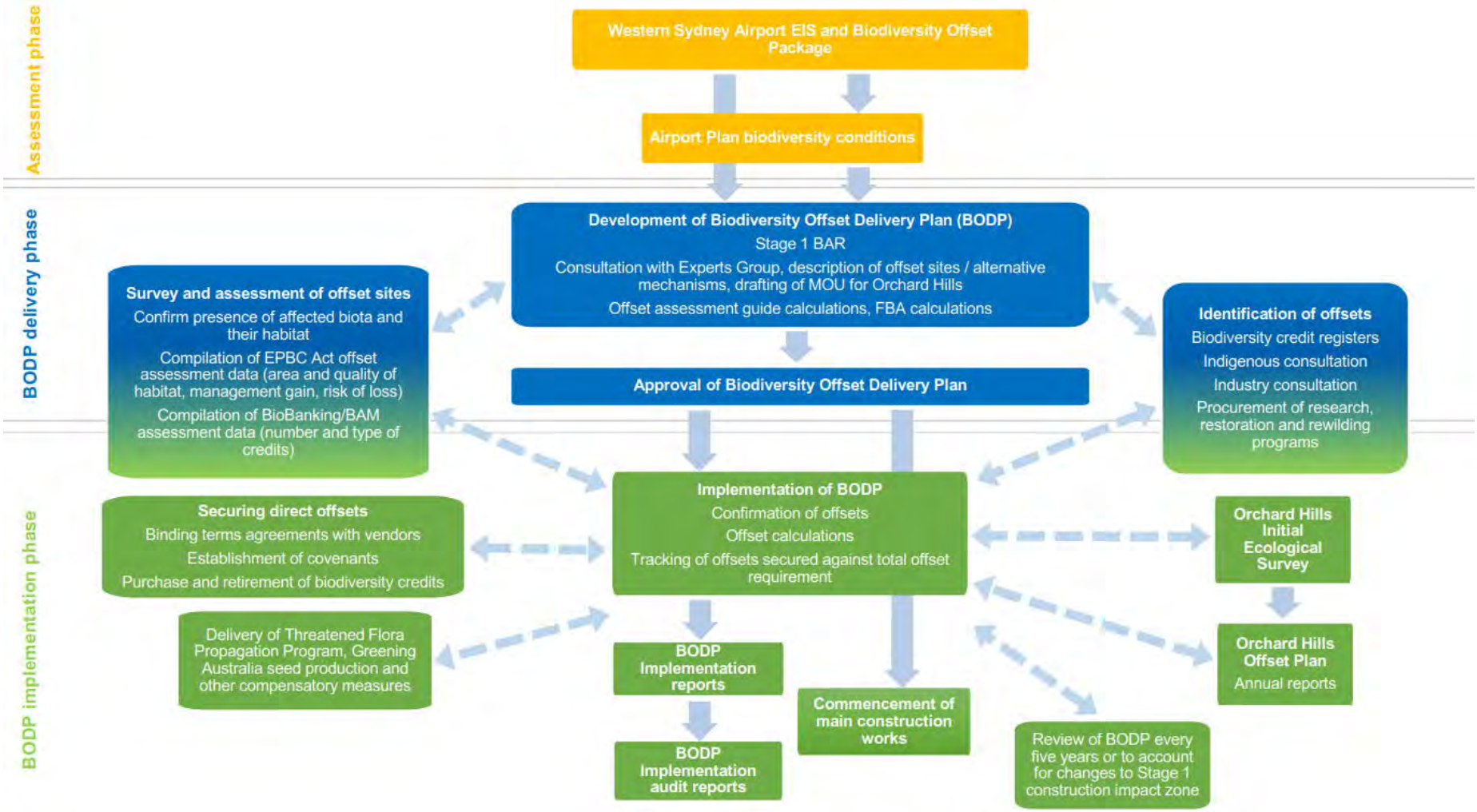
1.2.1 OTHER IMPORTANT DOCUMENTATION

This independent review also assesses the following related documents;

- the biodiversity assessment and offset package in the airport EIS (GHD, 2016)
- the updated biodiversity survey of the WSI site and impact calculations presented in the Western Sydney Airport Stage 1 Biodiversity Assessment Report Addendum (GHD, 2018); and

- the EPBC Act Offsets Policy (Department of Sustainability Environment Water Population and Communities, 2012).
- Western Sydney International Airport Threatened Flora Propagation Program Delivery Report (ABGMA, 2019); and
- Conservation genomics of *Pimelea spicata* (Spiked Rice-flower) in support of management and translocation activities (RBGDT, 2019)
- Memorandum of Understanding (MoU), Agreement to conserve and manage a biodiversity offset area at Defence establishment Orchard Hill, between The Department of Deference and Department of Infrastructure, Regional Development and Cities (Defence, 2018).
- Credit transfer reports (supplied by Infrastructure)
- Spatial data (supplied by GHD)

- EPBC offset calculator assessment guides for all offset sites (supplied by Infrastructure).



1.1 Implementation stages of the BODP

2 INDEPENDENT REVIEW

2.1.1 SUITABLY QUALIFIED EXPERT

Alex Cockerill (WSP) has been subcontracted by GHD on behalf of The Department as the Suitably Qualified Expert responsible for providing an independent review for the Orchard Hill Offset Area ecological survey Report.

Alex has more than 20 years' experience in botanical and terrestrial ecological research, ecological impact assessment and conservation landscape management. He is responsible for managing large scale environmental impact assessment projects, including the coordination of field staff, preparation of reports, agency negotiations and ongoing facilitation of projects towards positive outcomes.

He is an Accredited BAM Assessor and recognised expert in the application of the BAM in NSW, regularly providing support to the NSW Government as a third-party reviewer. He has acted as an independent ecological expert participating in compliance audits on behalf of State and Commonwealth governments and as an Expert Witness on flora and vegetation matters in the NSW Supreme Court, NSW Land and Environment Court and the Victorian Court of Arbitration and Tribunal. Alex previously completed the independent verification of the Biodiversity Assessment Reports (BARs) for WSI in accordance with the Airport Plan conditions.

2.2 BODP DETAILS

Summary of the offset proposal presented in the BODP;

DIRECT OFFSETS

- Orchard Hills Offset Area; the Department has made an agreement with Defence and established an offset site at the Defence Establishment Orchard Hills (DEOH). A Memorandum of Understanding (MOU) was entered into between Defence and Infrastructure that includes provisions that are additional to any Commonwealth Heritage Listing requirements relating to the Offset Area.
    - Based on preliminary Offsets assessment guide calculations the Orchard Hills Offset Area could meet around:
        - 90 % of the offset for Cumberland Plain Woodland, including
        - 61 % through conservation of EPBC Act Cumberland Plain Woodland and
        - 0 % through improvement of poorer quality Cumberland Plain Woodland;
        - 71% of the offset requirement for the Grey-headed flying-fox; and
        - 47% of the offset requirement for Swift Parrot foraging habitat.
- Purchase of biodiversity credits through the NSW Biodiversity Offsets Scheme (BOS) (Office of Environment and Heritage, 2017); The quantum of offset that would be delivered is subject to the identification of suitable suites of credits sourced from appropriate offset sites. This purchasing of credits will be staged and is likely to deliver (based on preliminary site surveys):
        - at least 10% of the offset requirement for Cumberland Plain Woodland;
        - around 15 to 25% of the offset requirement for the Grey-headed Flying-fox;
        - up to 35% of the offset requirement for Swift Parrot foraging habitat; and
        - up to 60% of the offset requirement for *Pimelea spicata* when linked to an area of occupied habitat.
- Acquisition of land; Acquisition of strategic parcels of and that promote connectivity for the Cumberland Plain Corridor

- Restoration and rewilding programs; improve the extent, connectivity and condition of native vegetation and habitat in the Cumberland Plain on non-biodiversity stewardship sites.

OTHER COMPENSATORY MEASURES

- Threatened Flora Propagation Program (TFPP); Propagation, research program and in situ collection of threatened plants species found at the airport site (including *Pimelea spicata, Marsdenia viridiflora subsp. viridiflora* and *Pultenaea parviflora*). As required by Condition 33 of Airport Plan, the Australian Botanic Gardens, Mount Annan (ABGMA) and Royal Botanic Gardens and Domain Trust (RBGDT) have been engaged by GHD as a sub-consultant to deliver a Threatened Flora Propagation Program (TFPP). Stage 1 works of the TFPP have been completed, and the following plant materials have been collected for conservation work and research;
  - *Pimelea spicata* (190 plants in the nursery, 6,100 seeds held in PlantBank).
  - *Marsdenia viridiflora subsp. viridiflora* (560 plants, 108 seeds).
  - *Pultenaea parviflora* (500 plants, 50 seeds).
- Greening Australia seed collection and production program; In accordance with Condition 32 (1) of the Airport Plan, the Department has entered into an agreement with Greening Australia to contribute funds to the organisation's Cumberland Seed Hub program in Western Sydney. The objective of the program is to deliver a reliable source of native seed for ecological restoration work, with the primary focus on species associated with Cumberland Plain Woodland
- Longer term research and capacity building, including training

COMPLEMENTARY OUTCOMES

- Aboriginal land management; Secure long-term training and employment opportunities in land management and restoration for Aboriginal peoples in Western Sydney.

3 SURVEY REPORT AND OFFSET PLAN REVIEW METHODOLOGY

3.1 REVIEW SCOPE

Condition 30 of the Airport Plan states:

(10) The Infrastructure Department must implement the approved Biodiversity Offset Delivery Plan on behalf of the Commonwealth.

(11) The Infrastructure Department must:

(a) ensure that an independent audit of its compliance with condition 30(10) is conducted in respect of;

(i) the 12-month period commencing with the approval of the Biodiversity Offset Delivery Plan; and

(ii) each subsequent 18-month period until all biodiversity offsets required by the Biodiversity Offset Delivery Plan have been secured or implemented; and

(b) submit a report of each audit that is carried out to the Environment Department within six months of the end of the period in respect of which the audit was conducted.

(12) For each audit, the independent auditor must be approved by an Approver prior to the commencement of the audit. Audit criteria must be agreed to by an Approver and the audit report must address the criteria to the satisfaction of an Approver.

The BODP Auditor, Alex Cockerill was approved as the independent auditor along with audit criteria on the 12/2/2020. The audit process consisted of an initial opening meeting/ field inspection of the proposed Orchard Hills Offset, review of the BODP implementation report, and audit interview.

During the BODP audit the Orchard Hills survey plan and offset plan were in preparation and therefore could not be reviewed. As such, an independent review of these documents was completed to verify the content of both reports and supporting documentation (subject of this report). A summary of methodology and outcome of the independent review of these documents is presented below.

3.2 REVIEW METHODOLOGY

3.2.1 REVIEW OPENING MEETING

An opening meeting was held on 1 November 2019 at Orchard Hills as part of the BODP audit. The participants at this meeting and their roles are listed in Table 3.1. This meeting was also located at the Orchard Hills offset site so verification of the Orchard Hills Offset Plan and survey report could also be conducted (refer to Appendix A). The purpose of the opening meeting was to discuss the scope of the audit and the audit process. The methods to be used by the auditor to conduct the audit were explained.

Table 3.1 Opening meeting attendees

STAFF	ORGANISATION	TITLE
Ben Harrington	GHD	Technical Director - Biodiversity
Alex Cockerill	WSP	Manager - Biodiversity

3.2.2 DESKTOP REVIEW

Where possible, the survey plan and offset plan as well as documents and data collected as part of the BODP audit were reviewed prior to conducting the site inspection. The data contained in these documents were verified where possible during the site inspection.

3.2.3 SITE INSPECTION

An initial site inspection of the Orchard Hills Offset Area was undertaken during the daylight hours of 6 March 2019 and again on 1 November 2019, by Alex Cockerill, as part of the BODP audit process. Following the completion and submission of the survey plan and offset plan for the site an additional site inspection was undertaken on the 21 May 2020.

Specifically, the site inspection focused on vegetated areas and included both random meander surveys and rapid assessments (RA) assessments as detailed below to complete:

- Vegetation zone identifications and boundary confirmations
- Review of plot and transect locations
- Review of field data collection points
- Review of general site condition and habitat for threatened species
- Review of management issues and proposed adequacy of management actions.

The locations of these surveys are illustrated in Figure 1. Appendix A provides a summary of the data collected from the site inspection.

The results of the site inspection were incorporated into the survey plan and offset plan review findings on the verification and accuracy of the proposed Orchard Hills Offset and specifically the justification of the offsets in accordance with the Environmental Offsets Policy October 2012.

3.2.3.1 RANDOM MEANDERS SURVEYS

Due to the large extent of the site, random meander surveys were undertaken to validate existing vegetation community, condition mapping and weed mapping. Random meander surveys are a variation of the transect type survey and were completed in accordance with the technique described by Cropper (1993), whereby the recorder walks in an unsystematic manner throughout the site recording all species observed, boundaries between various vegetation communities and condition of vegetation. The time spent in each vegetation community was generally proportional to the size of the community and its species richness.

3.2.3.2 RAPID ASSESSMENT

To assess biodiversity values, a total of 47 rapid assessments were undertaken throughout the site on three occasions (in March and November 2019 and May 2020) (refer to Figure 1). The rapid assessments incorporated methodologies from the BioBanking Operation Manual prepared by Seidel & Briggs 2008 and included an assessment of weed species diversity and cover, regeneration. The information was used to review and assess the “Start site value” scores for the proposed Orchard Hill offsets calculations in accordance with the Environmental Offsets Policy October 2012.

3.2.3.3 CONDITION AND QUALITY ASSESSMENT OF VEGETATION COMMUNITIES

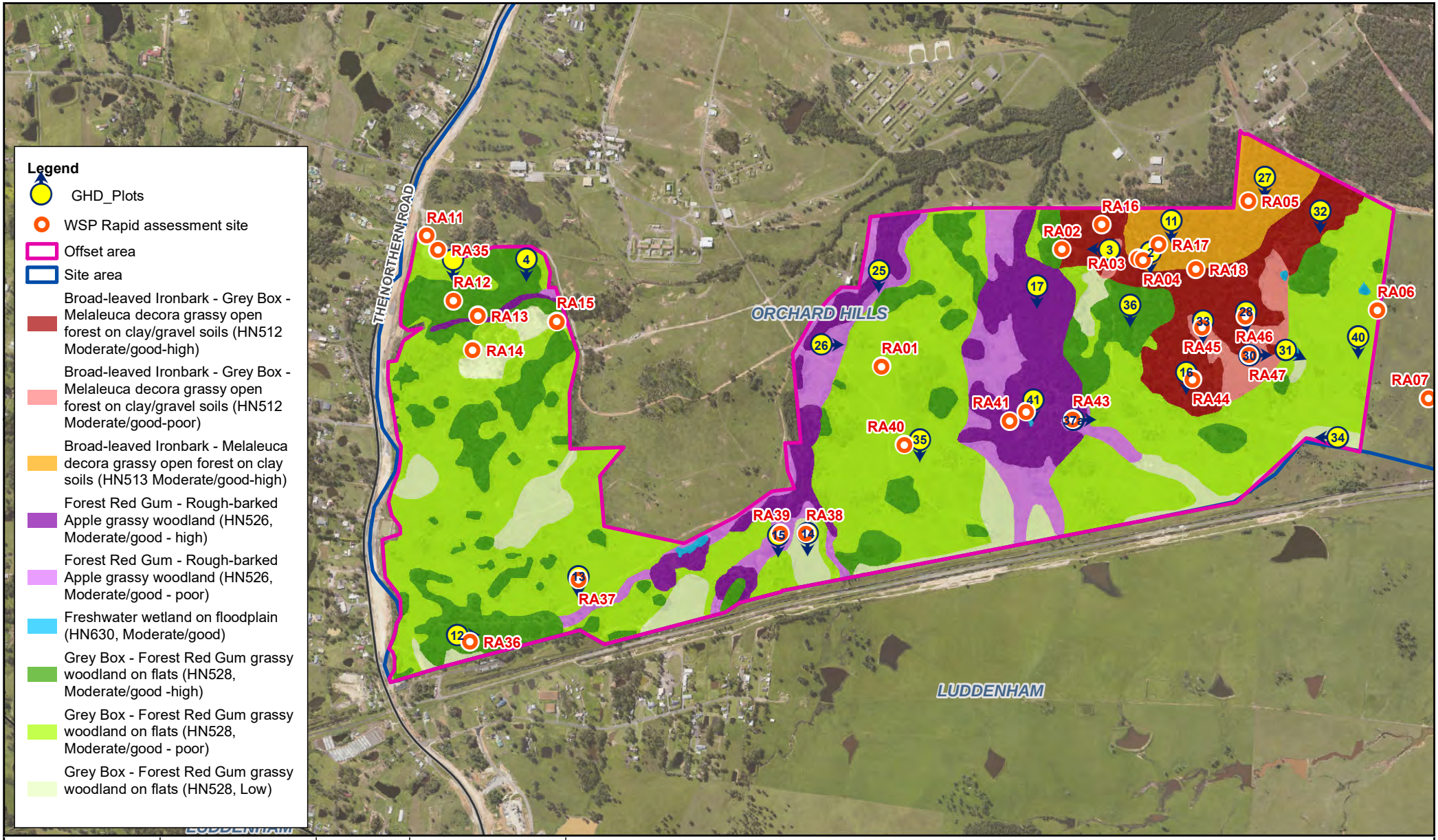
The general condition of vegetation was assessed during the field surveys using parameters such as intactness, diversity, history of disturbance, weed invasion and health.

Three general categories were used to describe the condition of vegetation communities:

- **Good:** Vegetation still retains the species complement and structural characteristics of the pre-European equivalent. Such vegetation has usually changed very little over time and displays resilience to weed invasion due to intact groundcover, shrub and canopy layers.
- **Moderate:** Vegetation generally still retains its structural integrity, but has been disturbed and has lost some component of its original species complement. Weed invasion can be significant in such remnants.
- **Low:** Vegetation that has lost most of its species and is significantly modified structurally. Often such areas have a discontinuous canopy of the original tree cover, with very few shrubs. Exotic species, such as introduced pasture grasses or weeds, replace much of the indigenous ground cover. Environmental weeds are often co-dominant with the original indigenous species

3.3 REPORTING

Following completion of the site component of the review, notes recorded were reviewed and outstanding information was clarified with GHD. Following the receipt of outstanding information or clarification of data gaps this report was prepared to provide an overview the reviews findings and any other observations made by the reviewer during the review.



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Date: 6/16/2020	Approved by: - A.Cockerill; C.Watson		1:20,000
Source: ; GHD; NSWSS; Metromap			Scale ratio correct when printed at A4 Coordinate system: GDA 1994 MGA Zone 56

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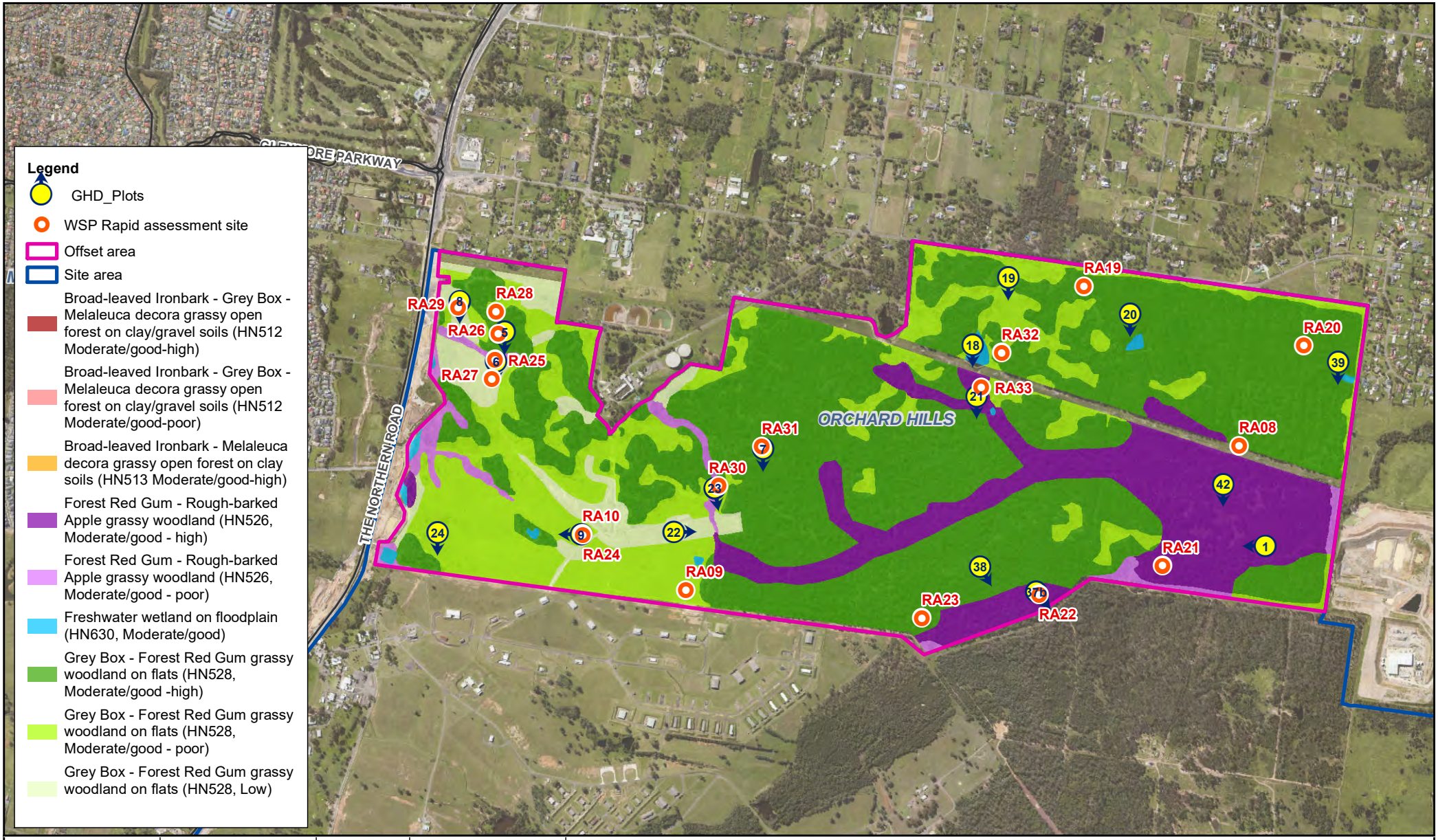
WSA OFFSET VERIFICATION

Figure 1a
Orchard Hills site assessment



Map: PS113470_ORHI_002_A2	Author: SuansriR		
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WSA OFFSET VERIFICATION

Figure 1b
Orchard Hills site assessment

4 REVIEW FINDINGS

4.1 SUMMARY OF REVIEW OBSERVATIONS AND RECOMMENDATIONS

4.1.1 ORCHARD HILLS OFFSET AREA INITIAL ECOLOGICAL SURVEY REPORT

The survey report prepared by GHD (2020a), for the Orchard Hills Offset Area, provides a logical and succinct assessment of the proposed offset area in accordance with the NSW BioBanking Assessment Methodology (BBAM) and consideration of the Biodiversity Assessment Method (BAM). However, some observations and recommendations have been provided to assess the adequacy and findings made during the desktop review and site inspection.

A summary of key comments are provided below with recommendation in bold:

4.1.1.1 SURVEY METHODOLOGY

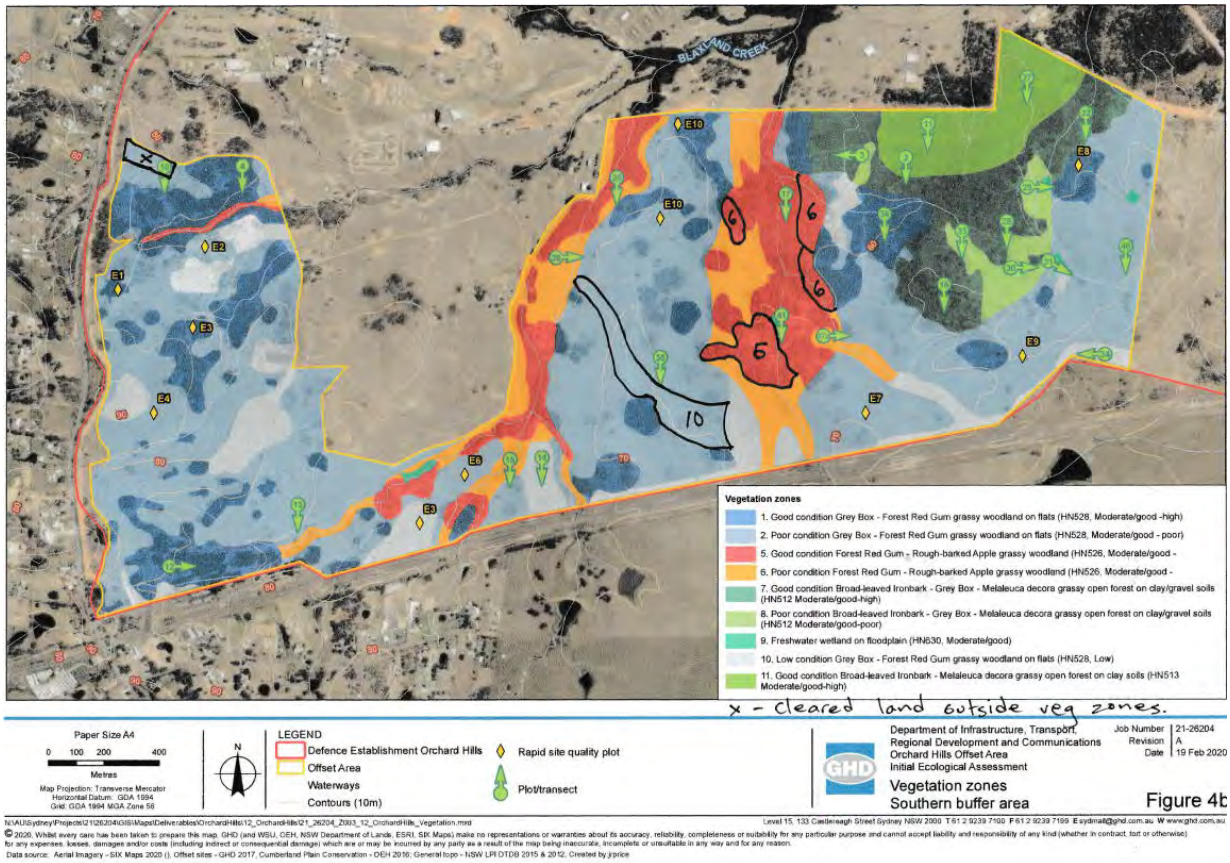
- The flora survey methodology provided in the survey report appears adequate and in accordance with BBAM and BAM. Targeted seasonal flora surveys were completed in accordance with the survey guidelines for threatened species listed under the BC Act (DEC, 2004) and with reference to the threatened plant survey guidelines (OEH, 2016). All flora surveys were conducted by suitably qualified ecologists and lead by a suitable qualified expert as detailed in Table 2.5 of the report.
- Specific flora survey methodology observations made include:
  - Plot/transects were completed using both the BBAM and BAM methodologies to maximise baseline data collection, allow comparisons of site condition data between methodologies and allow flexibility in assessing condition and preparing the offset plan.
  - The number of plot/transects completed fulfils the requirements of the BBAM and BAMs minimum plot/transect number per vegetation zone (as per Figure 4 and Table 3.2 of the survey report). In Table 3.2 of the survey report it is stated that 3 plot/transects were required for vegetation zone 9 (HN630 moderate/good condition) however only 2 were required in accordance with BBAM and BAM. As such, one surplus plot/transect has been included in the analysis than what was required.
  - The location of flora plots/transects are illustrated in Figure 4 of the survey report. On Figure 4 some plot/transect orientations and positions appear to occur in transitional zones or intersect/extend into adjacent vegetation types. It is acknowledged that this may be due to scale requirements needed for appropriate figure preparation/presentation. As such it is difficult to determine based on Figure 4 whether some of these plots/transects a wholly within a vegetation type. Examples of this include Q3, Q6, Q15, Q23, Q25 and Q33. On inspection, these plots/transects did occur wholly within the vegetation type they represent

  Fauna surveys were completed with reference to various threatened species including Commonwealth survey guidelines for nationally threatened birds (DEWHA, 2010), survey guidelines for threatened species listed under the BC Act (DEC, 2004) and survey methodology detailed in the recovery plans for example for the Grey-headed Flying-fox (DECCW, 2009). Based on this and the detailed methodology in Section 2.2.3 survey methodologies implemented appear adequate and in accordance with BBAM and BAM. All fauna surveys were conducted by suitably qualified ecologists and lead by a suitable qualified expert as detailed in Table 2.5 of the report.

4.1.1.2 BIODIVERSITY VALUES

- Initial field verification in November 2019 of the vegetation mapping for the Orchard Hills Initial Ecological Survey found that only one (RA4) of the 18 rapid assessments (or approximately 6%) were inconsistent. The inconsistency identified an area Cumberland Plain Woodland (HN 528) rather than Shale Gravel Transitional Forest (HN 512. which it is currently mapped. However, as both of these communities are characteristic of the TEC Cumberland Plain Woodland as listed under the EPBC Act, the finding it is inconsequential to the assessment and quantification of offsets.
- An additional field verification in May 2020, focused on areas not subject to previous inspections and identified several additional changes to the vegetation mapping (refer to Figure 2 below), including;
  - Areas of Poor condition HN528 revised to Low condition HN 528
  - Areas of HN528 in northern offset associated with RA 28 and 29 to be revised to low condition (not identified below in Figure 2)
  - Areas of good condition HN526 to poor condition HN526
  - Exclusion from the offset an area of Poor Condition HN528, recently cleared and associated with a construction compound.

Figure 2 Agreed changes to existing vegetation mapping following field verification on May 2020.



- In total, the field verification confirmed the vegetation mapping to be consistent across 37/45 or 82% of the sampled RA sites. The level of accuracy is considered acceptable for the scale of the offset area.
- Notably the field verification found a recently cleared construction compound and temporary development areas within an areas of mapped vegetation identified as Poor condition Cumberland Plain Woodland. **This area will**

require removal from the offset areas as it is unlikely to recovery without substantial restorations efforts. It is also recommended the process leading to the development within the proposed offset areas be investigated to ensures the final offset areas plan avoids in impacts to committed offset areas in the future.

- Analysis of the PCT classification across the site is based floristic analysis of Tozer vegetation types. While this method was generally acceptable and appropriate for at the time of survey report preparation, it is noted that there has been a recent development of a comprehensive revision to the NSW PCT identification tool in BioNet vegetation classification.
- The survey report would be benefited by reference to and confirmation of classification against the corresponding PCT s in the NSW PCT identification tool.
- I**n particular it is recommended additional justification for the mapping of *Casuarina glauca* dominated areas as Poor Condition HN 526 and not as the separate vegetation community PCT 1800 - Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley be provided**. While it is acknowledged, the approach to classification of this community is consistent with the approach taken to mapping HN526 in the Western Sydney Airport Stage 1 Biodiversity Assessment Report Addendum (GHD, 2018) it appears inconsistent with the recent BioNet vegetation classification.
- The NSW PCT identification tool in BioNet vegetation classification excludes Coastal Swamp Oak (*Casuarina glauca*) from the equivalent HN526 PCT and River Flat Eucalyptus Forest (RFEF) TEC under the BC Act. Areas of Swamp Oak dominated vegetation have been subsequently incorporated into a new PCT 1800 Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley is dominated by Casuarina, Melaleuca and other species such as *Acmena smithii* and *Glochidion. Eucalytpus* trees are either absent or minor in the PCT 1800.
- The review identified some minor inconstancies in the data and species list within the spreadsheets used for floristic analysis (Orchard Hills veg analysis Tool (Tozer 2010) GF assignment tool and Orchard Hills Species list). For example Plot 15 lists *Allocasuarina littoralis* incorrectly as dominant in one and *Casuarina glauca* in the Orchard Hills Species list. **It is recommended that the species list and provided in the survey report be reviewed for consistency.**
- Table 3.2 has not identified vegetation zone 6 -Poor condition Forest Red Gum - Rough-barked Apple grassy woodland (HN526, Moderate/good - poor) as corresponding with BC Act River Flat Eucalyptus Forest (RFEF) TEC however, the profile for vegetation zone 6 states it comprises a local occurrence of River-flat Eucalypt Forest, which is listed as an EEC under the BC Act. **Based on interpretation above it is considered unlikely the community meets the TEC classification. However, further justification is recommended and consistent outcome provided.**
- Figures 4a and 4b have mapped numerous formed firetails and access roads within the offset areas as remnant good condition vegetation. Some of these trails as mapped in Figure 2 including; Land Snail, Grey Box, Woodlands, Woodland East, Blackthorn, Ironbark and Lizard don't appear to have been clipped from the area calculation for these vegetation communities. **These areas if maintained should be excluded from the vegetation mapping or if proposed for decommissioning or regeneration revised to Low condition vegetation zones corresponding with the surrounding vegetation types.**
- The total areas of CPW good condition VZ 1 and 7 in Table 3.2 and Table 6.3 is 375.82 but in table 3.8 and Section 5.2 is 372.9. Inconsistencies are also found for CPW poor condition and others PCTs, including VZ 5.
- These inconsistencies appear throughout the report and supporting information including in the final credit calculations. While these inconsistencies are relatively small (<10%) they are also reflected in the offset areas calculation which further compound the issue in Table 6.5 ecosystem credits summary.
- **It is recommended that following the further revisions to vegetation mapping in accord ace with agreed changes and recommendations of this review a comprehensive review is completed for consistency in the presented values and areas of each vegetation zone and offset areas calculation**.

4.1.1.3 PROPOSED MANAGEMENT

- Approximately 377 ha of active restoration and supplementary planting across the management zones C, D and E compared to approximately 400 ha of committed active and supplementary planting across Mgt zones 2, 10, 6 and 8 of the BBAM Credit calculations. It is unclear how the areas of claimed active restoration in Table 6.3 aligns with the proposed management approach in Section 4 and Figure 7and the report and Orchard Hills Offset Area Offset Plan. **It is recommended that the proposed active regeneration planting by aligned**
- **Confirmation of the planting densities and indicative species lists proposed across management unit's C and D**
- The proposed *Management of Native Blackthorn scrub* needs to be supported by detailed baseline monitoring against local reference benchmarks and trial results. This type management requires demonstrated evidence of ecological improvements in diversity and species richness across flora and fauna and an understanding of impacts to weed and pest species within the offset.
- The proposed benefit of these actions on Swift and GHFF is questionable "Reduced risk of wildfire and associated risk of harm to individual animals, and of erosion having an impact on the quality of the habitat." In particular the influence of erosion. **It is recommended more detailed evidence of baseline values and site values scores of Burseria dominant areas against the benchmark conditions need to be presented to adequately justify the need for treatment.**

4.1.1.4 EPBC OFFSETS CALCULATIONS

- The assumptions and criteria used to determine the offset liability for the impact under the EPBC Offset policy calculator, are consistent with the assumptions for determining the quantum of the offset. These assumptions have been reviewed and approved Environment Department in the BODP (DIRD 2018). previously.
- The site quality scores start and future are robustly based on detailed site values information collected in accordance with corresponding site valued scores for condition collected using NSW BBAM and BAM. These values and approach are supported by the review.
- Table 5.6 Offset assessment for Swift Parrot appears to have some formatting issues and multiple site quality scores. **This should be reviewed and updated**
- **The revisions to vegetation mapping identified above will require updates to the areas and extent of habitat used for all EPBC offset calculations.**
- Reference to Broad-leaved Ironbark – Melaleuca decora grassy open forest as (HN512) within the habitat for CPW, needs to be revised to Broad-leaved Ironbark- Grey Box – Melaleuca decora grassy open forest (HN512). Broad-leaved Ironbark - Melaleuca decora grassy open forest on clay soils is PCT (HN513)

4.1.1.5 BBAM OFFSETS CALCULATIONS

- Current site value scores for V7 are identified as 74.74 in table 5.2 but 74.4 in the BBAM site values scores spread sheet provided or Table 6.3.
- V8 has a future site value score of 75.36 in the BBAM site values scores spread sheet and Table 6.3 but 68.6 in Table 5.3
- **It is recommended that a comprehensive review is completed for consistency of VIS scores for all vegetation zones**
- **VI scores and areas for all vegetation zones require review for consistency across the Appendix Tables 12-14**
- The BBAM calculation has assumed all three Large Forest owls to be present on site, despite no evidence of the species being recorded across multiple targeted surveys in accordance with relevant species guidelines. Large

Forest Owls are driving the highest TS Species multiplier of 3.0 within the BBAM credit calculations and t**herefore further justification of the presence and or likelihood is required to include in assumed presence on site.** This is also the case for a range of other species.

- It is noted that the highest TS Species multiplier for species recorded on site is 2.2 associated with the Greater Broad-nosed Bat
- Southern Myotis habitat for permanent waterways includes a number of 1 order streams that were not observed during the site inspection containing water. **It recommended that permanent waterways mapped in Figure 9 be reviewed and revised or further justification provided.**
- Records of Cumberland Plain Snail (CPS) were predominantly restricted to Good condition HN528 and HN512 across the site. There are few if any records of the CPS within the HN526 within the offset areas. The report does not identify the extent and location of all CPS surveys within the site, particularly those surveys areas where no CPS were recorded. **Figure 3 should be updated with survey locations**.
- **It is recommended the CPS species polygon be revised to only those areas of Good condition HN528 and HN512, or further justification and evidence provided for occupation of the CPS within the HN526 and fragmented patches throughout the southern offset areas**.

5 LIMITATIONS

- This report has been developed from certain information provided by GHD at the request of and exclusively for the use and benefit of the Department.
- This report has been prepared in accordance with the scope of work/services set out in a contract, or as otherwise agreed, between the Auditor and the Auditee. In preparing this report, the Auditor has relied upon data, surveys, analyses, designs, plans and other information provided by the Auditee and other individuals and organisations, most of whom are referred to in the report (the data).
- The review assumes no responsibility and will not be liable to any other person or organisation for, or in relation to any matter dealt with in this report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in this report.
- Neither the Auditor nor any member, associate or employee of WSP undertakes any responsibility for any injury, loss or damage claimed by the Auditee arising out of a claim by any third party against the Auditee in connection with this Report.

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APPENDIX A

SITE INSPECTIONS

A1 SITE INSPECTIONS OF ORCHARD HILL OFFSET SITE

Table 2 Orchard Hill Offset Area Inspection November 2019

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 1	150.704506519457,-33.8282690413289,0	01/11/2019	Poor condition Cumberland Plain Woodland high weed cover some shrub cover Bursaria sp. <50% Native. Site condition score 3-4	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 2	150.712093794386,-33.8243503143856,0	01/11/2019	Good condition Cumberland Plain Woodland (Upgrade from poor) – High native diversity structural diversity present all levels Regen present Low <20% exotic Site condition score 7-8	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 3	150.715260263717,-33.8247254938672,0	01/11/2019	Threatened Marsdesia sp. Present	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 4	150.715466203788,-33.8247787645893,0	01/11/2019	Good condition Cumberland Plain Woodland (HN 528) however it is mapped as HN 512. Shale Gravel Transition Forest zone High native diversity structural diversity present all levels Regen present Low <10% exotic Site condition score 7-8	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 5	150.719882697458,-33.8228216792349,0	01/11/2019	Cooks river Ironbark HN513 good condition Moderate native diversity structural diversity present all levels Regen present Low <10% exotic Site condition score 7-8	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 6	150.725146270106,-33.8266920774169,0	01/11/2019	Good condition Derived Native Grassland . Corresponds with Poor condition Cumberland Plain Woodland. Recommend; planting and revegetation here. Moderate weeds Site condition score 4-5	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 7	150.727184848866,-33.8297830634923,0	01/11/2019	Low condition exotic grassland Very little native species present not Cumberland Plain Woodland	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 8	150.736093307655,-33.8051666701978,0	01/11/2019	Good condition Cumberland Plain Woodland (previously mapped as poor). High native diversity structural diversity present all levels Regen present Low <10% exotic Site condition score 7-8	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 9	150.710111859634,-33.8103192234591,0	01/11/2019	Derived Native Grassland Poor condition High exotic cover Eragrostis curvula and Themeda triandra 50/50 cover. Areas of dominance of both	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 10	150.705346884923,-33.808055249428,0	01/11/2019	Derived Native Grassland Poor condition Cumberland Plain Woodland but with Themeda triandra 75% cover Site condition score 4	

Table 3 Orchard hill Offset site inspection March 2019

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 11	150.685747956978,-33.8233775926397,0	06/03/2019	Derived Grassland inspection Meets Poor condition Cumberland Plain Woodland Mixed dominance of Themeda triandra with more than 1-year growth patches of Eragrostis curvula and isolated native shrub regrowth Davesia sp and Bursaria sp. Site condition score 3-4	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 12	150.686790906624,-33.8256582161901,0	06/03/2019	Good condition Cumberland Plain Woodland High native diversity structural diversity present all levels Regen present Low <20% exotic Site condition score 7-8	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 13	150.687785655335,-33.8261928160767,0	06/03/2019	Good/moderate condition Cumberland Plain Woodland with erosion and waste dump Moderate native diversity Limited diversity present all levels Regen present Low <20% exotic Site condition score 6-7	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 14	150.687546516648,-33.827374334261,0	06/03/2019	Low Condition.possibly not Cumberland Plain Woodland Isolated Angophora sp. Regen with disturbance from land clearing and earthworks Site condition score 2	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 15	150.691060426956,-33.8264579732816,0	06/03/2019	Low Condition. Not Cumberland Plain Woodland High exotic cover >70% Eragrostis curvula dominant	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 16	150.71378290756,-33.8235144883698,0	06/03/2019	Good condition Cumberland Plain Woodland (HN 512. Shale Gravel Transition Forest zone) High native diversity structural diversity present all levels Regen present Low <10% exotic Site condition score 7-8	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 17	150.716120831735,-33.8242482687954,0	06/03/2019	Cooks river Ironbark HN513 good condition Moderate native diversity structural diversity present all levels. M. nodosa dominant Regen present Low <10% exotic Site condition score 7-8	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 18	150.717648048954,-33.8251337493344,0	06/03/2019	Good condition Cumberland Plain Woodland (HN 512. Shale Gravel Transition Forest zone) High native diversity structural diversity present all levels Regen present Low <10% exotic Site condition score 7-8	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA 35	E 285863 N 6254963	21/05/2020	Cleared construction compound within vegetation patch of Poor condition Cumberland Plain Woodland Low native diversity.	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA36	E 285986 N 6253457	21/05/2020	Good condition Cumberland Plain Woodland High native diversity – 90% native understorey cover. Structural diversity present all levels. Regen present. Low <10% exotic, isolated pasture weeds species and Solanum. Site condition score 7-8	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA37	E 286403 N 6253696	21/05/2020	Poor condition Cumberland Plain Woodland (Derived Native Grassland) High native diversity dominated by Themeda and Eragrostis spp. approx. 75% native understorey cover. only limited shrub and canopy Site condition score 4	
RA38	E 287277 N 6253873	21/05/2020	Exotic grassland with isolated patches of native Themeda Aristida vagans 50% Site condition score 2-3	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA39	E 287179 N 6253872	21/05/2020	Juncus acuta regrowth Swamp oak couch understory exotic 50% Possibly not PCT HN526 Site condition score 4-5	
RA40	E 287655 N 6254214	21/05/2020	60-75% exotic dominated grassland Not poor condition HN528 Site condition score 2	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA41	E 288061 N 6254306	21/05/2020	Question HN526 Swamp oak dominant good condition but no Eucalypt canopy present and not swift parrot habitat Site condition score 5-7	
RA42	E 288124 N 6254341	21/05/2020	Good Condition HN630 Freshwater Wetlands Site condition score 5-7	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA43	E 288303 N 6254311	21/05/2020	HN526 Redgum mixed native 50% understory. Site condition score 5-7	
RA44	E 288764 N 6254465	21/05/2020	HN512 Good condition isolated Buseria 90% native understory grassy Ste value score 8	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA45	E 288800 N 6254666	21/05/2020	Aristida dominant understory 75% some exotic pasture species regen Dillwinia Siberia and Melaleuca nodosa mixed age box Ste value score 5	
RA46	E 288967 N 6254706	21/05/2020	HN512 Good condition isolated Buseria 90% native understory grassy Ste value score 8	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA47	E 288981 N 6254559	21/05/2020	HN512 poor condition isolated Buseria and Dilwinya 75% native understory grassy Ste value score 4	
RA19	E 289764 N 6257831	21/05/2020	Regen HN528 > 60% native understory barbwire grass ect 30% shrub scattered large trees Ste value score 6-7	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA20	E 290715 N 6257575	21/05/2020	Remnant HN528 Large trees and mixed age class/ Shrub cover with Burseria 60% 90% native understorey present beneath shrubs and regen present. Site value score 8- 9	
RA21	E 290105 N 6256623	21/05/2020	Remnant HN526 mature trees and mixed age class 100% under storey native Site value score 8- 9	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA22	E 289570 N 6256498	21/05/2020	HN528/HN526 transition. Shrub cover at 90% Burseria and native understory. Canopy a single age class 30 year eucalyptus isolated mature tree low no weed Site value score 8- 9	
RA23	E 289063 N 6256396	21/05/2020	Increased weed infestations on boundary. Areas are excluded from offset calculations. However, mapping should be reviewed to confirm	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA24	E 287597 N 6256756	21/05/2020	DNG grassland areas with Themeda dominant over Seteria. 60% native No regen. Mid or canopy Site value score 2-3	
RA25	E 287217 N 6257514	21/05/2020	HN528 but in Low condition not as mapped. Eragrostis Verbena and seteria 70%. Site value score 1-2	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA26	E 287231 N 6257625	21/05/2020	Remnant HN528 managed understory no Buseria but 80% native isolated weeds mixed age canopy regen Site value score 7	
RA28	E 287222 N 6257721	21/05/2020	Old house site 100% exotic not Good condition HN528 as mapped	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA29	E 287057 N 6257739	21/05/2020	Low DNG HN528 dominated by Eragrostis 90 % Site value score 1	
RA30	E 288183 N 6256968	21/05/2020	Moderate regeneration in HN528 with native dominant grass understory some mix age Site value score 5	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA31	E 288370 N 6257138	21/05/2020	HN528 mature diverse native understory with 90% Buseria mid storey Mixed age class Site value score 8	
RA32	E 289409 N 6257544	21/05/2020	Wetland Tyha and mixed macrophytes Site value score 5	

RAPID ASSESSMENT #	COORDINATES	DATE	DESCRIPTION	PHOTO
RA33	E 289321 N 6257394	21/05/2020	HN526 mixed Swamp oak and Redgum 90% native understory regen isolate weeds including olive Biden's Site value score 7	

APPENDIX B

AUDIT CHECKLIST

B1 AUDIT CRITERIA CHECKLIST

Indicator	Independent Auditor Comments	Measures made	Requirement	Verification Method	Compliance Finding
Condition 30(10)	**The Infrastructure Department must implement the approved Biodiversity Offset Delivery Plan on behalf of the Commonwealth**				
The Infrastructure Department must implement the approved Biodiversity Offset Delivery Plan on behalf of the Commonwealth	This 2020 BODP implementation report provides a summary of the actions of the Department to implement the BODP. Observations cited within the 2020 BODP Implementation report include; The word “secured” is used in the 2020 BODP implementation report to describe purchased and transferred credits to the Department under the NSW biobanking scheme. However, until these credits are retired they are not considered secure. The percentage of offsets that have been secured differs in this 2020 BODP Implementation Report from those presented in the 2019 BODP Implementation Report or estimated in the BODP for the following reasons The numbers presented in the 2019 BODP Implementation Report were based on EPBC Act offset guide calculations, while the numbers presented in this 2020 BODP Implementation Report are based on FBA and BBAM calculations and BBAM credits	Review of BODP implementation report for consistency with mapping and spatial files. Review Equivalency Statement for residual offset requirements provided by NSW DPIE Review credit transactions identified within the BODP implementation report A site inspection of Orchard Hills offset verifying the Initial Survey Report (GHD 2020) findings has been conducted (See Appendix A) In total, the field verification confirmed the vegetation mapping to be consistent across 37/45 or 82% of the sampled RA sites These inconsistencies were rectified in the final Orchard Hills Initial Ecological Survey Report and offset calculations presented in the 2020 BODP implementation report. A review of each FBA and BBAM calculations and EPBC Act offset calculations for each MNES being offset, including assessment of inputs against previously approved assumptions provided in the BODP A review of proposed DEOH Offset Management Plan (GHD 2020). Correspondence from Department of Agriculture, Water and the Environment (DAWE): approving the use of the NSW BC Act (including NSW BioBanking Assessment Methodology (BBAM) calculator, or NSW BC Act BAM conversions) to calculate and secure offset requirements for EPBC Act listed matters in the context of the WSA BODP cited Draft meeting minutes: Western Sydney International offset requirements meeting (Sep 2020) between (DAWE) and Infrastructure cited. Noting that DAWE has endorsed the BAM as a method for determining offsets on the basis that the management actions will bring back trees to the areas over the specified time period’	Does the Biodiversity Offset Delivery Plan Implementation Report on and support the implementation of the Biodiversity Offset Delivery Plan's requirements?	On-site: undertaking site inspection of offset site as Defence Establishment Orchard Hills Off-site: reviewing of the Biodiversity Offset Delivery Plan Implementation Report.	**Observation (O)**

Indicator	Independent Auditor Comments	Measures made	Requirement	Verification Method	Compliance Finding
		Review of MOU and Final DEOH Offset Plan.			
Condition 30(6)	**The Biodiversity Offset Delivery Plan must:**				
(a) be consistent with the EPBC Act Environmental Offsets Policy (2012) to the satisfaction of the Approver, including in particular:	This requirement is considered throughout the approved BODP. Consistency with specific criteria is demonstrated further in Chapter 9 of the approved BODP. The calculation of the offset requirements for Stage 1 development impacts and the proposed offsets in the BODP has used a consistent EPBC 'offsets assessment guide' spreadsheet and NSW FBA and BBAM. The BODP was approved by DoEE (Now DAWE) on 24 August 2018. The 2020 BODP Implementation report incorporates an assessment of each offset with either the EPBC Act Environmental Offsets Policy (2012) or the NSW BBAM (currently replaced with the NSW Biodiversity Offset Scheme (BOS) under the NSW Biodiversity Conservation Act 2016 (NSW). DAWE have provided correspondence approving the use of the BOS in NSW for the quantification and delivery of the project's offsets in the 2020 BODP Implementation report. Ecosystems and Species credits have been purchased from offsets sites secured under the NSW BBAM, or BOS in perpetuity. The DEOH offset area is proposed for conservation management through a MOU between Defence and Infrastructure and the implementation of the DEOH Offset Plan (GHD 2020). The tenure of this site will be maintained by Defence. There is some inconsistency between the MOU, DEOH Offset Plan and 2020 BODP Implementation report in regard to the proposed mechanism for security and commitment to management of the proposed DEOH offset area beyond the MOU Offset Improvement Period. In particular, the DEOH Offset Plan states;	Review of BODP implementation report for consistency with mapping and spatial files. EPBC offset calculations reviewed for each individual MNES against findings of site inspection condition site values scores and assertions. Confirm and review credit transactions identified within the BODP implementation report Review Equivalency Statement for residual offset requirements provided by NSW DPIE Review credit transactions identified within the BODP implementation report Site inspections and verification of the Orchard Hills Initial Ecological Survey Report found that only 37/45 or 82% of the sampled rapid assessments were inconsistent. These inconsistencies were rectified in the final Orchard Hills Initial Ecological Survey Report and offset calculations presented in the 2020 BODP implementation report Correspondence from Department of Agriculture, Water and the Environment (DAWE): approving the use of the NSW BC Act (including NSW BioBanking Assessment Methodology (BBAM) calculator, or NSW BC Act BAM conversions) to calculate and secure offset requirements for EPBC Act listed matters in the context of the WSA BODP cited Draft meeting minutes Western Sydney International offset requirements meeting (Sep 2020) between	Has the Biodiversity Offset Delivery Plan considered the *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy October 2012 (EPBC Act offsets policy) and the *NSW Biodiversity Conservation Act 2016 (NSW)*? Are the biodiversity offset sites securely titled under a legally binding conservation covenant (or other appropriate mechanisms) and actively managed? Consideration should be given to a changing regulatory environment. Does the Biodiversity Offset Delivery Implementation Plan provide consideration of changes to legislation and policies and amendments to existing policies and if so do the proposed offsets meet a range of mechanisms and methodologies in accordance with current **regulatory** requirements?	On-site: n/a Off-site: reviewing of the Biodiversity Offset Delivery Plan Implementation Report and quantum of calculated offsets has been in line with guiding methodologies.	**Observation (O)**

Indicator	Independent Auditor Comments	Measures made	Requirement	Verification Method	Compliance Finding
	'the MOU also provides for the conservation of the Offset Area (in the state achieved by the end of the Improvement Period) in perpetuity.' *It is noted that the projects impacts are permanent and the policy states 'secured for at least the same duration as the impact on the protected matter arising from the action'.* Therefore, it is recommended the 2020 BODP implementation report state and confirm how the DEOH Offset Plan is implemented and secured by Defence beyond the MOU Offset Improvement Period and or in accordance with Section 7.2.1 of the EPBC Act Environmental Offsets Policy (the policy) (2012).	(DAWE) and Infrastructure cited. Noting that DAWE has endorsed the BAM as a method for determining offsets on the basis that the management actions will bring back trees to the areas over the specified time period' Review of MOU and Final DEOH Offset Plan. Section 1.3.2 of the Final DEOH Offset Plan notes "*Maintenance of the Offset Area in perpetuity to retain long-term benefits of the ecological improvements achieved in the Offset Improvement Period*" and "*Although valid for the Offset Improvement Period, the MOU also provides for the conservation of the Offset Area (in the state achieved by the end of the Improvement Period) in perpetuity."*			
(i) offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter;	The BODP provides evidence that the proposed offsets deliver an overall conservation outcome that improves or maintains the viability of the protected matters This was approved by DoEE on 24 August 2018. The 2020 BODP Implementation report outlines offsets delivered and generally consistent with the BODP. Difference between the BODP and the 2020 BODP Implementation report include changes in the quantification of offsets from the EPBC offset calculations to the use of NSW FBA Biobanking credit calculations. The differences in the approach to quantification are justified and reflect changes in NSW offset policy currently endorsed by the Commonwealth for assessing and providing offset for MNES. The application of the NSW BOS has also been endorsed in correspondence with the DAWE specifically for the project. The quantification of offsets in terms of NSW FBA and BBAM credits also allows for the residual credit liabilities to be converted to BAM credits under the current BOS in NSW under	Review of BODP implementation report for consistency with mapping and spatial files. EPBC offset calculations reviewed for each individual MNES against findings of site inspection condition site values scores and assertions Site inspections and verification of the Orchard Hills Initial Ecological Survey Report found that only 37/45 or 82% of the sampled rapid assessments were inconsistent. These inconsistencies were rectified in the final Orchard Hills Initial Ecological Survey Report and offset calculations presented in the 2020 BODP implementation report Review Equivalency Statement for residual offset requirements provided by NSW DPIE Review credit transactions identified within the BODP implementation report Review of each individual FBA and BBAM offset calculations for each MNES against findings of site inspection and proposed DEOH Offset Management Plan (GHD 2020) identified some minor inconstancies in the identification and classification of gains for	Do the Biodiversity Offset Delivery Plan proposed management actions improve or maintain the viability of the relevant protected matters being offset?	On-site: undertake a site inspection of offset sites at Orchard Hills to confirm the implementation of management actions. Off-site: review of the potential management actions within the Offset Management Plan to be prepared for the offset sites.	**Observation (O)**

Indicator	Independent Auditor Comments	Measures made	Requirement	Verification Method	Compliance Finding
	the BC Act. A conversion has formally been provided under the *Statement of assessment of reasonable equivalence* by DPIE in accordance with clause 22(3) of the Biodiversity Conservation (Savings and Transitional) Regulation 2017. The FBA Biobanking credit calculations for the Orchard Hills offset area have been provided for each ecosystem condition class. These calculations were consistent with those presented in the final, independently verified Initial Ecological Survey report (GHD 2020). Following detailed review of the DEOH Offset Plan it is noted there are multiple references to potentially competing management outcomes in regard to the maintenance of natural grassland and providing for the natural regeneration of canopy and midstory. In particular, Section 4.3.3 of the DEOH Offset Plan states; 'The strategy should include maintenance of areas of species rich native grasslands or scrub' and further 'areas to be maintained as grassland'. This management strategy is described for Management Unit (MU) C in Table 5.1 as 'Maintain and enhance native grassland or scrub' and the management action of assisted plantings is not included within the Table 5.2. However, Table 5.2 the DEOH Offset Plan does proposes to facilitate the natural regeneration of canopy and mid-storey within MU C through the following management actions. — Weed control — Application of ecological fire management — Management of human disturbance — Erosion Control — Retention of regrowth and remanent native vegetation (specifically to develop a regeneration and revegetation strategy which provides for fine scale mapping of extent of natural regeneration with an overall objective of canopy cover of greater than 10% when measured across continuous patches) Supplementing the above is an additional management action under 12.9.1.7 of the BBAM:	MNES. Specifically, MZ6bc and MZ2c in the appendix claims default increase score for OS and MS Cover. However, this area is actively maintained as grasslands and there is no historical evidence or indication these will naturally regenerate the canopy as proposed in the OMP. Therefore, the OS and MS default increase in MZ C areas should be reduce below the default increase to 0. The consultation and approval advice provided by DAWE as it relates to the use of the ecosystem credits for Swift Parrot specifies this was 'on the basis that the management actions will bring back trees to the areas over the specified time period' And further states; '*It is assumed that untreed areas can be restored to eventually become treed and suitable as habitat*.'			

Indicator	Independent Auditor Comments	Measures made	Requirement	Verification Method	Compliance Finding
	— Control feral and/or overabundant native herbivores The DEOH Offset Plan also includes specific performance criteria with an overall objective of establishing canopy cover of >10% when measured across continuous patches of the community. The current BBAM credit calculations for these areas of poor condition grassland within MU C have generated credits on the assumption the minimum management actions required under the Section 12.9 of BBAM will be undertaken, including active and or natural regeneration to reinstated a canopy and mid-storey layers and deliver the default increase scores for Over-storey (OS) and Mid-storey (MS) cover. If such regeneration was to be excluded or unsuccessful the OS and MS attribute gain would require reduction in accordance with Section 12.2 of the BBAM. It is the opinion of the independent auditor that areas of natural grassland within MU C are unlikely to naturally regenerate a canopy structure without the additional provision of assisted plantings outlined in Table 5.2 for other areas and MUs. Despite this view it is acknowledged the DEOH Offset Plan does include management actions within MU C to facilitate natural regeneration. Furthermore, the DEOH Offset Plan also includes detailed requirements for monitoring and reporting on the progress of these action in meeting the offset objectives in chapter 6. Given the implementation of the DEOH Offset Plan will be the subject of future 5 yearly reviews and further independent audits of the BODP implementation, there is likely to be sufficient transparency on BODP implementation, performance of the Offset Plan and quantification of the BBAM calculations generated from the offset site. The approved BODP and DEOH Initial Ecological Survey report excluded the use of the poor condition PCTs 849 and PCT 835 as an offset for the habitat for Swift Parrot and Grey-headed Flying-fox based on ‘Like for Like’ requirements of the EPBC Act Environmental Offset Policy.				

Indicator	Independent Auditor Comments	Measures made	Requirement	Verification Method	Compliance Finding
	The FBA and BBAM calculation in the 2020 BODP Implementation report have included all areas of PCT 835 and PCT 849 as offset for the habitat for Swift Parrot and Grey-headed Flying-fox. It is acknowledged that while these areas don't meet the 'Like for Like' requirements of the EPBC Act Environmental Offset Policy, the endorsed NSW BOS under the BC Act includes areas of habitat for ecosystem species regardless of the condition. The NSW BOS assumes ecosystem credits are generated from the improvements of areas in poor condition either through natural or active regeneration and will provide habitat for these ecosystem species over time. The use of ecosystem credits for the Swift Parrot and Grey-headed Flying-fox is therefore reasonable where the management units provide for natural or active regeneration of habitat for these ecosystem species over time. The specific habitat components of PCT 835 and PCT 849 for the Swift Parrot and Grey-headed Flying-fox are the presence of winter flowering trees for foraging. If the proposed management of the Orchard Hill offset area includes areas of actively maintained grasslands without canopy, it is unreasonable to include these areas within the species ecosystem credits. DAWEs endorsement of the use of ecosystem credits under the NSW BOS (or in this case FBA) to meet the BODP credit liabilities of the Swift Parrot and Grey-headed Flying-fox, states; 'It is assumed that untreed areas can be restored to eventually become treed and suitable as habitat. Certainly, this was the original intention of restoration activities to be carried out at Orchard Hills under agreement between Infrastructure and Department of Defence.' Therefore, the performance of the proposed natural regeneration of canopy OS and MS layers within grassland areas of MU C, will require specific focus by future BODP implementation audits and DEOH Offset Plan 5 year review to ensure the assumed natural regeneration and corresponding credit calculations for MU C are adequately providing offsets for the Swift Parrot and Grey-headed Flying-fox as currently proposed.				

Indicator	Independent Auditor Comments	Measures made	Requirement	Verification Method	Compliance Finding
(ii) offsets must be built around Direct Offsets but may include Other Compensatory Measures (including that the offsets must be 'like-for-like');	The BODP was approved by DoEE on 24 August 2018. It incorporates Direct offsets through the establishment of a land based conservation management area at Orchard Hills and purchasing of credits under the NSW Biobanking Scheme. All purchased Like for Like credits under the NSW Biobanking Scheme have been reviewed. All credit transferred documents have been cited, a review of a total of 4,059 credits purchased from 8 established biobanking sites has been conducted. A review of the individual biobanking sites has been completed, including a consistency assessment against EPBC offset guidelines, offset calculations and areas, and the spatial data provided. Compensatory measures are proposed in the BODP Implementation Report for Cumberland Plain Woodland in form of Greening Australia Native Seed Production Area.	Review of BODP implementation report for consistency with mapping and spatial files. Orchard Hills Site Covenant Agreement MOU has been cited. EPBC offset calculations reviewed for each individual MNES against findings of site inspection condition site values scores and assertions Confirm and review credit transactions identified within the BODP implementation report Correspondence from DAWE approving the use of the NSW Biobanking and BAM to meet the Like for like offset requirements for MNES cited. Site inspections and verification of the Orchard Hills Initial Ecological Survey Report found that only 37/45 or 82% of the sampled rapid assessments were inconsistent. These inconsistencies were rectified in the final Orchard Hills Initial Ecological Survey Report and offset calculations presented in the 2020 BODP implementation report. Site review confirm the proposed Orchard Hills offset area will following the implementation of the DEOH Offset Plan deliver 'like-for-like' outcomes for MNES, CPW. Review of Western Sydney International Airport Threatened Flora Propagation Program Delivery Report (ABGMA, 2019);and Conservation genomics of Pimelea spicata (Spiked Rice-flower) in support of management and translocation activities (RBGDT, 2019,)	Are the offsets direct offsets? Are any other compensatory measures being applied?	On-site: undertake inspection of the direct land-based protected matter offsets to confirm or otherwise 'like-for-like'. Off-site: review the Biodiversity Offset Delivery Plan to confirm that the offsets are at least 90% direct land-based offsets and are 'like-for-like' for each protected matter offset.	**Compliant (Y)**

Indicator	Independent Auditor Comments	Measures made	Requirement	Verification Method	Compliance Finding
(iii) offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs; and	The Orchard Hills offset area is recognised under the Memorandum of Understanding (MOU) as providing additional conservation requirements and security to its current existing land use, which is currently managed for Defence capability purposes, Defence training activities and the use and safe storage of explosives. The management of the Orchard Hills offset area under DEOH Offset Plan, will be funded and implemented to provide measurable ecological improvements consistent with the EPBC Act Environmental Offsets Policy. The MOU between Defence and Infrastructure includes provisions that are stated as additional to any Commonwealth Heritage Listing requirements relating to the Orchard Hills offset area. The existing plans and documents related to conservation management within the DEOH include a number of existing management actions that are considered 'basic maintenance of values'. Some of these actions could be considered 'conservation measure or action' and subject to additionality in accordance with BBAM. These include but are not limited to; — Weed control — Application of ecological fire management — Manage human disturbance It is recommended that the 2020 BODP Implementation report includes a review of the existing management plans and actions for DEOH and an appropriate assessment of 'Additionality' against the specific criteria of Section 12.10 of the BBAM. If the assessment identifies that additionality requirements in accordance with BBAM, the FBA Biobanking credit calculation should be reviewed in accordance with discounts for each action in Table 10 of the BBAM with appropriate justification.	Review of BODP implementation report for consistency with mapping and spatial files. Confirm credit transactions identified within the BODP implementation report are from existing in perpetuity Biobank sites in accordance with NSW Biobanking Scheme. Review Orchard Hills MOU for confirmation proposed management actions additional to what is already required, determined by law Review of the following existing management plans currently applicable to DEOH including; DEOH Biodiversity Monitoring Report – Spring 2013 (SKM, 2014) DEOH Heritage Management Plan (Godden Mackay Logan, 2013). Defence Establishment Orchard Hills Kangaroo Management Plan (Defence 2014	Are the offset for each protected matter additional to what is already required?	On-site: n/a Off-site: review of the Biodiversity Offset Delivery Plan to check if the offsets are additional to what is already required.	**Observation (O)**

Indicator	Independent Auditor Comments	Measures made	Requirement	Verification Method	Compliance Finding
(iv) the identification of offsets must be informed by scientifically robust information and incorporate the precautionary principle in the absence of scientific certainty	The purchase of existing credits from offsets in the form of Biobanks is based on the NSW Biobanking Scheme and considered to be of scientific robust methodology. The establishment of these sites requires accredited assessors to describe and assess the site which is subsequently reviewed by NSW regulators period to approval. The Orchard Hills survey reporting and Management plan identify and quantify the field data capture and offset calculation methodologies consistent with the both NSW Biodiversity Assessment Methodology (BAM) and Framework for Biodiversity Assessment (FBA) and EPBC Act offset policy calculator consistent with the methods assumption and calculations used for the project impacts. The Orchard Hills site identified within the BODP was subject to preliminary field surveys and assessment, in accordance with State and commonwealth surveys methods and guidelines. The assessment incorporates the precautionary principle in the absence of scientific certainty by conservatively excluding areas of low condition from contributing to the offset requirements for CPW. The surveys and assessment were determined to be appropriate and approved by DoEE in the BODP on 24 August 2018.	Review of BODP implementation report for consistency with mapping and spatial files. A detailed an independent audit of the DEOH Initial Survey report was completed in June 2020, this independent review has been attached, see Appendix A A brief summary below; Minor changes/recommendations regarding the survey methodology. Small changes to vegetation mapping were recommended due inconsistencies found during the field inspections, including; —Changes mapping to Cumberland Plain Woodland (HN 528) rather than Shale Gravel Transitional Forest (HN 512) which it was currently mapped (At RA4) —Areas of Poor condition HN528 revised to Low condition HN 528 —Areas of HN528 in northern offset (associated with RA 28 and 29) to be revised to low condition —Areas of good condition HN526 revised to poor condition HN526 —Exclusion from the offset; an area of Poor Condition HN528, recently cleared and associated with a construction compound. In total, the field verification confirmed the vegetation mapping to be consistent across 37/45 or 82% of the sampled RA sites The recommendations were generally addressed and can be find in Section 7 of DEOH Initial Survey report (GHD, 2020) Review of BODP implementation report for consistency with mapping and spatial files. Confirm credit transactions identified within the BODP implementation report are from existing in perpetuity Biobank sites in accordance with NSW Biobanking Scheme.	Has the identification of offsets been informed by scientifically robust field data capture and offset calculation methodologies, such as the NSW Framework for Biodiversity Assessment (FBA) methodology and/or other acceptable methods for assessing and quantified biodiversity offset in accordance with State and Commonwealth legislative requirements? Is there an absence of scientific certainty? If so, has the precautionary principle been applied or has an acceptable alternative mechanisms been applied?	On-site: check and confirm the location of field survey data collection and check each survey site aligns with the data captured for the site. Off-site: review of Biodiversity Offset Delivery Plan Implementation Report to check the methodologies used are scientifically robust.	**Compliant (Y)**
(b) include measures to offset impacts on foraging habitat for the Swift Parrot (Lathamus discolor) in addition to those species and ecological communities listed in the Biodiversity Offset Strategy provided as part of the EIS;	The implementation report incorporates direct offset for foraging habitat for the Swift Parrot (*Lathamus discolor*). A total of 139.3 Ha of habitat has been purchased from 8 established biobank sites, and the Orchard site is considered to have an additional 517.9 ha of habitat. These area calculations have been reviewed. The approved BODP and DEOH Initial Survey report excluded the use of the poor condition PCTs 849 and PCT 835 as an offset for the habitat for Swift Parrot based on 'Like for Like'	Review and confirm BODP implementation report for inclusions of specific offset assessment and quantification using the EPBC offset calculations for foraging habitat for the Swift Parrot (*Lathamus discolor*). Review credit transactions identified within the BODP implementation report for habitat of Swift Parrot. A site inspection of Orchard Hills offset verifying the Initial Survey Report (GHD 2020) findings including areas of potential	Have measures been included to offset impacts on foraging habitat for the Swift Parrot?	On-site: n/a Off-site: review the Biodiversity Offset Delivery Plan to check that a Swift Parrot foraging habitat offset will be provided.	**Observation (O)**

Indicator	Independent Auditor Comments	Measures made	Requirement	Verification Method	Compliance Finding
	requirements of the EPBC Act Environmental Offset Policy. The FBA and BBAM calculation in the 2020 BODP Implementation report have included all areas of PCT 835 and PCT 849 as offset for the habitat for Swift Parrot. It is acknowledged that while these areas don't meet the 'Like for Like' requirements of the EPBC Act Environmental Offset Policy, the endorsed NSW BOS under the BC Act includes areas of habitat for ecosystem species regardless of the condition. The NSW BOS assumes ecosystem credits are generated from the improvements of areas in poor condition either through natural or active regeneration and will provide habitat for these ecosystem species over time. The use of ecosystem credits for the Swift Parrot are therefore reasonable under the NSW FBA and BOS where the management units provide for natural or active regeneration and will provide habitat for these ecosystem species over time. The specific habitat components of PCT 835 and PCT 849 for the Swift Parrot are the presence of winter flowering trees for foraging. If the proposed management of the Orchard Hill offset area includes areas of actively maintained grasslands without canopy, it is unreasonable to include these areas within the species ecosystem credits. DAWEs endorsement of the use of ecosystem credits under the NSW BAM (or in this case FBA) for the BODP credit liabilities of the Swift Parrot, states '*It is assumed that untreed areas can be restored to eventually become treed and suitable as habitat. Certainly, this was the original intention of restoration activities to be carried out at Orchard Hills under agreement between Infrastructure and Department of Defence*.' Therefore, the performance of the proposed natural regeneration of canopy OS and MS within grassland areas of MU C will require specific focus by future BODP implementation audits and DEOH Offset Plan 5 year review to ensure the assumed natural regeneration and corresponding credit calculations for MU C are adequately providing offsets for the Swift Parrot and Grey-headed Flying-fox as currently proposed.	Swift Parrot habitat has been conducted (See Appendix A) In total, the field verification confirmed the vegetation mapping to be consistent across 37/45 or 82% of the sampled RA sites These inconsistencies were rectified in the final Orchard Hills Initial Ecological Survey Report and offset calculations presented in the 2020 BODP implementation report. A review of each FBA and BBAM calculations and EPBC Act offset calculations for each MNES being offset, including assessment of inputs against previously approved assumptions provided in the BODP A review of proposed DEOH Offset Management Plan (GHD 2020). Correspondence from Department of Agriculture, Water and the Environment (DAWE): approving the use of the NSW BC Act (including NSW BioBanking Assessment Methodology (BBAM) calculator, or NSW BC Act BAM conversions) to calculate and secure offset requirements for EPBC Act listed matters in the context of the WSA BODP cited Draft meeting minutes Western Sydney International offset requirements meeting (Sep 2020) between (DAWE) and Infrastructure cited. Noting that DAWE has endorsed the BAM as a method for determining offsets on the basis that the management actions will bring back trees to the areas over the specified time period'			

Indicator	Independent Auditor Comments	Measures made	Requirement	Verification Method	Compliance Finding
(c) identify biodiversity credits (or other measure as appropriate) required to offset the total impacts of the Stage 1 Development on biodiversity, determined in accordance with the relevant policies;	The biodiversity credits (or other measure as appropriate) required to offset the total impacts of the Stage 1 was previously approved by DoEE for the EIS, including preliminary calculation of Orchard hills within the BODP. The assumptions and criteria used to determine the offset liability for the impact under the EPBC Offset policy calculator, are consistent with the assumptions for determining the quantum of the offset from the projects impacts. Infrastructure has subsequently assessed and quantified all offsets in regard to the NSW FBA and BBAM calculator and or BAM consistent with advice from DAWE. The conversion of all offsets to BBAM credits and corresponding costs provide a consistent measure for evaluation against the credits liability in the BODP. To evaluate the contribution of 'Other compensatory measures' and in particular the $10,000,000 contribution to Greening Australia Native Seed Production Area the BODP Implementation report outlines in Section 1.6 a method to confirm the offset contribution of other compensatory measures as BBAM credits. The method provides a logical and reasonable approach to quantifying the Other compensatory measures. The observations under the Conditions a i) and iii) in relation to revising the BBAM credit calculations for the Orchard Hill offset area maintained grassland areas and assessment of additionality under BBAM also relate to this condition. Any changes in relations to the BBAM credit calculations arising from these recommendations will require a revision to the Tables 6 and 7 of the current 2020 BODP Implementation report.	All credit transactions included within the BDOP implementation report have had evidence cited of transaction within the 12-month period EPBC offset calculations reviewed for each individual MNES against findings of site inspection condition site values scores and assertions Review Orchard Hills MOU execution and date.	Are biodiversity credits (or other measures) required to make up the offset for the total impacts upon biodiversity associated with the Stage 1 development? If so has relevant policies been referred to?	On-site: n/a Off-site: review the Biodiversity Offset Delivery Plan Implementation Report to check if biodiversity credits are being purchased and that it has been done in accordance with relevant policies.	**Observation (O)**
(d) provide evidence that the required biodiversity credits (or other measure as appropriate) can be secured in accordance with the relevant policies;	A total of 4,059 credits from 8 Established biobanks have been purchased within the implementation period. DAWE have provided correspondence approving the use of the BOS in NSW for the quantification and delivery of the projects offsets in the BODP Implementation report. The conservation management area at Orchard Hills is proposed as being secured through a MOU and implementation of the Final DEOH Offset Plan. The tenure of this site will be maintained by Defence.	All credit transactions included within the BDOP implementation report have had evidence cited of transaction within the 12 month period Review Orchard Hills MOU execution and date The MOU has been sited, Orchard Hills site will provide a substantial areas of the offset requirements. The Orchard site will generate an estimated 14,800 biodiversity credit. Credit transferred documents have been	Have the biodiversity credits (or other measure) been secured in accordance with relevant policies?	On-site: n/a Off-site: review the Biodiversity Offset Delivery Plan Implementation Report and Biodiversity Offset Delivery Plan to check if biodiversity credits have been secured in accordance with relevant policies.	**Observation (O)**

Indicator	Independent Auditor Comments	Measures made	Requirement	Verification Method	Compliance Finding
	While evidence was cited for all credit transfers within 2020 BODP Implementation report, no evidence was provided that these credits were subsequently retired and secured. It is recommended that in future compliance reporting that evidence (documented dates) that the credits are now retired should be provided.	cited and are compliant, however evidence of credit retirement has not been provided. Review of Western Sydney International Airport Threatened Flora Propagation Program Delivery Report (ABGMA, 2019);and Conservation genomics of Pimelea spicata (Spiked Rice-flower) in support of management and translocation activities (RBGDT, 2019,) Review and consider the methodology and approach for qualifying the contribution of other compensatory measures provided in the 2020 BODP Implementation report (GHD, 2021)			
(e) provide evidence that the arrangements for managing the Direct Offsets will be provided through mechanisms that are enduring, enforceable and auditable; and	The MOU and DEOH Offset Pan for the Orchard Hills site incorporates details of the enforceable and auditable mechanisms for review of the proposed direct actions. All credit purchased under the Biobanking scheme incorporates legislative reporting monitoring requirements to ensures gains and outcomes are being achieved on the biobank.	Review Orchard Hills MOU execution and date and confirm mechanisms that are enduring, enforceable and auditable Review and confirm all credit transaction within BODP implementation report are from existing established Biobanks. Site visit of inspected ongoing monitoring points established within the DEOH Offset Pan for the Orchard Hills site.	Have arrangements to manage the direct offsets been provided through mechanisms that are reasonably enduring, enforceable and auditable?	On-site: undertake site visit to check if initial management mechanisms are being implemented. Off-site: review the Biodiversity Offset Delivery Plan Implementation Report and Biodiversity Offset Delivery Plan to check that the management mechanisms to be applied to the direct offsets are enduring, enforceable and auditable.	**Compliant (Y)**
(f) if any Other Compensatory Measures are proposed, provide details of those measures along with a justification of why they should be considered acceptable.	Section 3.3 of the implementation report and BODP outline proposed Compensatory Measures and appropriate justification. These include Threatened Flora Propagation Program (TFPP) and Greening Australia seed collection and production programs, as well as other research and capacity building activities.	Review and confirm Other Compensatory Measures within 2020 BODP implementation report. Appropriate justification provided for suitability with Cumberland Plain vegetation communities	Are other compensatory measures proposed? If so, what are the measures and have justifications as to why they should be considered acceptable been provided?	On-site: Off-site: review the Biodiversity Offset Delivery Plan Implementation Report and Biodiversity Offset Delivery Plan to check if other compensatory measures are to be implemented and corresponding justifications.	**Compliant (Y)**
Condition 30 (11)	**The Infrastructure Department must:**				
(a) ensure that an independent audit of its compliance with condition 30(10) is conducted in respect of;	This audit	Completed in accordance with the Audit criteria.	Audit to be completed by a suitable qualified and experienced auditor.	Undertake audit on-site and off-site in accordance with Condition 30(11) requirements.	**Compliant (Y)**

Indicator	Independent Auditor Comments	Measures made	Requirement	Verification Method	Compliance Finding
(i) the 12-month period commencing with the approval of the Biodiversity Offset Delivery Plan; and	The Audit was completed by the 24 February 2020 on the BODP implementation report covering the 12-month implementation period following approval of the Biodiversity Offset Delivery Plan by 24 August 2018.	Completion of this Audit dated 24 February 2020 criteria.	Audit to be completed by a suitable qualified and experienced auditor.	On-site: undertake audit of direct land-based offsets at 12-month mark. Off-site: undertake audit of offset delivery compliance report.	**Compliant (Y)**
(ii) each subsequent 18-month period until all biodiversity offsets required by the Biodiversity Offset Delivery Plan have been secured or implemented; and	noted	NA	Audit to be completed by a suitable qualified and experienced auditor.	On-site: undertake audit of direct land-based offsets at 18-month intervals until all offset have been secured and implemented. Off-site: undertake audit of offset delivery compliance report.	**Not applicable (NA)**
(b) submit a report of each audit that is carried out to the Environment Department within six months of the end of the period in respect of which the audit was conducted.	This Audit was completed before the 24 February 2020 and within the 6 months period following the end of the 12-month period of implementation of the Biodiversity Offset Delivery Plan	Email submission of this audit	Audit report to be prepared by a suitable qualified and experienced auditor within six months of the end of the period in respect of which the audit was conducted.	On-site: n/a Off-site: prepare an audit report within 6 months of conducting an audit on behalf the Environment Department.	**Compliant (Y)**

Appendix B – Statement of Reasonable Equivalence

Planning, Industry & Environment

DOC20/216030-1

Statement of assessment of reasonable equivalence of biodiversity credits

A delegate of the Environment Agency Head of the Department of Planning Industry and Environment has determined that the number of biodiversity credits required to be retired under the *Threatened Species Conservation Act 1995* (**TSC Act**) as part of the development consent listed in Part 1, are reasonably equivalent to the number and class of biodiversity credits under the *Biodiversity Conservation Act 2016* (**BC Act**) set out in Part 2.

This document outlines that determination, made in accordance with clause 22(3) of the *Biodiversity Conservation (Savings and Transitional) Regulation 2017*.

Part 1 Existing statutory obligation to retire credits

Request made by:	Department of Infrastructure, Transport, Regional Development and Communications
Date received	26 February 2020
Development Consent reference	Western Sydney Airport, Airport Plan (December 2016)
Development name	Western Sydney Airport

Existing statutory obligation reference	Biodiversity credit name (Plant Community Type name and ID, or threatened species name)	IBRA sub region	Number of credits[1]
~~Western Sydney Airport, Airport Plan~~	~~Broad-leaved Ironbark – Grey Box – Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion (HN512, PCT 724)~~	~~Cumberland - Hawkesbury/Nepean~~	~~359.84~~
~~Western Sydney Airport, Airport Plan~~	~~Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion (HN526, PCT835)~~	~~Cumberland - Hawkesbury/Nepean~~	~~2,661.06~~
~~Western Sydney Airport, Airport Plan~~	~~Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion (HN528, PCT849)~~	~~Cumberland - Hawkesbury/Nepean~~	~~10,584~~

[1] Strikethrough indicates original credit obligation. The Department of Infrastructure, Transport, Regional Development and Communications have requested that the credit equivalence be undertaken only for those biodiversity credits with remaining offset obligations.

~~Western Sydney Airport, Airport Plan~~	~~Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion (HN529, PCT850)~~	~~Cumberland - Hawkesbury/Nepean~~	~~2,162.01~~
Western Sydney Airport, Airport Plan	Phragmites australis and Typha orientalis coastal freshwater wetlands of the Sydney Basin Bioregion (HN630, PCT 1071)	Cumberland - Hawkesbury/Nepean	926
~~Western Sydney Airport, Airport Plan~~	~~*Pultenaea parviflora*~~	~~NA~~	~~60~~
~~Western Sydney Airport, Airport Plan~~	~~*Marsdenia viridiflora* subsp. *viridiflora* population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas~~	~~NA~~	~~5,800~~
~~Western Sydney Airport, Airport Plan~~	~~Cumberland Plain Land Snail (*Meridolum corneovirens*)~~	~~NA~~	~~2,441~~
~~Western Sydney Airport, Airport Plan~~	~~Black Bittern (*Ixobrychus flavicollis*)~~	~~NA~~	~~242~~
Western Sydney Airport, Airport Plan	Southern Myotis (*Myotis macropus*)	NA	~~1,617~~ 419
Western Sydney Airport, Airport Plan	Spiked Rice Flower (*Pimelea spicata*)	NA	107,068
Western Sydney Airport, Airport Plan	*Dillwynia tenuifolia*	NA	~~540~~ 29

Part 2 Determination of reasonable equivalence

The number and class of biodiversity credits that are reasonably equivalent under the BC Act are:

Ecosystem Credits

1. **Name of Plant Community Type:** Phragmites australis and Typha orientalis coastal freshwater wetlands of the Sydney Basin Bioregion (HN630, PCT1071)

Number of ecosystem credits required	545
Offset trading group	Coastal Freshwater Lagoons with a percent cleared value ≥70% and <90%
Hollow bearing trees	Not applicable
Vegetation class	Coastal Freshwater Lagoons
Vegetation formation	Freshwater Wetlands
IBRA[2] subregion	Cumberland and any IBRA subregion that adjoins the subregion within which the development occurs and any such subregion that is within 100 kilometres of the outer edge of the impact site.

Species Credits

2. **Name of threatened species:** Southern Myotis (*Myotis macropus*)

Number of species credits required[3]	419

3. **Name of threatened species:** Spiked Rice Flower (*Pimelea spicata*)

Number of species credits required [4]	53

[2] Interim Biogeographic Regionalisation for Australia
[3] Matching credits are available on the BioBanking credits register for Southern Myotis (*Myotis macropus*) from BioBanking Agreements BA 331, BA341, BA424 and BA383. In accordance with the approved method there is no recalculation of the equivalent credit number.
[4] Matching credits are available on the BioBanking Credits register for Spiked Rice Flower (*Pimelea spicata)*. In accordance with the approved method there should be no recalculation of the equivalent credit number, however in this instance the 1:1 ratio equates to 107,068 species credits and is considered unreasonable, given that the species is now assessed via area of habitat under the BC Act. Therefore, a full recalculation of the equivalent credit number was undertaken, based on area of habitat.

4. Name of threatened species: *Dillwynia tenuifolia*

Number of species credits required [5]	29

This statement was issued on 9 April 2020.

Authorised by:

DEREK RUTHERFORD
Director Conservation Programs
Department of Planning Industry and Environment
Delegate of the Environment Agency Head

[5] Matching credits are available on the BioBanking Credits register for *Dillwynia tenuifolia* from BioBanking Agreement BA 375, BA 413 and BA 381. In accordance with the approved method there is no recalculation of the equivalent credit number.

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Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
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B	K Chesnut	J Tipping	On file	J Tipping	On file	21/1/21
C	K Chesnut	J Tipping	On file	J Tipping	On file	03/02/21
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