NATIVE VEGETATION CLEARING PERMIT APPLICATION

SUPPORTING DOCUMENT

CBH BORDEN EXPANSION AND ENHANCEMENT PROJECT

CO-OPERATIVE BULK HANDLING LTD

ENDPLAN ENVIRONMENTAL

PO BOX 138 NORTH FREMANTLE, W.A. 6159

M: 0447 366460 / E: admin@endplanenvironmental.com.au

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Native Vegetation Clearing Permit Application Supporting Document
CBH Borden Grain Facility Upgrade

Our Reference:
CBH236_02_draft

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF PLATES

LIST OF FIGURES

SUMMARY

Co-operative Bulk Handling Limited (CBH), an agricultural co-operative based in Western Australia (WA), is making changes to adapt to the ongoing growth of crops received in WA each year. With a projected average yearly intake of 22 Mt by 2033, there is a need to construct additional grain storage capacity and efficient facilities to accommodate the expected intake. In anticipation of increased yields, CBH is currently evaluating its network; implementing safety and risk mitigation upgrades at various sites.

The CBH Grain Receival site at Borden has been operational since 1976. The site currently has a storage capacity of up to 364,520 tonnes, however, projected demand for increased grain storage capacity has been identified as critical.

Central to the Borden project is the relocation of the site's new marshal-sample-weigh (MSW) area, road and supporting infrastructure, including:

- Upgrading and relocating one 36 metre weigh-in weighbridge and one Type 10 sample hut with a new weighbridge hut;
- Upgrading four open bulkheads with their frame heights extended from 1.2 m to 1.8 m to increase storage capacity;
- Construction of access roads and marshalling areas required for 16 RAV 7 Trucks;
- Additional bypass lanes to support light vehicle and outloading traffic movements;
- Improvements to allow truck stacking at grids, easing congestion; and
- Construction of stormwater drainage infrastructure.

The enhancement will direct all inbound traffic to the norther end of the Borden site, improving traffic flow and reducing congestion on-site during peak times at harvest.

The Project aims to provide measurable benefits including:

- Reducing site cycle times;
- Mitigating safety risks;
- Improving traffic flow;
- Increasing storage capacity;
- Reducing standing crop risk for farmers;
- Reducing the carbon footprint of overall operations;
- Increasing the number of tonnes to port during harvest and shipping windows; and
- Provide greater capacity to manage stormwater on site.

To enable the project to proceed, CBH proposes to clear **0.27 ha** of native vegetation at the Borden Grain Receival site comprising **0.18 ha** of Completely Degraded and **0.08 ha** of Degraded native vegetation.

To assist in understanding the potential impact of the project upon the existing environment, CBH commissioned Bio Diverse Solutions (BDS) to undertake a spring reconnaissance flora and vegetation survey including a targeted Threatened/Priority Ecological Community (TEC/PEC). The survey area comprised **49.5 ha** which included the proposed development footprint and immediate surrounds.

Desktop reviews of published Western Australian and Commonwealth databases pertaining to a 20-30 km study area buffer were undertaken to source data and information relating to Threatened and Priority Flora, Threatened Ecological/Priority Communities, Environmentally Sensitive Areas, groundwater dependent ecosystems, heritage, remnant vegetation, geology and soils.

The spring reconnaissance flora and vegetation and targeted Threatened/Priority Ecological Community (TEC/PEC) survey conducted in September 2023 identified the following from the within the survey area:

- A total of 153 vascular flora taxa were recorded from relevés and opportunistic observations including 49 non-native species or introduced species;
- No species of Threatened or Priority flora were identified;
- Three vegetation units were identified *Allocasuarina fraseriana* Open Forest, Mixed Eucalyptus Woodland and *Acacia acuminata* Low Open Forest;
- The native vegetation condition ranged from Completely Degraded to Degraded. Approximately 40.3 ha of the 49.5 ha survey area was considered to be cleared, consisting of roads, CBH infrastructure or agricultural land; and
- While the Mixed Eucalyptus Woodland bore similarities to the *Eucalyptus Woodlands of the Western Australian Wheatbelt* (Wheatbelt Woodlands) TEC/PEC, it was determined not to meet the criteria due to floristic composition and degradation.

The survey results outlined above, and presented in more detail in this supporting document, indicate that none of the 10 Clearing Principles were at variance. However, Principle (e) may be at variance as the proposed clearing of **0.27 ha** Degraded to Completely Degraded remnant native vegetation will occur in an area that has been extensively cleared and may cause appreciable land degradation and impact the quality of surface water.

The proposed development within the proposed development footprint is likely to have minimal impact on conservation values due to the small area of native vegetation present being in 'Degraded' and 'Completely Degraded' condition, general environmental degradation and overall site disturbance that has occurred historically.

ACRONYMS AND ABBREVIATIONS

BAM Act	Western Australian *Biosecurity and Agriculture Management Act 2007*
BC Act	Western Australian *Biodiversity Conservation Act 2016*
BoM	Bureau of Meteorology
C1, C2, C3	Declared Pest categories under the BAM Act
CD	Conservation Dependent (fauna; specially protected species under the Western Australian BC Act)
CR	Critically Endangered (listed under the Commonwealth EPBC Act and/or Western Australian BC Act)
DAFWA	Department of Agriculture and Food, Western Australia (2006-2017, now DPIRD)
DAWE	Commonwealth Department of Agriculture, Water and Environment (2020-2022, now DCCEEW)
DBCA	Western Australian Department of Biodiversity, Conservation and Attractions
DBH	Diameter at Breast Height (1.3 m)
DEWHA	Commonwealth Department of the Environment, Water, Heritage and the Arts (2007-2010, now DCCEEW)
DPAW	Western Australian Department of Parks and Wildlife (2013-2017, now DBCA)
DoE	Commonwealth Department of the Environment (2013-2016, now DCCEEW)
DotEE	Commonwealth Department of the Environment and Energy (2016-2020, now DCCEEW)
DPIRD	Western Australian Department of Primary Industries and Regional Development
DSEWPaC	Commonwealth Department of Sustainability, Environment, Water, Population and Communities (2010-2013, now DCCEEW)
DWER	Western Australian Department of Water and Environmental Regulation
EN	Endangered (listed under the Commonwealth EPBC Act and/or Western Australian BC Act)
EP Act	Western Australian *Environmental Protection Act 1986*
EPA	Western Australian Environmental Protection Authority
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
GDA 94	Geographic Datum of Australia 1994
GIS	Geographic Information System
GPS	Global Positioning System
ha	hectare(s)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for Conservation of Nature
km	kilometre(s)
m	metre(s)
MT	Million tonne
mT	Metric tonne
MGA	Map Grid of Australia
MI	Migratory species (fauna; specially protected species under the Western Australian BC Act)
NVIS	National Vegetation Inventory System
MNES	Matters of National Environmental Significance

P, P1, P2, P3, P4, P5	Priority Flora and Fauna species rankings (P1-P4) or Priority Ecological Communities (P1-P5
PEC	Priority Ecological Community
PMST	Protected Matters Search Tool (Commonwealth hosted by DDCCEEW)
sp./spp.	Specie(s)
subsp.	Subspecies (infrataxon)
S1	Schedule 1 Fauna species listed under the Western Australian BC Act
TEC	Threatened Ecological Community
TF	Threatened Flora (formerly termed Declared Rare Flora, DRF, in Western Australia)
var.	Variety (infrataxon)
VU	Vulnerable (listed under Commonwealth EPBC Act and/or Western Australian BC Act)
WAH	Western Australian Herbarium
WAM	Western Australian Museum
WAOL	Western Australian Organism List
WONS	Weeds of National Significance

1. PROJECT OVERVIEW

CBH an agricultural co-operative based in Western Australia (WA), is making changes to adapt to the ongoing growth of crops received in WA each year. With a projected average yearly intake of 22 Mt by 2033, there is a need to construct additional grain storage capacity and efficient facilities to accommodate the expected intake. In anticipation of increased yields, CBH is currently evaluating its network; implementing safety and risk mitigation upgrades at various sites.

The CBH Grain Receival site at Borden has been operational since 1976 (**Figure 1**). The site currently has a storage capacity of up to 364,520 tonnes, however, projected demand for increased grain storage capacity has been identified as critical.

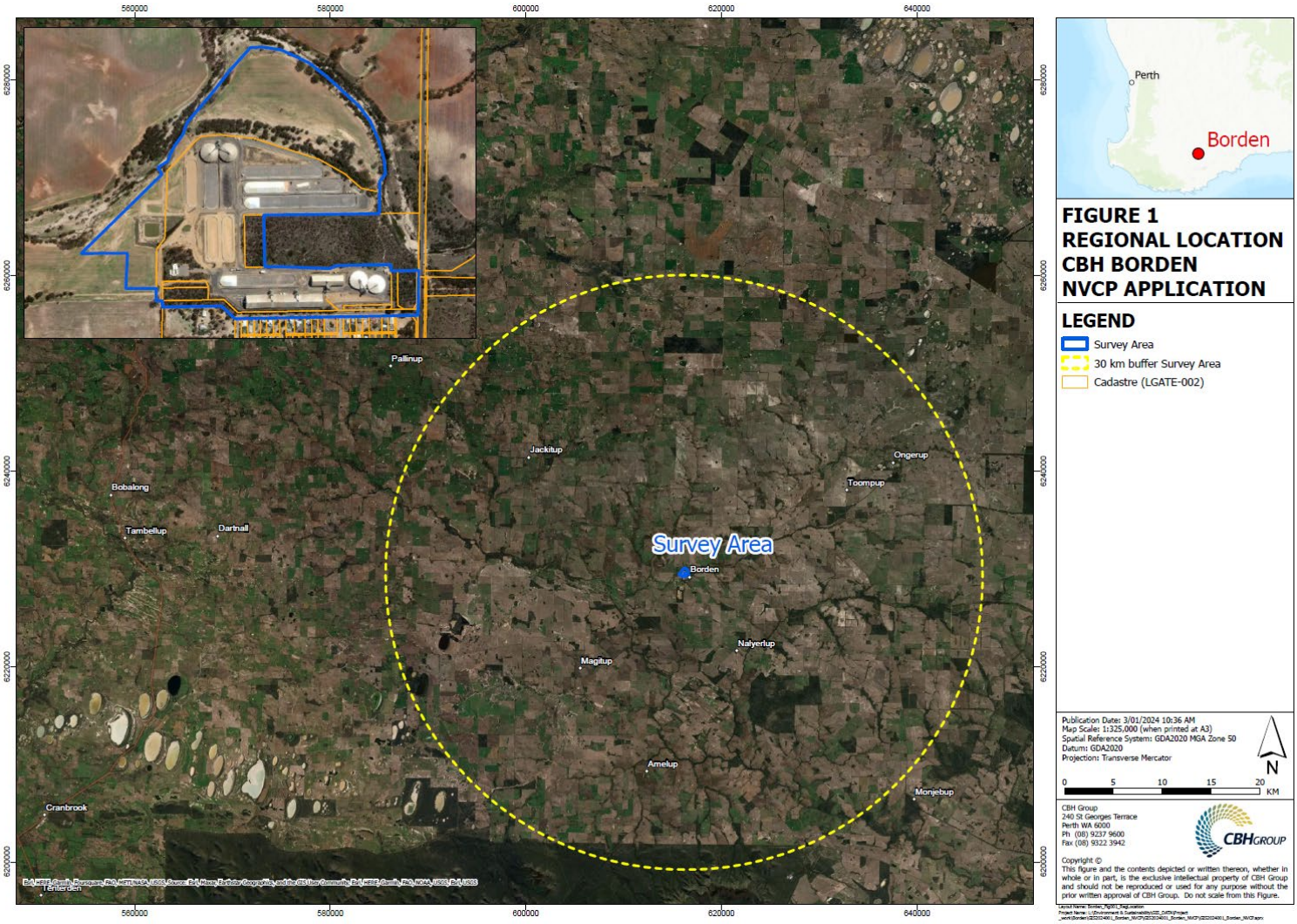

Figure 1 Regional location of CBH Borden Site

Central to the Borden project, which commenced in 2023 and now partially completed is the relocation of the site's new marshal-sample-weigh (MSW) area, road and supporting infrastructure, including:

- Upgrading and relocating one 36 m weigh-in weighbridge and one Type 10 sample hut with a new weighbridge hut;
- Upgrading four open bulkheads with their frame heights extended from 1.2 m to 1.8 m to increase storage capacity;
- Construction of access roads and marshalling areas required for 16 RAV 7 Trucks;
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- Reducing site cycle times;
- Mitigating safety risks;
- Improving traffic flow;
- Increasing storage capacity;
- Reducing standing crop risk for farmers;
- Reducing the carbon footprint of overall operations;
- Increasing the number of tonnes to port during harvest and shipping windows; and
- Provide greater capacity to manage stormwater on site.

To enable the project to proceed, CBH proposes to clear **0.27 ha** of native vegetation at the Borden Grain Receival site comprising **0.17 ha** of Completely Degraded and **0.1 ha** of Degraded native vegetation. This document has been prepared to support the granting of a NVCP for the proposal under Part V Division 2 of the *Environmental Protection Act 1986* (EP Act) and includes the following information:

- The justification for the proposal;
- An overview of the existing environmental conditions of the site;
- Proposed environmental mitigation and management actions;
- An evaluation of potential impacts of the proposed native vegetation clearing; and
- An evaluation of compliance of the proposed impact against the ten clearing principles listed under Schedule 5 of the EP Act.

1.1 Project Location and Land Ownership

Situated approximately 383 km southeast of Perth and 121 km north-northeast of Albany, the proposed development footprint is located within the Shire of Gnowangerup in the Great Southern region and is situated immediately to the north of the Borden township (**Figure 2**).

The legal description for the landholding that comprises the proposed **0.27 ha** development footprint is shown in **Table 1**.

13164000 13164200 13164400 13164600 13164800 13165000 13165200

-4037200 -4037400 -4037600 -4037800 -4038000 -4038200 -4038400

FIGURE 2
SURVEY AREA & PROPOSED DEVELOPMENT FOOTPRINT
CBH BORDEN
NVCP APPLICATION

LEGEND

- Proposed Development Footprint
- Survey Area
- Cadastre (LGATE-002)

Map Scale: 1:4,100 (when printed at A3)
Spatial Reference System: GDA2020
Datum: GDA2020
Map Units: Metre

N

0 50 100 150 200 Metres

CBH Group
240 St Georges Terrace
Perth WA 6000
Ph (08) 9237 9600
Fax (08) 9322 3942

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Layout Name: A3 Landscape Side InfoBar Layout Template

Table 1 Legal description of the proposed development footprint

Lot No.	Deposited Plan	Volume/Folio	Registered proprietor
150	P067780	2784/521	Co-operative Bulk Handling Ltd

Source: CBH Group 2023

The Certificate of Title and Deposited Plan Lot 150 are provided in **Appendix 1**.

1.2 Project Justification

There is a defined shortfall in CBH's current statewide export capacity relative to its future targets. Borden has been identified as a priority site in the Albany zone for increased storage capability to address this shortfall.

in February 2017, the CBH Grain Receival site at Borden was completely flooded due to heavy rainfall in the wheatbelt region. From January 29 - 31, the region experienced daily rainfall between 50 mm to 100 mm, with the highest daily total of 140.2 mm at Yorkarakine. These rainfall intensities, lasting from 30 minutes to seven days, correspond to the 1 % Annual Exceedance Probability (AEP) prompting CBH to recognize the need for upgrading the drainage infrastructure at this site.

1.3 Alternative Project Options Considered

The proposed development was constrained by the presence of 7.02 ha of vegetation located centrally and to the east of the site. Having significant heritage and ecological values, this area was prioritised for protection and excluded from the expansion area.

To achieve the project objectives, two options were assessed.

Option 1:
The original concept of the project was to proceed without removing any native vegetation. However, after a period of operation, it was determined that the current layout, which avoided clearing, was unsafe and impractical. This was due to the need for multiple trucks to navigate in a single file and park in inappropriate areas for the operation to take place. To mitigate the impact on native vegetation, the project attempted to avoid the entire area during the design phase.

Option 2:
Option 2 involves widening the current roads surrounding the sample area to allow for traffic flow. Lesser marshalling capacity has traffic congestion implications, potentially jamming the access road and ultimately affecting our cycle times and increasing the carbon footprint of the site.

Through the assessment process undertaken by CBH, Option 1 was initially chosen as it would require the least amount of clearing. After executing Option 1 in 2023, a full year of harvest operations was conducted using this design, but it provided little benefit to growers. This was mainly due to the inefficiencies caused by a single traffic lane bottleneck at the site. Converging to a single lane blocks line of sight both for onsite personnel walking to grain storage and traffic entering the Borden sample area. In late 2024, Option 2 was identified as necessary to unlock key benefits that were not actualised as expected in the undertaking of Option 1, specifically:

- reducing site cycle times;
- mitigating safety risks;
- improving traffic flow; and
- reducing the carbon footprint of overall operations.

2. EXISTING ENVIRONMENT

2.1 Climate

The Bureau of Meteorology's (BoM) Ongerup weather station (station number 010622) is the closest BOM station providing long-term weather data and is located approximately 67 km south-southeast of the site. The Ongerup area receives, on average, an annual total of 386.5 mm rainfall with most rainfall occurring during the months of May-September (Bureau of Meteorology 2023). The total rainfall in the year previous to the survey (October 2021 – September 2022) was 412.2 mm which is 25.7 mm above average and equates to 6.6% increase in average rainfall.

The average annual temperature for Ongerup ranges from 5.7 ˚C to 28.8 ˚C. The average summer temperature ranges between 10.4-28.8 °C, while average winter temperatures ranges between 5.7-16.2 °C (BoM 2023).

2.2 Geology and Soils

Database searches shows the survey area lies within the Upper Pallinup System (241Up). The Upper Pallinup System is described as *"Gently undulating rises in the Pallinup Zone with broad crests and upland plains. Grey shallow sandy duplex (some alkaline), shallow loamy duplex (some alkaline) and grey deep sandy duplex. Wandoo-York gum woodland (west) and mallee (east)"* (Department of Primary Industries and Regional Development [DPIRD] 2022a).

The soil type within the survey area is mapped as the Upper Pallinup 3 subsystem (241Up_3) and Upper Pallinup 5 subsystem (241Up_5). The Upper Pallinup 3 subsystem is described as "*Lower to upper slopes and crests associated with shallow granite and dolerite. Soils are mainly grey sandy duplex soils (generally shallow) and minor areas of red duplex soils"*. The Upper Pallinup 5 subsystem is described as *"Narrow saline valley flats with minor areas of alkaline grey shallow sandy duplex soils, brown and pale deep sands"* (DPIRD 2022c).

2.3 Hydrology

The proposed development footprint does not lie within any Public Drinking Water Source areas (Department of Water and Environmental Regulation [DWER] 2022. The Warperup Creek travels directly adjacent to the survey area, to the north. There are no significant wetlands or waterways located within the survey area (Department of Biodiversity, Conservation and Attractions [DBCA] 2017).

The proposed development footprint lies within the Pallinup (HZ22_P) Hydrological Zone (DPIRD, 2022d). The Pallinup zone is described as "*Undulating rises on Archaean granitic rocks in the Upper Pallinup catchment. Shallow duplex soils, commonly with sodic and alkaline subsoils. Woodlands of York and Salmon gums, wandoo and yate dominate.*" (DPIRD, 2022d).

The proposed development footprint lies within the Beaufort Inlet-Pallinup River Hydrographic Catchment (DWER 2018a) and the Pallinup River Hydrographic Subcatchment (DWER 2018b).

2.4 Biogeographic Region

The proposed development footprint is located within the Mallee Interim Biogeographical Regionalisation for Australia (IBRA) Bioregion and Western Mallee (MAL02) subregion (DPIRD 2019b).

Beecham and Danks (2001) describes the Mallee Bioregion as "*the south-eastern part of Yilgarn Craton. Its landscape is gently undulating, with partially occluded drainage. Mallee over myrtaceous-proteaceous heaths on duplex (sand over clay) soils are common. Melaleuca shrublands characterise alluvia, and Halosarcia low shrublands occur on saline alluvium. A mosaic of mixed eucalypt woodlands and mallee occur on calcareous earth plains and sandplains overlying Eocene limestone strata in the east. Landscape is fragmented with particular surface-types almost completely cleared as wheatfields.*"

2.5 Pre-European Vegetation

The pre-European vegetation type and extent mapping undertaken by J.S. Beard (1979) attempted to depict the native vegetation as it was presumed to be at the time of settlement. Digital mapping (Shepherd, Beeston and Hopkins 2002)[1] was subsequently updated by the Western Australian Department of Primary Industries and Regional Development in 2019 (DPIRD 2017c).

A GIS search of J.S. Beard's (Beard *et al.* 2013) vegetation classification places the survey area within one Vegetation Association (DPIRD 2017c).

- System Association Name: Pallinup
- Vegetation Association Number: 938
- Structure Description: Woodland other
- Floristic Description: Wheatbelt; York gum, salmon gum etc. *Eucalyptus loxophleba*, *E. salmonophloia*. Goldfields; gimlet, redwood etc. *E. salubris*, *E. oleosa*. Riverine; rivergum *E. camaldulensis*. Tropical; messmate, woolybush
- Remnant Vegetation by Beard Association Rarity in LGA: 18.07 % remaining (Government of Western Australia [GoWA] 2019)
- Remnant Vegetation by Beard Association Rarity in IBRA Region: 14.59 % remaining (Government of Western Australia [GoWA] 2019)

2.6 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are defined under s51B of the *Environmental Protection Act 1986* and are declared by the DWER to prevent the degradation of important environmental values such as Threatened flora, Threatened Ecological Communities (TECs) or significant wetlands.

The proposed development footprint does not intersect with any clearing regulation ESAs, with the nearest ESA located approximately 2.8 km to the south (DWER 2021).

2.7 Areas of Conservation Significance

The proposed development footprint does not directly intersect any conservation lands, however, the general area lies within a highly modified landscape consisting of agricultural properties. The Stirling Range National Park is located approximately 27 km south and the Corackerup Nature Reserve is located approximately 34 km to the southeast. There are other small to large areas of remnant bushland located to the north, south, east and east of the survey area.

[1] Vegetation extents are updated every two years by DBCA (2019a)

2.8 Heritage

The proposed development footprint is located within the Wagyl Kaip nation but is not located within a registered heritage site (Department of Planning, Lands and Heritage 2022). The closest registered heritage site (4476) is located approximately 130 m to the south of the survey area.

3. BIOLOGICAL SURVEYS

CBH commissioned BDS to undertake a spring reconnaissance flora and vegetation survey, including a targeted Threatened/Priority Ecological Community (TEC/PEC) survey of the proposed CBH Borden site. The spring reconnaissance survey was conducted on 17 and 18 October 2022 by BDS ecologists.

The BDS 'survey area' comprised 49.50 ha area of which approximately 40.3 ha was considered to be cleared, consisting of roads, CBH infrastructure or agricultural land.

The BDS 'study area' consisted of a 30 km radius around the survey area, used for indications of Likelihood of Occurrence (LOO) of Threatened or Priority flora, fauna, and ecological communities, providing a broader local context and assessment of the survey area.

The regional and site location of the survey area is shown in **Figure 1**.

The BDS survey report (2023) is included as **Appendix 3**.

3.1 Methodology

Desktop Assessment:
Prior to conducting the field survey, a desktop assessment was conducted to identify the potential and possible occurrence of TECs, PECs and Threatened and Priority flora species listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and Biodiversity Conservation Act (BC Act) (Western Australian Government Gazette 2023) and by the DBCA within the survey area or the surrounding 20-30 km study area.

The assessment utilised FloraBase, EPBC Act Protected Matters Search Tool (PMST) Department of Climate Change, Energy, the Environment and Water [DCCEEW] (2023) and DBCA (2022; 2023a; 2023b) databases and available published literature.

Field Survey:
The survey area was surveyed on foot using traverses, relevés and quadrats to identify and map the different vegetation units, their condition category, capture the species of flora present and to undertake more intensive targeted surveys within associated habitat for conservation significant species.

All species of flora were recorded within the relevés, both threatened and non-threatened and collections of plant specimens were made where further identification was required, using Regulation 62 Flora Taking Licence FB62000460. This provided a measure of species richness to be used as a basic indicator of diversity.

For species that were not flowering and where foliage or fruit couldn't be used for identification, potential habitat was used as an indication of the likelihood of species occurrence post-field survey.

Vegetation units within the survey area were mapped using opportunistic traverses to capture community boundaries. Three relevés were systematically surveyed across representative vegetation units to enable analysis and categorisation. Relevé sites were placed within the centre of mapped vegetation units and away from transitions/boundaries of vegetation units and aimed to capture the floristic, structural and condition diversity within vegetation units. Vegetation units were distinguished through changes in structure, dominant taxa and cover characteristics, which is described in both Muir (1977) and NVIS Level 5 (sub-association; Department of Energy and the Environment [DoEE] 2017)

description methods. Condition of vegetation was assessed and mapped using the Keighery (1994) condition scale rating.

An assessment was completed during the field survey on whether vegetation units were likely to meet any TEC/PEC's identified as 'likely' or 'possible' to occur in the LOO. This predominantly applied to *Eucalyptus Woodlands of the Western Australian Wheatbelt* (Wheatbelt Woodlands) TEC/PEC and an assessment of ecological communities against criteria was undertaken Where vegetation units bore resemblance to Wheatbelt Woodlands TEC/PEC, more intensive sampling was conducted via quadrats to ecologically define communities within the survey area. This methodology is consistent with a Targeted Vegetation Survey. Non-permanent 10 x 10 m quadrats were sampled and analysed to identify if vegetation units met Wheatbelt Woodland TEC/PEC criteria.

Information collected within each relevé and quadrat included:

- Location: Coordinates of the relevé using a handheld GPS unit;
- Date and site code;
- Site description: landform, slope, soil colour and type and hydrology;
- Vegetation description: dominant and non-dominant species present within the different growth forms and percentage cover; and
- Vegetation condition.

3.2 Survey Limitations

An assessment of potential survey limitations was undertaken as per the Environmental Protection Authority [EPA] (2016) document *Technical Guidance Flora and Vegetation Surveys for Environmental Impact Assessment.* Limitations were primarily nil-minor in nature and did not affect the validity of results presented. Minor limitations included survey timing, lack of information on predominantly undescribed, informal species, standing water limiting access and survey intensity for targeting orchid species.

Specifically, a random meandering traverse ensured that all areas within 5-10m of each other were covered. However, it is recognised that due to the complex nature of orchid phenology and physiology, more intensive survey transects and surveys over multiple time periods may be required (City of Albany 2013). The survey was conducted at the appropriate time to detect the three orchid species identified in the desktop assessment.

Six species were identified in the LOO as 'Possible' to occur with very limited information present taxonomically, which was considered during identification, with precautionary principles applied to relevant genera. This was considered a minor limitation.

3.3 Results

3.3.1 Desktop Assessment

Flora:
Database searches identified that 19 Threatened and 72 Priority species were within the study area (30 km buffer). Of these, 27 were assessed to be "Possible" to occur, and two were considered 'Likely' to occur[2].

Suitable habitat for species considered to have historically been possible to occur is mostly no longer present, due to the extensive degradation across the site. It is also likely that if populations of species assessed as "Possible" to occur were historically present at the site, the soil seed bank has been significantly impacted and compromised from disturbance through hooved grazers, off-site effects of chemical and fertiliser from surrounding agricultural use and the evident lengthy timeframe that the site has been disturbed.

Numerous limitations were present in detection of species identified within the desktop assessment. A brief summary is provided below:

- Expertise of surveyors – P1 *Xanthoparmelia scabrosina* is a lichen and is outside of the expertise of surveyors and therefore could not be accurately surveyed for;
- Flowering time – P4 *Acacia declinata* was identified as 'Possible' to occur and is recorded as flowering in August to September, on the periphery of the survey period. This may represent a minor limitation, and it is recognised that detection of the species is possible without flowering;
- Flowering time – EN *Roycea pycnophylloides* was identified as 'Possible' to occur and is recorded as flowering in September, on the periphery of the survey period. This may represent a minor limitation, and it is recognised that detection of the species is possible without flowering;
- Flowering time – P3 *Calectasia obtusa* was identified as 'Possible' to occur and is recorded as flowering in August to September. This may represent a minor limitation, as it is recognised that this species is a cryptic and hard to detect without flowers. However, the survey was conducted on the periphery of the flowering period meaning some flowering material may still have been present at the time of the survey; and
- Limitation information present on species – one species (P3 *Thelymitra sp. Ongerup* (S. Oborne 142)) was deemed as having a lack of information due to the undescribed, informal nature of the species. Due consideration was given and precautionary principles applied to any species in this genus during identification.

Threatened and Priority Ecological Communities:
The desktop assessment identified two ecological communities as potentially being present within the study area. Of these, *Wheatbelt Woodlands* was assessed as 'likely' to occur and *Kwongkan* as "Possible" to occur.

(i) Eucalypt Woodlands of the Western Australian Wheatbelt

The *Wheatbelt Woodlands* is listed as a Priority 3 (P3) PEC under the BC Act and an Endangered TEC under the EPBC Act. The survey area lies within the Katanning Avon Wheatbelt IBRA subregion, within the boundaries of the location criteria of the *Wheatbelt Woodlands*.

The *Wheatbelt Woodlands* is comprised of Eucalypt woodlands dominated by a complex mosaic of eucalypt species with a tree or mallet form over an understorey that is highly variable in structure

[2] Refer to **Appendix 3:** Table 8 in Appendix B for LOO analysis**.**

and composition. Woodlands dominated by mallee forms or vegetation with a very sparse eucalypt tree canopy are not part of the ecological community (DoEE 2015).

General notes on the condition thresholds of the ecological community are outlined in the *Approved Conservation Guidelines for Wheatbelt Woodlands* (DoEE 2015). Most notably in relation to the study area, this includes "*It is intended that the condition thresholds will exclude degraded patches from any requirement for protection, for instance: isolated paddock trees on farms, or small or narrow stands of trees that serve as windbreaks or shelterbelts on farms and other properties"* (DoEE 2015).

(i) Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia

The *Kwongkan Shrublands* TEC/PEC is listed as Priority 3 (P3) PEC within WA under the BC Act and as an Endangered TEC under the EPBC Act. The survey area lies within the southeast botanical province of Western Australia (Hopper and Gioia 2004), which is the geographical location of *Kwongkan Shrublands*. It is defined and assessed in the conservation advice as generally *Kwongkan shrubland*, ranging from sparse to dense, thicket-forming, where Proteaceous species form a significant component and primarily occurs on sandplains and marine plains and lower to upper slopes and ridges, as well as uplands across this region.

Kwongkan Shrublands is recognised by key diagnostic features and minimum condition thresholds outlined in Approved Conservation Advice Guidelines (Department of Environment 2014):

3.3.2 Field Survey

Floral Diversity:

One hundred and fifty-three flora species, consisting of 35 families and 95 genera, were recorded within the survey area. The most commonly occurring families were Asteraceae, Fabaceae, Myrtaceae, and Poaceae. The species list includes 69 native species, 49 introduced/non-native species and 35 cultivated species[3].

Plant identification was undertaken through the most relevant, current, and available taxonomic literature, keys, and herbarium reference specimens available[4].

Vegetation Units:

Three vegetation units were identified within the survey area and their distribution is identified in **Figure 3**.

Vegetation unit 1: *Allocasuarina fraseriana* Open Forest [AfOF]

Vegetation Unit 1 comprised 4.88 ha and consisted of a parkland cleared community, with only a native overstorey present as shown in **Plate 1** (over the page). The mid- and understorey has likely been historically cleared and consists of invasive species or disturbance-opportunist natives. The overstorey is comprised of Sheoak (*Allocasuarina fraseriana*) Open Forest while the understorey is dominated by invasive kikuyu (**Cenchrus clandestinus*) in the east of the survey area. In the north of the survey area the understorey is dominated by invasive barley grass (**Hordeum leporinum*) and annual veldt grass (**Ehrharta longiflora*).

[3] Refer to **Appendix 3**: Appendix D – Species Lists, Relevé and Quadrat Data.

[4] (AVH, n.d.; Barrett & Tay, 2016; Euclid, n.d.; French, 2012; JSTOR, 2000-; Maslin, 2018; WAH 1998-; Young, 2006; 2021). All resources used were the most current to knowledge. Nomenclature used through this report follows the most recent scientific names through the Western Australian Herbarium (WAH, 1998-).

Overall, there is a low diversity of species within this vegetation unit. There was a patch of standing water within this vegetation unit, due to the poor drainage on the site. This restricted some access, but a large portion of the survey area was still able to be surveyed. No riparian vegetation was present around this waterbody with the system being in a degraded state.

No Priority or Threatened flora were identified within Vegetation unit 1 and the ecological community did not bear any similarity to any PEC/TEC criteria.

Plate 1 *Allocasuarina fraseriana* Open Forest [AfOF] vegetation unit

Vegetation Unit 2: Mixed Eucalyptus Woodland [MEW]
Vegetation Unit 2 comprised 0.99 ha in a Degraded condition and consisted of a mixed eucalyptus overstorey which had been planted within the survey area after historical clearing had taken place as shown in **Plate 2**.

Plate 2 Mixed *Eucalyptus* Woodland [MEW] vegetation unit

The species planted were a cultivated mix of species endemic and non-endemic to the area. The mid- and understorey had likely also been historically cleared and consists of invasive species or disturbance-opportunist natives characterised by tagasaste (**Chamaecytisus palmensis*), *Melaleuca hamulosa* and cultivated lesser bottlebrush (*Callistemon phoeniceus*), African love grass (**Eragrostis curvula*), great brome (**Bromus diandrus*) and kikuyu grass (**Cenchrus clandestinus*). The vegetation unit is characterised by a mixed eucalypt overstorey with flooded gum (*Eucalyptus rudis* subsp*. rudis*) being dominant in the south-eastern portion of the vegetation unit. The central, southern portion of the vegetation unit is a mix of eucalypts that have been historically planted, some endemic and some non-endemic to the area.

Vegetation Unit 2 has a high diversity of eucalypts due to its cultivated nature, but overall has a low diversity of species.

This Vegetation Unit bore similarity to the *Wheatbelt Woodlands* TEC/PEC criteria but did not meet all the criteria.

No Priority or Threatened flora were identified within the vegetation unit.

Vegetation Unit 3: *Acacia acuminata* Low Open Forest [AaLOF]
Vegetation Unit 3 comprised 3.24 ha in a Degraded condition and has likely been historically cleared and consists of invasive species or disturbance-opportunist natives as shown in **Plate 3**.

The vegetation unit is characterised by a dominant overstorey of jam wattle (*Acacia acuminata*) with scattered sheoak (*Allocasuarina fraseriana*) and occasional mixed eucalypts. The vegetation unit was generally lacking a mid-storey with a few scattered species present. The understorey was dominated by weedy herbs and grasses, namely, ursinia (**Ursinia anthemoides*), Guilford grass (**Romulea rosea*) and perennial veldt grass (**Ehrharta calycina*).

No Priority or Threatened flora were identified within the vegetation unit.

Plate 3 *Acacia acuminata* Low Open Forest [AaLOF] vegetation unit

Vegetation Condition:
The vegetation condition for the survey area has been mapped using the condition rating scale (adapted from Keighery 1994) outlined in the EPA document *Flora and Vegetation Survey Technical Guidance* (2016).

The vegetation across the survey area had been historically cleared with invasive species or disturbance-opportunist natives recolonising, as a result the vegetation ranged from 'Completely Degraded' to 'Degraded' condition throughout the survey area. These classification levels are related to degradation of structure and vegetation integrity by processes such as clearing, fire, weeds, grazing, Phytophthora Dieback and vehicle tracks. The 'AfOF' and 'AaLOF' vegetation units are classified as being in 'Degraded' and 'Completely Degraded' condition and the 'MEW' unit is in 'Degraded' condition.

The condition rating and area extent for each of the three vegetation units is identified in **Table 2**.

Table 2 Vegetation condition rating within the survey area

Vegetation unit	Condition rating	Area (ha)
1: *Allocasuarina fraseriana* Open Forest [AfOF]	Degraded	0.68 ha
	Completely Degraded	4.20 ha
2: Mixed *Eucalypus* Woodland [MEW]	Degraded	0.95 ha
	Completely Degraded	0.04 ha
3: *Acacia acuminata* Low Open Forest [AaLOF]	Degraded	2.37 ha
	Completely Degraded	0.87 ha
	TOTAL	**9.11 ha**

Source: BDS 2023

Vegetation condition mapping is shown in **Figure 3** (over the page)

FIGURE 3
VEGETATION UNITS & CONDITION
CBH BORDEN
NVCP APPLICATION

LEGEND

- Proposed Development Footprint
- Survey Area
- Cadastre (LGATE-002)

Sample Site Type

- Quadrat
- Releve

Vegetation Unit

- Acacia acuminata Low Forest [AaLF]
- Allocasuarina fraseriana Open Forest [AfOF]
- Mixed Eucalyptus Woodland [MEW]
- Paddock
- Planted Road Verge

Vegetation Condition

- Completely Degraded
- Degraded

Map Scale: 1:4,100 (when printed at A3)
Spatial Reference System: GDA2020
Datum: GDA2020
Map Units: Metre

N

0 50 100 150 200 Metres

CBH Group
240 St Georges Terrace
Perth WA 6000
Ph (08) 9237 9600
Fax (08) 9322 3942

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Conservation Significant Flora:
No Threatened or Priority flora were detected within the survey area. All native flora species present were considered to be non-threatened and common locally within the area. The survey was conducted outside of the flowering time of three species identified in the 20-30 km desktop assessment.

Of these, P4 *Acacia declinata* and EN *Roycea pycnophylloides* are able to be identified without flowers and were determined not to be present in the survey area. P3 *Calectasia obtusa* is recognised as cryptic and hard to detect without flowers. However, the survey was conducted on the periphery of the flowering time, meaning some flowering material may still have been present at the time of the survey. It is therefore said not to have been present within the survey area.

Threatened and Priority Ecological Communities:
During the desktop assessment, the *Wheatbelt Woodlands* TEC/PEC was assessed as 'Likely' to occur within the survey area.

The targeted ecological community component of the survey focused specifically on determining the presence of any TEC or PEC within the survey area through quadrat analysis.

Within the survey area, Vegetation Unit 2: Mixed Eucalyptus Woodland bore similarity to *Wheatbelt Woodlands* TEC/PEC. Three quadrats were sampled within Vegetation Unit 2 to assess and analyse the quantitative and qualitative criteria and determine if present[5]. Vegetation Unit 2 consisted of a mixed eucalyptus overstorey which had been planted within the survey area after historical clearing had taken place. The species planted were a cultivated mix of species endemic and non-endemic to the area. The understorey was compromised entirely of introduced species.

Quadrats 1 and 2 only met Criteria 1 and 2, while Quadrat 3 only met Criteria 1, 2 and 3. Criteria 4 and 5 were not met by any of the quadrats. Therefore, Vegetation Unit 2is not considered to be *Wheatbelt Woodlands* TEC/PEC.

Refer to **Table 3** (over the page) for rationale.

[5] Refer to **Appendix 3**: Quadrat data is provided in Appendix D.

Table 3 Quadrat analysis of Vegetation Unit 2 [MEW] determining the presence of *Wheatbelt Woodlands* TEC/PEC

Criteria	Description	Discussion	Meet Criteria
1)	Occurs within the IBRA Avon Wheatbelt subregions Merredin (AVW01) and Katanning (AVW02), Western Mallee subregion (MAL02) and jarrah forest subregions Northern Jarrah Forest (JAF01) and Jarrah Forest (JAF02) when adjacent to the Avon Wheatbelt.	Confirmed that the survey area is located within Mallee Bioregion and Western Mallee (MAL02) subregion.	**Yes – Q1, Q2 and Q3**
2)	Structure of the ecological community is a woodland, with minimum crown cover of tree canopy of mature woodland being 10% (crowns measured as if opaque).	Q1, 2 and 3 all had a minimum crown cover of tree canopy of 10% of mature woodland. Specifically, *Eucalyptus utilis* had a cover of 10-30% for both Q1 and 2 and *Eucalyptus rudis* subsp. *rudis* had a cover of 10-30% for Q3. This exceeds the minimum of 10% required to meet the criteria and the vegetation unit is consistent with a woodland structure.	**Yes – Q1, Q2 and Q3**
3)	Key species of the tree canopy are species of Eucalyptus identified in Table 2a of approved conservation guidelines (DoEE 2015). These are species that typically have a single trunk. One or more tree species are dominant or co- dominant within the patch of the ecological community. If other species are present in the tree canopy, then these do not occur as dominant in the tree canopy.	Q1 and 2 contained a high number of cultivated species not endemic to the area. For example, *Eucalyptus utilis,* the dominant species present within Q1 and Q2 does not naturally occur in Borden but has been planted as part of the revegetation of the road reserve. It is not identified as a key eucalyptus species in Table 2a of the approved conservation advice. *E. utilis* is considered a 'moort' opposed to 'tree', a key feature of eucalyptus species forming *Wheatbelt Woodlands*. *Eucalyptus rudis* subsp. *rudis* is the dominant species present within Q3, which is identified as a key eucalypt species in Table 2a of the approved conservation advice. *E. rudis* subsp. *rudis* only occurred within locally occurring patches, with the species composition across the vegetation unit being more consistent with that of Q1 and Q2. It is also unknown whether the plants had been cultivated or were naturally occurring within the area.	**Yes – Q3** **No – Q1 and Q2**
4)	Native understorey is present but is of variable composition, being a combination of grasses, other herbs and shrubs, as specified in Table 2 of Section 4.2.	No native understorey is present in any of the quadrats, with the understorey being comprised fully of weed species including grasses such as **Ehrharta longiflora, *Ehrharta calycina, *Aira caryophyllea,*Lolium rigidum, *Briza maxima* and **Eragrostis curvula* and herbs such as **Hypochaeris glabra,*Bromus diandrus, *Ursinia anthemoides, *Crassula alata, *Asparagus asparagoides, *Oxalis pes- caprae* and **Arctotheca calendula.*	**No - Q1, Q2 and Q3**

Criteria	Description	Discussion	Meet Criteria
5)	Patch Size and Condition Criteria (Table 2).	Table 2 identifies the specific condition and patch thresholds of *Wheatbelt Woodlands* TEC/PEC, with specific focus applied to the roadside minimum patch width required. The "patch" of Vegetation Unit 2: MEW is considered a roadside patch. However, exotic plant species account for >70% of total vegetation cover in the understorey layers.	**No – Q1, Q2 and Q3**

Source: Bio Diverse Solutions 2023

All other vegetation units present within the survey area did not bear resemblance to any TEC/PEC criteria.

Introduced Flora:

Forty-nine species of flora were identified as introduced weeds[6]. All species, except bridal creeper (*Asparagus asparagoides*), are classed as 'Permitted – s11', while bridal creeper is classed as a 'Declared Pest – s22(2) under the *Biosecurity and Agriculture Management Act 2007* and as a Weed of National Significance (IPAC,2017).

Under the *Environmental Weeds Strategy for Western Australia* (Department of Conservation and Land Management 1999) bridal creeper, Mediterranean turnip, Guildford grass, and perennial veldt grass are listed as 'High', while hottentot fig, iceplant, cape weed, spear thistle, smooth cats-ear, prickly lettuce, Jersey cudweed, common sowthistle, ursinia, budding club-rush, bugle lily, *Eucalyptus cladocalyx*, South African orchid, common bartsia, silvery hairgrass, bearded oat, blowfly grass, shivery grass, kikuyu grass, couch, barley grass and Wimmera ryegrass are rated as 'Moderate'. The remaining species are either rated 'Low', 'Mild' or are not listed.

[6] For the full list of introduced (weed) species identified during the BDS field survey, refer to **Appendix 3**: Table 5.

4. CLEARING OF NATIVE VEGETATION

Excluding activities that are exempt under the Clearing Regulations (Section 5 – Prescribed Clearing), all native vegetation clearing conducted by CBH (or its contractors) will be undertaken in accordance with conditions attached to a Native Vegetation Clearing Permit (NVCP).

4.1 Measures to Avoid and Minimise Clearing

The following sections outline the activities conducted by CBH to reduce disturbance to the smallest extent possible and to avoid critical value habitats and features.

4.1.1 Impact Avoidance through Alternative Project Options

Through the process of reviewing alternative the two project options discussed in **Section 1.3**, CBH has taken into consideration the results of the 2023 spring reconnaissance flora and vegetation survey and the mitigation hierarchy in order to reduce the project's potential impacts on the environment.

Avoid:
The location of the proposed 026 ha development footprint was chosen as it comprises Vegetation Unit 3: *Acacia acuminata* Low Open Forest [AaLOF] in a Degraded to Completely Degraded condition.

Minimise:
The proposed 0.27 ha development footprint is inclusive of all areas that may be impacted by the proposed works.

Manage:
In terms of minimising environmental impacts, the choice of location of the proposed development footprint has avoided any vegetation that could be *Wheatbelt Woodlands* TEC/PEC.

4.1.2 Impact Avoidance Through Environmental Management

Prior to the commencement of vegetation clearing/construction, CBH will prepare a Construction Environmental Management Plan (CEMP) to describe how the impacts of activities related to the potential disturbance to remnant vegetation during the construction phase of the Project will be managed to reduce potential direct and indirect impacts on the environment.

The CEMP will include, but not be restricted to, the following:

- Vegetation protection: Prior to clearing commencing, the areas of vegetation to be retained will be clearly demarcated with star pickets, coloured tape or bunting, or temporary fencing to protect native vegetation in these areas;
- Environmental induction: All personnel engaged in vegetation clearing and project construction will be required to participate in an environmental induction toolbox session to ensure they are made aware that native fauna/flora are protected under the *Biodiversity Conservation Act 2016* and of the measures to be implemented to prevent undue environmental harm;
- Dieback (*Phytophthora cinnamomi*): The movement of soils and plant material will be strictly managed within the proposed development footprint to ensure Dieback is not introduced into the surrounding vegetated areas. All clearing machinery will be washed down prior to entering and leaving the site. No Dieback soil or 'fill' will be brought into the proposed development footprint following clearing;
- Native fauna protection: Any fauna injured during construction will be taken to a designated veterinary clinic or a DBCA nominated wildlife carer; and

- Hydrocarbon storage: If hydrocarbons are to be temporarily stored within the proposed development footprint, they will be contained within portable bunds. Precautions will be required to be taken when refuelling and a spill-response kit will be located in close proximity to any refuelling locations.

4.2 Impact Mitigation through Rehabilitation

To mitigate the clearing of 0.27 ha of native vegetation that may be considered significant as a remnant of native vegetation in a landscape that has been extensively cleared, CBH proposes a potential revegetation area outside of the proposed development footprint and will prepare and implement a Mitigation and Rehabilitation Plan (MRP).

The MRP will be prepared in consultation with the DWER and will, as a minimum, include the following:

1. Introduction and Background including:
   - Documentation;
   - Mitigation; and
   - rehabilitation objectives.
2. Environmental Context including:
   - climate;
   - landform;
   - soils;
   - Dieback status; and
   - site condition.
3. Implementation strategy including:
   - Signage;
   - Herbivores;
   - Fencing; and
   - access tracks.
4. Planning and Management including:
   - vegetation retention;
   - native seed collection and storage;
   - cutting and transplant recovery; and
   - Dieback management.
5. Implementation Methodology including:
   - weed management;
   - surface preparation;
   - species selection;
   - plant allocations;
   - seedling propagation and planting; and
   - works schedule.
6. Post-installation Management including:
   - site maintenance;
   - monitoring;
   - completion criteria; and
   - reporting.
7. Contingency and Management Actions.

Based on a previous methodology for assigning habitat scores (CPS 10003-1 Cranbrook 2022), it is anticipated that as a result of the project, the re-vegetation area will need to cover a quantum of impact of 0.02 ha of remnant vegetation.

The 0.02 ha quantum of impact been based on the proposed clearing of 0.17 ha of Completely Degraded native vegetation having a quality (scale) score of 0, and 0.1 ha of Degraded native vegetation having a quality (scale) score of 2 due to a 0.1 % conservation significance score for terrestrial native vegetation complex - <30% extent remaining in the bioregion.

5. APPLICATION OF THE TEN CLEARING PRINCIPLES

The flora and vegetation surveys were conducted in October 2022 which is within the optimal period for a primary survey within the bioregion (EPA 2016). T

On the basis of the information provided in the BDS survey report, an assessment of the proposal to clear native vegetation within the proposed **0.27 ha** development footprint against the eight of the Ten Clearing Principles outlined in Schedule 5 of the EP Act is provided in **Sections 5.1 – 5.10**. A summary of the assessment is shown in **Table 4**.

Table 4 Summary of assessment against the Ten Clearing Principles

Clearing principle	Not at variance	Not likely to be at variance	May be at variance	Likely to be at variance
Principle (a) Native vegetation should not be cleared if it comprises a high level of biological diversity (refer to **Section 5.1**).	X			
Principle (b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia (refer to **Section 5.2**).	X			
Principle (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora (refer to **Section 5.3**).	X			
Principle (d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community (refer to **Section 5.4**).	X			
Principle (e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared (refer to **Section 5.5**).			X	
Principle (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland (refer to **Section 5.6**).	X			
Principle (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation (refer to **Section 5.7**).	X			
Principle (h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area (refer to **Section 5.8**)	X			
Principle (i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water (refer to **Section 5.9**).	X			
Principle (j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding (refer to **Section 5.10**).	X			

5.1 Principle (a)

Native vegetation should not be cleared if it comprises a high level of biological diversity.

5.1.1 Assessment

Native vegetation present within the survey area was limited to an area of 9.1 ha.

Minimal ecosystem diversity is considered to be present within the survey area as a result, scattered disturbance opportunist natives were present in the mid and understorey, with some native and some cultivated overstorey species present. The vegetation was however, largely dominated by invasive species. The condition of native vegetation was assessed as 'Degraded' (4 ha) and 'Completely Degraded' (5.11 ha). As such, a low level of species diversity was present, with a total of 86 native species present across the three vegetation units.

Due to ongoing pressures of degradation such as being out-competed by invasive species and the impact of the adjacent agricultural land uses, the biological diversity within the survey area is likely to decline.

The survey area is not within the vicinity of a recognised Biodiversity Hotspot (as determined by the Threatened Species Scientific Committee; DWER 2014).

An assessment of non-vascular flora or fauna was not conducted during the reconnaissance survey. Hence the assessment of Clearing Principle (a) did not consider these components of biological diversity.

5.1.2 Conclusion

Due to the historical clearing of 40.3 ha within the survey area and limited area of native vegetation remaining (9.11 ha), there is not a wide range of endemic native vegetation types present and the recording of the diversity at this level is unlikely to be considered high.

The proposed clearing of 0.27 ha of native vegetation from within the proposed development footprint is <u>not</u> at variance with this Principle.

5.2 Principle (b)

Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

5.2.1 Assessment

No surveying of the fauna habitat was conducted.

5.2.2 Conclusion

While no assessment of the fauna habitat within the proposed development footprint was conducted on-site, the area has been subjected to a long of history of disturbance. A review of the quadrat data and the Degraded to Completely Degraded vegetation condition indicate that proposed development footprint in general is of low foraging value for the Carnaby's Black-Cockatoo.

The proposed clearing of 0.27 ha of native vegetation from within the proposed development footprint is <u>not</u> at variance with this Principle.

5.3 Principle (c)

Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

5.3.1 Assessment

During the desktop assessment, 28 species of Priority and Threatened flora were identified as 'Likely' or 'Possible' to occur in the likelihood of occurrence (LOO) assessment. However, none of these were detected within the survey area, with all native flora species considered to be common.

Native vegetation was not considered to be suitable habitat post-field for any of the 28 Priority or Threatened flora identified in the LOO, due to it being in a 'Degraded' or 'Completely Degraded' condition and the ongoing degradation observed.

5.3.2 Conclusion

While three species of Priority flora (P4 *Eucalyptus caesia* subsp., P4 *Eucalyptus kruseana* and P3 *Eucalyptus newbeyi*) were present within Vegetation unit 2: MEW, these species are not considered to be endemic to the survey area since they were planted as an ornamental specimens and are therefore not at variance to this principle.

None of the Priority species were located within the proposed development footprint.

The proposed clearing of 0.27 ha of native vegetation from within the proposed development footprint is <u>not</u> at variance with this Principle.

5.4 Principle (d)

Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

5.4.1 Assessment

Two Threatened or Priority ecological communities were identified within the 20 km desktop assessment as 'Possible' to occur: '*Eucalypt Woodlands of the Western Australian Wheatbelt* (*Wheatbelt Woodlands*)' and '*Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia* (*Kwongkan*)'.

During the field survey, Vegetation Unit 2: Mixed Eucalypt Woodland MEW bore characteristics resembling the *Wheatbelt Woodlands* TEC/PEC. None of the other vegetation units bore any resemblance to any TEC/PEC identified in the desktop assessment. Additionally, native vegetation present throughout the survey area was in 'Degraded' or 'Completely Degraded' condition and would not have met condition thresholds of TEC/PEC criteria, if it was comparable to any TEC / PECs.

5.4.2 Conclusion

Following post-survey quadrat analysis and utilising key diagnostic characteristics of the *Wheatbelt Woodlands* TEC (DoEE 2015), an assessment was undertaken of Vegetation unit 2: MEW that concluded that the unit did not meet the criteria for the TEC/PEC *Eucalypt Woodlands of the Western Australian Wheatbelt*.

The proposed clearing of 0.27 ha of native vegetation from within the proposed development footprint is <u>not</u> at variance with this Principle.

5.5 Principle (e)

Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

5.5.1 Assessment

The pre-European native vegetation association occurring within the area is '938: Pallinup, Woodland other' (Beard *et al.* 2013). Approximately 18.07% is currently mapped as remaining within the Shire of Gnowangerup and 14.59 % remaining in the Mallee IBRA region (GoWA 2019). This is below 30%, considered to be the threshold as extensively cleared. Clearing of vegetation will result in further fragmentation of vegetation in an already highly fragmented landscape.

Within the proposed development footprint, approximately 0.17 ha was in a 'Degraded' condition and 0.1 ha in a Completely Degraded condition.

5.5.2 Conclusion

While mapping identifies the 49.50 ha survey area as comprising one Vegetation Association: Pallinup, Woodland other, 40.3 ha was assessed as cleared. The remaining 9.11 ha of native vegetation was assessed as being in Degraded (4 ha) and 5.11 ha was in Completely Degraded condition.

The proposed clearing of 0.27 ha of native vegetation from within the proposed development footprint <u>may</u> be at variance with this Principle.

5.6 Principle (f)

Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

5.6.1 Assessment

During the field survey, no significant wetlands or watercourses were present within the survey area. A stream runs directly adjacent to the survey area and a drainage system leading into the stream was present at the northeast of the survey area. This area was entirely smothered by the invasive kikuyu grass (*Cenchrus clandestinus*) and no native understorey species were present. Artificial drains were also present surrounding hard-stand areas and infrastructure, but similarly only contained invasive species.

5.6.2 Conclusion

There are no significant watercourses or wetlands within or in close proximity to the proposed development footprint that would be impacted by any disturbance to native vegetation

The proposed clearing of 0.27 ha of native vegetation from within the proposed development footprint is <u>not</u> at variance with this Principle.

5.7 Principle (g)

Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

5.7.1 Assessment

As discussed in **Section 2.2**, the survey area is located within the Upper Pallinup 3 subsystem (241Up_3) and Upper Pallinup 5 subsystem (241Up_5).

The land degradation risk categories that apply to this subsystem are demonstrated below. The northern portion of the survey area has a high to extreme risk of water erosion, a moderate to high flood and salinity risk and a moderate to very high waterlogging risk. The entire site has high to extreme wind erosion risk.

Given the above, the proposed clearing of vegetation, including eucalypts, sheoak and weeds may potentially cause destabilisation of the survey area, which could lead to erosion and the sedimentation of the stream.

In relation to the proposed 0.27 ha development footprint which is located within the southern portion of the risk mapping:

- Wind erosion: 10-30% of map unit has a high to extreme wind erosion risk;
- Water erosion: <3% of map unit has a high to extreme water erosion risk;
- Flood: <3% of the map unit has a moderate to high flood risk;
- Waterlogging: <3% of map unit has a moderate to very high waterlogging risk; and
- Salinity risk: 3-10% of map unit has a moderate to high salinity risk or is presently saline.

5.7.2 Conclusion

The proposed potential disturbance to native vegetation within the development footprint is unlikely to impact the underlying soils as the risk factor is generally within the 3-10 % decile. The CEMP that is proposed includes implementing best practice management during clearing and construction which will reduce the potential for erosion and waterlogging to occur.

The proposed clearing of 0.27 ha of native vegetation from within the proposed development footprint is <u>not</u> at variance with this Principle.

5.8 Principle (h)

Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

5.8.1 Assessment

The nearest Environmentally Sensitive Area that is managed for conservation is the significant and globally recognised Stirling Range National Park occurs 27 km south of the survey area.

The survey area contains a small amount of native vegetation in the southeast of the survey area that contributes to the ecological linkage of the area. Clearing of this would further fragment the already fragment landscape. However, clearing would not affect the longevity or sustainability of the adjacent reserves. Fragmentation from the survey area to the nearest native vegetation patches and conservation

estate is characterised by agricultural farmland, infrastructure sites and the Borden townsite. It is unlikely that clearing within the survey area will significantly impact or affect conservation estate.

5.8.2 Conclusion

The proposed development footprint is not located on or near any lands vested for conservation that would be affected by any works conducted within it.

The proposed clearing of 0.27 ha of native vegetation from within the proposed development footprint is <u>not</u> at variance with this Principle.

5.9 Principle (i)

Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

5.9.1 Assessment

The 9.11 ha of native vegetation present within the survey area was comprised of primarily invasive and shallow rooted species and removal of this vegetation may impact the quality of surface water within these vegetated areas.

During the field survey, no significant wetlands or watercourses were observed to be present within the survey area. A stream runs directly adjacent to the survey area and a drainage system leading into the stream was present at the northeast of the survey area. This area was entirely smothered by the invasive kikuyu grass (*Cenchrus clandestinus*) and no native understorey species were present. Artificial drains were also present surrounding hard-stand areas and infrastructure, but similarly only contained invasive species.

5.9.2 Conclusion

The proposed clearing of native vegetation within the proposed development footprint is unlikely to have an impact upon surface or underground waters as there are no major drainage lines dissecting it. The CEMP that is proposed includes implementing best practice management during clearing and construction which will reduce the potential for erosion and subsequent sedimentation of drainage channels to occur.

The proposed clearing of 0.27 ha of native vegetation from within the proposed development footprint is <u>not</u> at variance with this Principle.

5.10 Principle (j)

Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

5.10.1 Assessment

While no detailed hydrological assessment has been undertaken within the survey area, according to the DPIRD Flood Risk mapping, <3 % of the map unit has a moderate to high flood risk, and the DPIRD Waterlogging mapping indicates that <3 % of the map unit has a moderate to very high waterlogging risk.

5.10.2 Conclusion

The potential disturbance to native vegetation within the proposed development footprint is unlikely to cause, or exacerbate, the incidence or intensity of flooding.

The proposed clearing of 0.27 ha of native vegetation from within the proposed development footprint is not at variance with this Principle.

6. SUMMARY AND CONCLUSIONS

Within the proposed development footprint, approximately **0.27 ha** of native vegetation is proposed to be cleared.

Desktop reviews of published Western Australian and Commonwealth databases pertaining to a 49.50 ha survey area was undertaken and included data and information relating to Threatened and Priority flora and TECs, ESAs, groundwater dependent ecosystems, geology, soils and hydrology.

A spring reconnaissance flora and vegetation and targeted TEC/PEC survey was conducted in October 2022. The survey identified the following from the within the survey area:

- One hundred and fifty-three vascular flora taxa were recorded from relevés and opportunistic observations including 69 native species, 49 non-native species and 35 planted/cultivated species.
- While three species of Priority flora (P4 *Eucalyptus caesia* subsp., P4 *Eucalyptus kruseana* and P3 *Eucalyptus newbeyi*) were present within Vegetation unit 2: MEW, these species are not considered to be endemic to the survey area since they were planted as an ornamental specimens.
- Three vegetation units were observed, one of which (*Acacia acuminata* Low Open Forest) was found within the proposed development footprint.
- The native vegetation condition ranged from Completely Degraded (4 ha) to Degraded (5.11 ha). Approximately 40.3 ha ha of the 49.5 ha survey area had been historically cleared.
- Following the spring field survey, an assessment was completed on Vegetation Unit 2: Mixed Eucalyptus Woodland [MEW]quadrat data that determined that the vegetation unit did not meet the criteria for *Wheatbelt Woodlands* TEC/PEC.

Potential impacts associated with the proposed vegetation clearing to allow for the expansion of the CBH Borden grain storage facility have been considered with respect to the 10 Clearing Principles outlined in Schedule 5 of the EP Act.

As discussed in **Section 5**, it is concluded that the proposed clearing of **0.27 ha** native vegetation may be at variance with Clearing Principle **(e)**.

7. REFERENCES

Australasian Virtual Herbarium (n.d.) *Australian Virtual Herbarium.* Accessible: https://avh.chah.org.au/.

Australian Government. *Environment Protection and Biodiversity Conservation Act 1999.* Accessible: https://www.legislation.gov.au/Details/C2016C00777

Australian Government and Department of the Environment and Energy 2018, *Weeds of National Significance*. Accessible: Weeds Australia

Barrett, R. L. and Dixon, K. W. 2001, A revision of the genus *Calectasia (Calectasiaceae) with eight new species described from south-west Western Australia. Nuytsia 13*(3): 411-488.

Barrett, R. and Tay, E. P. 2016, *Perth Plants: A Field Guide to the Bushland and Coastal Flora of Kings Park and Bold Park. Second Edition.* CSIRO. Western Australia.

Barrett, R.L., Bruhl, J.J. and Wilson, K.L. 2021, *Revision of generic concepts in Schoeneae subtribe Tricostulariinae (Cyperaceae) with a new Australian genus Ammothryon and new species of Tricostularia*. Telopea, Journal of Plant Systematics, 24: 61-169.

Beard, J. S., Beeston, G.R., Harvey, J.M., Hopkins, A. J. M. and Shepherd, D. P. 2013, The vegetation of Western Australia at the 1:3,000,000 scale. Explanatory memoir. Second edition. *Conservation Science Western Australia* 9: 1-152.

Beecham, B., and Danks, A. 2001, *Mallee 2 (MAL2 - Western Mallee subregion). A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002.* Department of Conservation and Land Management.

Bio Diverse Solutions 2022, *Reconnaissance flora and vegetation survey – CBH Borden Expansion Area, Borden*. Report prepared for Co-operative Bulk Handling, December 2022.

Bureau of Meteorology Australia 2022, Climate Statistics for Australian Locations – Ongerup (Station 010622) Accessed: October 2022 www.bom.gov.au.

Briggs, B. G. and Johnson, L. A. S. (2001). *The genus Desmocladus (Restionaceae) and new species from the south of Western Australia and South Australia. Telopea 9*(2): 2001.

Brown, A. 2018, *Western Australia's Superb Sun Orchids (Thelymitra).* The Orchadian: Official Journal of Australasian Native Orchid Society Inc, 19(5).

Brundrett, M. 2014, *Identification and ecology of Southwest Australian Orchids.* Western Australia Naturalists' Club Inc., Western Australia. p. 161.

Commonwealth of Australia 2013, *Draft Survey Guidelines for Australia's Threatened Orchids,* Commonwealth of Australia. Accessible: http://www.environment.gov.au/system/files/resources/e160f3e7-7142-4485-9211-2d1eb5e1cf31/files/draft-guidelines-threatened-orchids.pdf

Department of Agriculture, Water and the Environment (DAWE) 2021a, *Australia's bioregions (IBRA).* Accessible: Australia's bioregions (IBRA) - DCCEEW

Department of Agriculture, Water and the Environment (DAWE) 2021b, *EPBC Act Protected Matters Search Tool*. Accessible: Protected Matters Search Tool - DCCEEW

Department of Agriculture, Water and Environment (2022). *EPBC Act Protected Matters Search Tool*. URL: http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf#

Department of Biodiversity, Conservation and Attractions 2007-, *NatureMap: Mapping Western Australia's Biodiversity*. Department of Parks and Wildlife. URL: https://naturemap.dbca.wa.gov.au/

Department of Biodiversity, Conservation and Attractions 2017, South Coast Significant Wetlands (DBCA-018) dataset.

Department of Biodiversity, Conservation and Attractions 2021, *Priority Ecological Communities for Western Australia Version 32.* Species and Communities Program. Available from: https://www.dpaw.wa.gov.au/images/documents/plants-animals/threatened-species/Listings/Priority%20Ecological%20Communities%20list.pdf

Department of Biodiversity, Conservation and Attractions 2022a, *Threatened and Priority Flora Database Search for CBH Borden Receival Site* accessed on the 23/09/2022. Prepared by the Species and Communities program for Charlize van der Mescht, Bio Diverse Solutions (88-0922FL) for reconnaissance flora and vegetation survey.

Department of Biodiversity, Conservation and Attractions 2022b, *Threatened and Priority Ecological Community Database Search for CBH Borden Receival Site* accessed on the 23/09/2022. Prepared by the Species and Communities program for Charlize van der Mescht, Bio Diverse Solutions (56-0922EC) for reconnaissance flora and vegetation survey.

Department of Climate Change, Energy, the Environment and Water 2023, *EPBC Act Protected Matters Search Tool*. Accessible: http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf#.

Department of Conservation and Land Management 1999, *Environmental Weed Strategy for Western Australia,* Department of Conservation and Land Management, Como.

Department of the Environment 2014, *Approved Conservation Advice for Proteaceae Dominated Kwongkan Shrublands of the southeast coastal floristic province of Western Australia*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/126-conservation-advice.pdf. In effect under the EPBC Act from 04-Dec-2015.

Department of the Environment 2015, *Conservation Advice for Eucalypt Woodlands of the Western Australian Wheatbelt*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/128-conservation-advice.pdf . In effect under the EPBC Act from 04-Dec-2015.

Department of the Environment and Energy 2017, *Australian Vegetation Attribute Manual Version 7.0.* NVIS Technical Working Group, Australian Government. Accessible: https://www.dcceew.gov.au/environment/land/publications/australian-vegetation-attribute-manual-version-7

Department of Planning, Lands and Heritage 2022, Aboriginal Heritage Inquiry System (AHIS). Viewed October 2022.

Department of Primary Industries and Rural Development 2019, *Pre-European Vegetation (DPIRD-006)*. Last updated 2019. Accessible: Pre-European Vegetation (DPIRD-006) - Datasets - data.wa.gov.au

Department of Primary Industries and Regional Development 2022a, Soil Landscape Mapping - Best Available (DPIRD-027) dataset. Last updated 2022. Accessible: https://catalogue.data.wa.gov.au/dataset/soil-landscape-mapping-best-available

Department of Primary Industries and Regional Development 2022b, Soil landscape land quality - Zones (DPIRD- 017) dataset. Last updated 2022. Accessible: https://catalogue.data.wa.gov.au/dataset/soil-landscape-land-quality-zones

Department of Primary Industries and Rural Development 2022c, *Soil Landscape Mapping - Best Available (DPIRD-027)*. Last updated 2022. Accessible: https://www.agric.wa.gov.au/resource-assessment/nrinfo-natural-resource-information-western-australia#:~:text=NRInfo%20is%20a%20source%20of,and%20Environmental%20Regulation%3B%20Environmental%20Protection

Department of Primary Industries and Regional Development 2022d, Hydrological Zones of Western Australia (DPIRD-069) dataset. Last updated 2022. Accessible: https://catalogue.data.wa.gov.au/dataset/hydrological-zones-of-western-australia

Department of Sustainability, Environment, Water, Population and Communities 2011, *Survey guidelines for Australia's Threatened mammals. Guidelines for detecting mammals listed as Threatened under the Environment Protection and Biodiversity Conservation Act 1999*. Government of Australia. Accessible: https://www.dcceew.gov.au/environment/epbc/publications/survey-guidelines-australias-threatened-mammals

Department of Water and Environmental Regulation 2018a, Hydrographic Catchments - Catchments (DWER-028) dataset accessed from https://maps.slip.wa.gov.au/landgate/locate/

Department of Water and Environmental Regulation 2018b, Hydrographic Catchments - Subcatchments (DWER- 030) dataset accessed from https://maps.slip.wa.gov.au/landgate/locate/

Department of Water and Environmental Regulation 2021, Clearing Regulations - Environmentally Sensitive Areas (DWER-046) dataset

Department of Water and Environmental Regulation 2022, Public Drinking Water Source Areas (DWER033) dataset accessed January 2021 from https://maps.slip.wa.gov.au/landgate/locate/

Environmental Protection Authority 2016, *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment*, EPA, Western Australia. Accessible: Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment | EPA Western Australia

Euclid (n.d.) *Eucalypts of Australia, Fourth Edition,* Commonwealth Science Industry Research Organisation, Australian Biological Resources Study, Centre of Australian National Biodiversity Research, Department of Agriculture, Water and the Environment. Accessible: https://apps.lucidcentral.org/euclid/text/intro/index.html

Florabase. Accessible: https://florabase.dpaw.wa.gov.au/science/key/fabaceae/
French, M. 2012, *Eucalypts of Western Australia's Wheatbelt.*

Government of Western Australia, *Environmental Protection Act 1986.* Accessible: https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_304_homepage.html

Government of Western Australia, *Environmental Protection (Environmentally Sensitive Areas) Notice 2005.* Accessible: https://www.legislation.wa.gov.au/legislation/statutes.nsf/law_s36889_currencies.html

Government of Western Australia, *Biodiversity Conservation Act 2016.* Accessible: https://www.legislation.wa.gov.au/legislation/prod/filestore.nsf/FileURL/mrdoc_41658.pdf/$FILE/Biodiversity%20Conservation%20Act%202016%20-%20%5B00-d0-01%5D.pdf?OpenElement

Government of Western Australia 2019, *2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report)*. Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions, Perth, WA. Accessible: https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics

Hartley, R. and Barrett, S. 2008, *Grass Conostylis (Conostylis misera) Recovery Plan.* Department of Environment and Conservation, Western Australia. Available from: http://www.environment.gov.au/resource/grass-conostylis-conostylis- misera-recovery-plan.

Hislop, M 2012, *Two new species from the Leucopogon distans group (Ericaceae: Styphelioideae: Styphelieae) and the reinstatement of Leucopogon penicillatus.* Nuytsia, 22(1): 1-16.

Hopper S and Gioia P 2004, The southwest Australian floristic region: Evolution and conservation of a global hot spot of biodiversity. Annual Review of Ecology, Evolution, and Systematics, 35**,** p 623-50.
IPAC, Invasive Plants and Animals Committee (2017). *Australian Weeds Strategy 2017 – 2027.* Commonwealth of Australia. JSTOR (2000 -). *Global Plants, Herbarium Specimens.* Accessible: https://plants.jstor.org/collection/TYPSPE

Keighery, B. 1994, *Bushland Plant Survey, A Guide to Community Survey for the Community*, Wildflower Society of WA (Inc.) Nedlands, WA.

Maslin, B.R. (2018 -) *Wattles of Australia, Version 3.* Australian Biological Resources Study, Department of Biodiversity, Conservation and Attractions, Identic Pty Ltd. Accessible: https://apps.lucidcentral.org/wattle/identify/key.html

Muir, B.G. 1977, *Biological Survey of the Western Australian Wheatbelt, Part 2. Vegetation and habitat of Bendering Reserve.*

Olde, P.M. (2020, *Grevillea pieroniae Olde (Proteaceae: Grevilleoideae: Hakeinae), a rare new species in the Triloba Group from the Stirling Range, Western Australia, and a short history of the group. Telopea, Journal of Plant Systematics, 23: 227- 235.*

Roadside Conservation Committee 2014, Roadside conservation mapping program. Data from surveyed shires. Available from: http://www.dpaw.wa.gov.au/management/off-reserve-conservation/roadside-conservation/132- roadside-conservation-value-mapping-program?showall=&start=2. Accessed November 2022.

Sandiford, E.M. and Barrett, S. 2010, *Albany Regional Vegetation Survey, Extent Type and Status.* A project funded by the Western Australian Planning Commission (EnviroPlanning "Integrating NRM into Land Use Planning" and State NRM Program), South Coast Natural Resource Management Inc. and City of Albany for the Department of Environment and Conservation. Unpublished report. Department of

Environment and Conservation, Western Australia.

Shepherd, DP, Beeston, GR and Hopkins, AJM 2002, 'Native Vegetation in Western Australia: Extent, Type and Status'., *Resource Management Technical Report 249*. Department of Agriculture, South Perth, WA.

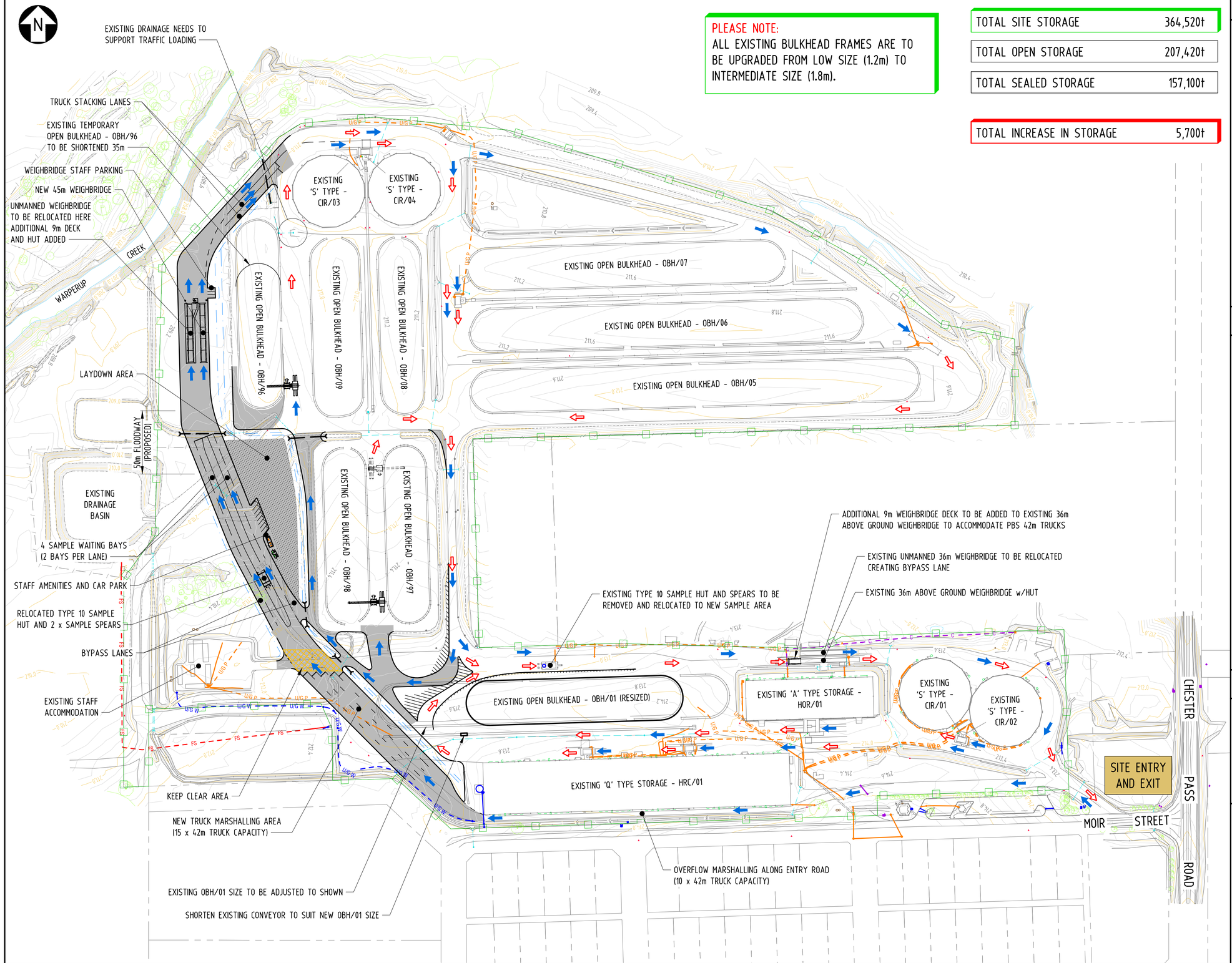
Species and Communities Program; Department of Biodiversity Conservation and Attractions 2020, *Priority Ecological Communties for Western Australia Version 30. 28 July 2020*. Accessible: https://www.dbca.wa.gov.au/wildlife-and-ecosystems/plants/list-threatened-and-priority-flora

Western Australian Herbarium 2022, *FloraBase—the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions. Accessible: https://florabase.dbca.wa.gov.au/

Wilkins, P., Gilfillan, S., Watson, J. and Sanders, A. 2006, *The Western Australian South Coast Macro Corridor Network – a bioregional strategy for nature conservation.* Department of Conservation and Land Management (CALM) and South Coast Regional Initiative Planning Team (SCRIPT), Albany, Western Australia.

Young, J. A. 2006, *Hakeas of Western Australia: A Field and Identification Guide.*

Young, J. A. 2021, *A Field Guide to the Melaleucas of South-West Western Australia.*



PLEASE NOTE:
ALL EXISTING BULKHEAD FRAMES ARE TO BE UPGRADED FROM LOW SIZE (1.2m) TO INTERMEDIATE SIZE (1.8m).

TOTAL SITE STORAGE	364,520t
TOTAL OPEN STORAGE	207,420t
TOTAL SEALED STORAGE	157,100t
TOTAL INCREASE IN STORAGE	5,700t

DRAWING LEGEND

- TRAFFIC MOVEMENTS - TRUCKS FULL
- TRAFFIC MOVEMENTS - TRUCKS EMPTY
- LOT BOUNDARIES
- CBH SITE BOUNDARY
- U/G P — UNDERGROUND POWER LINES
- U/G W — UNDERGROUND WATER PIPES
- C — UNDERGROUND COMMS LINES
- G — UNDERGROUND GAS LINES
- FS — UNDERGROUND FIREWATER SYSTEM
- UNDERGROUND STORMWATER PIPES
- PROPOSED OPEN DRAINS
- PROPOSED CULVERTS (WITH HEADWALL)

STORAGE CAPACITIES

EXISTING SITE STORAGE		
'A' TYPE STORAGE	HOR/01	17,100t
'Q' TYPE STORAGE	HRC/01	60,000t
'S' TYPE STORAGE	(4 CELLS)	80,000t
INT STEEL FRAME OBH	(01)	29,500t
INT STEEL FRAME OBH	(05)	42,000t
LOW STEEL FRAME OBH	(06)	31,000t
LOW STEEL FRAME OBH	(07)	25,000t
LOW STEEL FRAME OBH	(08)	14,000t
LOW STEEL FRAME OBH	(09)	17,220t
LOW STEEL FRAME OBH (TEMPORARY)	(96)	15,000t
LOW STEEL FRAME OBH (TEMPORARY)	(97)	14,000t
LOW STEEL FRAME OBH (TEMPORARY)	(98)	14,000t
TOTAL EXISTING STORAGE		358,820t

PROPOSED SITE STORAGE		
INT STEEL FRAME OBH (RESIZE)	(01)	- 8,250t
INT STEEL FRAME OBH	(06)	+ 6,200t
INT STEEL FRAME OBH	(07)	+ 5,000t
INT STEEL FRAME OBH	(08)	+ 2,800t
INT STEEL FRAME OBH	(09)	+ 3,450t
INT STEEL FRAME OBH (TEMPORARY)	(96)	- 3,500t
TOTAL PROPOSED STORAGE		5,700t

HATCHING LEGEND

- AREA OF NEW WORKS — 23,000m²
- CHEVRON LINE MARKING

PRELIMINARY ISSUE
DO NOT USE FOR CONSTRUCTION
DATE 12.01.23

1:1500 @ A1
1:3000 @ A3
0 20 40 60 80 100 120 140 m

CBH GROUP
LEVEL 6
240 ST GEORGE'S TERRACE
PERTH W.A. 6000
PH (08) 9237 9600
FAX (08) 9322 3942
ABN 29 256 604 947

REF DRAWING No.	REFERENCE DRAWING TITLE	REV	DATE	REVISION DESCRIPTION	BY	CHK'D	APP'D
		F	01.12.22	DRG REVERTED BACK TO REV C CONCEPT STAGE - AS PER C.O. REQUEST	JB		
		E	29.11.22	REVISED & RE-ISSUED FOR REVIEW	JB		
		D	28.11.22	SHAWMAC DESIGN ADDED. DRG REVISED & RE-ISSUED FOR REVIEW	JB		
		C	19.07.22	RE-ISSUED FOR REVIEW - GENERAL CHANGES	PF		
-	-	G	12.01.23	RE-ISSUED FOR REVIEW - 2 x 45m ENTRY WEIGHBRIDGES ADDED	PF		

SCALE 1:1500
SHEET A1
PROJECT M-2645
CONTRACT No

DRAWN	P. Forrest	14.07.22
CHECKED		
DESIGNED		
DESIGN APPR		
PROJECT APPR		

TITLE
BORDEN
PRE-FEASIBILITY STUDY
NEW MARHSAL/SAMPLE/WEIGH AREA
CONCEPTUAL LAYOUT - OPTION 2

ORG No 589-ENG-CI-DCO-0002 | SHEET 1 OF 1 | REV. G

APPENDIX 3 RECONNAISSANCE FLORA AND VEGETATION SURVEY
CBH BORDEN EXPANSION AREA

(Source: Bio Diverse Solutions 2023)