Questdale Holdings

Lot 2 and Lot 10 Rowley Road Mandogalup, WA
Extension of Quarry Operations

Conservation Area Management Plan

10 October 2021

56799-131720 (Rev 2)

JBS&G Australia Pty Ltd T/A Strategen-JBS&G

www.jbsg.com.au

Declaration of accuracy

In making this declaration, I am aware that section 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000*. The offence is punishable on conviction by imprisonment or a fine, or both. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed

_____

Full name (please print)

_____

Organisation (please print)

_____

Date

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Table of Contents

List of Tables

List of Figures

1. Introduction

1.1 Project background

Questdale Holdings (in association with Frankland Sand Supplies) propose to extend the operation of an existing sand quarry at Lots 2 and 10 Rowley Road, Mandogalup across approximately 33 ha (the Proposal; Figure 1.1). The Proposal area is located approximately 33 km south of the Perth CBD within the City of Kwinana (CoK), and is bounded by Rowley Road to the north, the existing sand quarry to the west, a Western Power powerline corridor to the south, and residential development to the east.

At the federal level, the Proposal will result in impacts to Matters of National Environmental Significance (MNES) listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), including:

- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*)- endangered
- Forest Red-tailed Black Cockatoo (*C. banksii naso*)- vulnerable
- Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community (TEC) – endangered.

At the state level, four preliminary key environmental factors relevant to the Proposal have been identified, which are:

- Flora and vegetation
- Terrestrial fauna
- Air quality
- Social surroundings.

The Proposal was initially referred to the (then) Commonwealth Department of Environment and Energy (DoEE, now Department of Agriculture, Water and the Environment [DAWE]) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 6 April 2018. The DoEE advised on 19 June 2018 that the Proposal was determined to be a controlled action under the EPBC Act (EPBC 2018/8182).

The Proposal was referred to the Environmental Protection Authority (EPA) under section 38 of the *Environmental Protection 1986* (EP Act) on 7 December 2018. The EPA advised on 28 February 2019 that the level of assessment for the Proposal was set as a Public Environmental Review (PER) with a public consultation period of four weeks.

Given the proposal is determined to be a controlled action, the proposal is being assessed under the Bilateral Agreement between the Commonwealth of Australia and the State of Western Australia made under section 45 of the EPBC Act.

The Environmental Scoping Document (ESD) was prepared by the proponent and the final ESD was endorsed by the EPA and issued on 10 December 2019. The Environmental Review Document (ERD) is currently being prepared.

1.2 Site description

The Proposal includes the retention of approximately 3.74 ha of native vegetation within a 4.1 ha Conservation Area (CA; Figure 1.1). This CA will contribute to the long-term conservation of the pre-European vegetation complexes and associations as well as providing foraging, roosting and potential breeding habitat for native fauna, including black cockatoos. The CA has been strategically located to ensure some habitat connectivity remains between Bush Forever site 268 to the southwest and Frankland Park to the north.

Retention of the CA has been included as an impact mitigating measure within the Proposal's referral and assessment under both the EP Act and EPBC Act.

1.3 Purpose and scope

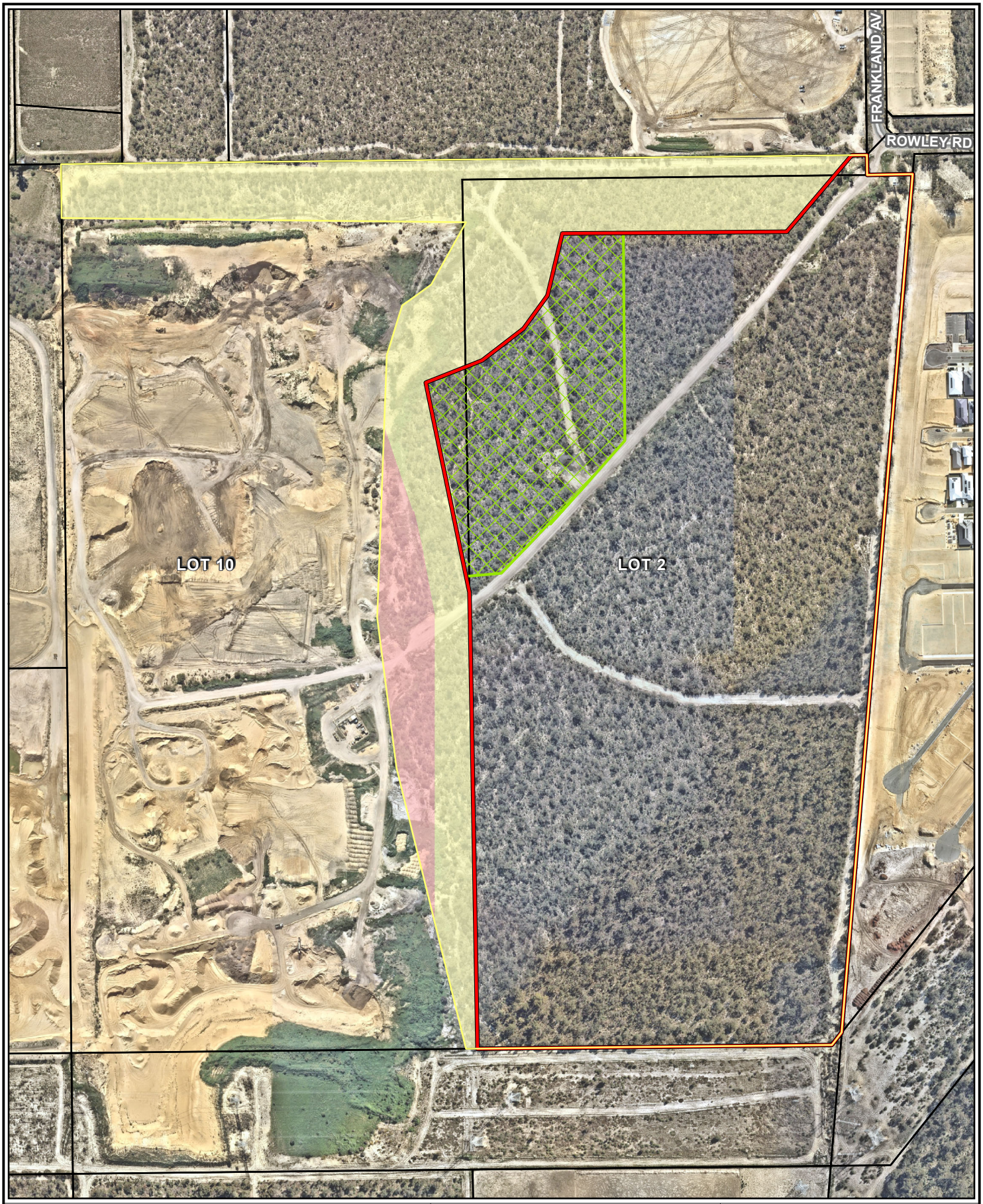
This Conservation Area Management Plan (CAMP) has been prepared in support of the Proposal's assessment under the EP Act and EPBC Act, in accordance with the DAWEs *Environmental Management Plan Guidelines 2014* and EPAs *Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans 2020.* Also supporting the Proposal's assessment under the EP Act and EPBC Act is an Environmental Management Plan (EMP). The EMP will operate alongside this CAMP with interactions identified and reflected in each management plan where appropriate.

The aim of this CAMP is that the CA be managed as an important natural resource where sustainable habitats and ecosystems are protected. To this end, the purpose of this CAMP is to:

- Provide measures to physically delineate areas that will be retained
- Define the nature of access to and within the CA
- Identify suitable locations for revegetation and provide the methodology by which revegetation will be undertaken
- Develop an environmental monitoring program
- Outline trigger criteria for the implementation of contingency actions
- Establish roles and responsibilities
- Provide indicative timeframes for the implementation of the above objectives.

All management actions contained within this CAMP have been designed according to the SMART principal, in that all actions are:

- Specific
- Measurable
- Attainable
- Relevant
- Time bound.



Legend:

- Survey area
- Proposal area
- Conservation area
- Future Hammond and Rowley Roads (excised from previous referral area)
- Existing quarry approval
- Cadastral boundary
- Roads (MRWA)

Scale 1:5,000 at A4 (0, 50, 100 metres)		**Lot 2 and 10 Rowley Road Mandogalup**
Coord. Sys. GDA 1994 MGA Zone 50		**SITE LOCATION**
Job No: 56799		
Client: Questdale Holdings Pty Ltd		**FIGURE 1.1**
Version: A	Date: 22-Sep-2021	strategen JBS&G
Drawn By: hsullivan	Checked By: ES	

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2. Statutory and policy context

Key statutory and policy documents relevant to the CA are described in the following sections.

2.1 Environmental Protection Act 1986

The EP Act is the primary legislation governing environmental protection and impact assessment in Western Australia. Division 1 of Part IV of the EP Act provides for the referral and assessment of significant and strategic proposals.

If a proposal is likely to have a significant effect on the environment, the proposal should be referred to the EPA in accordance with section 38 of the EP Act. The EPA reviews the referral and decides whether to assess a referred proposal. The EPA then determines whether it will assess a proposal and the level of assessment for that proposal.

The Proposal was referred to the EPA on 7 December 2018 and, following a request from the EPA, further information provided on 31 January 2019. The EPA advised on 28 February 2019 that the level of assessment for the Proposal was set as a Public Environmental Review (PER) with a public consultation period of four weeks.

The Environmental Scoping Document (ESD) was prepared by the proponent and the final ESD was endorsed by the EPA and issued on 10 December 2019. The Environmental Review Document (ERD) is currently being prepared.

As part of the EPA's decision on referral, four preliminary key environmental factors relevant to the Proposal were identified. These factors, their associated objectives, and the sections of this CAMP where they are addressed is detailed in Table 2.1.

Table 2.1: Key environmental factors

Key environmental factor	EPA objective	Section addressed in CAMP
Flora and vegetation	To protect flora and vegetation so that biological diversity and ecological integrity are maintained.	Sections 6.1, 6.2, 6.3, 6.6, and 6.7
Terrestrial fauna	To protect terrestrial fauna so that biological diversity and ecological integrity are maintained	Sections 6.3, 6.4, 6.6, and 6.7.
Air quality	To maintain air quality and minimise emissions so that environmental values are protected	Not within the scope of this CAMP Refer to DMP
Social surroundings	To protect social surroundings from significant harm	Not within the scope of this CAMP Refer to EMP

2.2 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is administered by the DAWE on behalf of the Commonwealth Minister for the Environment. If a Proposed Action will have, or is likely to have, a significant impact on MNES, the Proposed Action must then be referred to the Minister for a decision on whether assessment and approval is required under the EPBC Act.

The MNES are:

- World heritage properties
- National heritage places
- Wetlands of international importance (often called 'RAMSAR' wetlands after the international treaty under which such wetlands are listed)
- Nationally threatened species and ecological communities;
- Migratory species
- Commonwealth marine areas
- The Great Barrier Reef Marine Park

- Nuclear actions (including uranium mining)
- A water resource, in relation to coal seam gas development and large coal mining development.

If the Proposed Action is determined to be a Controlled Action, the Proposal will be assessed in accordance with s87 of the EPBC Act. If nominated by the proponent and agreed by DAWE the proposed action may be assessed under the accredited assessment between the Commonwealth and the State of Western Australia. Under an accredited assessment, the Commonwealth has endorsed the State's environmental impact assessment (EIA) process, effectively delegating the responsibility of assessing the Proposal to the State.

The Proposal was referred to the (then) Commonwealth Department of the Environment and Energy (DoEE), now DAWE, on 6 April 2018. DoEE advised on 19 June 2018 that the Proposal was determined to be a Controlled Action under the *Environment Protection and Biodiversity Act* (EPBC Act) (EPBC 2018/8182).

The Proposal will be assessed under the accredited process.

2.3 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) has now replaced the *Wildlife Conservation Act 1950* (WC Act). On 3 December 2016, several parts of the new Act were enacted by the State Governor. The remaining parts of the Act and the associated Regulations came into effect on 1 January 2019.

In addition to providing for the protection of flora and fauna, the BC Act includes provisions for state listed threatened ecological communities, threatening processes, critical habitats and environmental pests.

2.4 Other regulations

The CA is currently zoned as Rural under the Perth Metropolitan Region Scheme (MRS) and "Rural A" under the City of Kwinana Town Planning Scheme (TPS) No. 2. Both the CA and wider proposal area lie within the MRS Improvement Plan No. 47 - Mandogalup, which is currently being progressed by the Department of Planning, Lands and Heritage (DPLH). Outcomes of the investigations will feed into the preparation of an Improvement Scheme, which will inform and provide the Western Australian Planning Commission (WAPC) with direct authority over the area's future land use and development.

3. Stakeholder consultation

3.1 Key stakeholders

The key stakeholders associated with the Proposal and CA include the following:

- Department of Agriculture, Water and the Environment (DAWE)
- Department of Water and Environmental Regulation (DWER)
- Department of Biodiversity, Conservation and Attractions (DBCA)
- City of Kwinana (CoK).

3.2 Stakeholder engagement process

Limited stakeholder engagement has been undertaken in relation to the Proposal. The following stakeholders have been consulted:

- DWER
- DAWE.

3.3 Stakeholder consultation

Stakeholder consultation undertaken to date has been in relation to:

- The proposal's referral under the EPBC Act to the (then) DoEE in April 2019
- Preliminary discussions with the DWER regarding referral of the proposal under section 38 of the EP Act
- Development of the agreed ESD with DWER.

As previously advised the proposal will be assessed under the accredited process and as a requirement of the environmental impact assessment process, consultation with key stakeholders will be undertaken and submissions will be received during the public comment period.

A period of 4 weeks has been set by the EPA for public consultation.

4. Existing environment

4.1 Soils and topography

Topography across the CA is generally undulating, with elevation ranging from approximately 30 m Australian Height Datum (AHD) in the centre of the CA to 38 m AHD in the north.

The CA is located within the Swan Coastal Plain 2 (SWA2 – Swan Coastal Plain subregion) of Western Australia (Mitchell *et al*. 2002). The Swan Coastal Plain comprises five major geomorphologic systems that lie parallel to the coast, namely (from west to east) the Quindalup Dunes, Spearwood Dunes, Bassendean Dunes, Pinjarra Plain and Ridge Hill Shelf (Churchward & MacArthur 1980; Gibson et al. 1994). The CA is located within the Bassendean Dune system (Churchward & McArthur 1980).

4.2 Hydrology

There are no geomorphic wetlands mapped within the CA or wider proposal area. Surface water discharge across the area is generally to the south west, where sand mining works within Lot 10 have lowered natural surface levels.

Depths to groundwater across the CA vary between 14.5 m (16.5 m AHD) to 24 m (16 m AHD), with regional groundwater flow anticipated to be towards the west.

4.3 Vegetation and flora

In 2017, Strategen (now Strategen-JBS&G) completed a flora and vegetation survey of the proposal area which involved a desktop assessment and field surveys during August and October. Subsequent to this survey, targeted winter and spring surveys were carried out in August and October 2018 for the threatened species *Drakea elastica* and *Caledenia huegelii* respectively. Both surveys were conducted consistent with the requirements of *Technical guidance: Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016). A summary of the results of these surveys across the Proposal area is provided in the following sections.

4.3.1 Vegetation

Three vegetation types (VTs) were defined and mapped across the broader survey area. The total area mapped was 43.67 ha, including already cleared areas (note the area surveyed is greater than the Proposal area (33 ha)). Of these, only one VT (VT1), occurs within the Proposal Area and CA. VTs are summarised in Table 4.1 and displayed in Figure 4.1. Areas which have been cleared of vegetation have not been counted as unique VTs but have been included for area calculation purposes.

Table 4.1: Vegetation types recorded within the CA and Proposal area

Vegetation Type	Description	Area within the Proposal (ha)	Area within the CA (ha)
VT1	Low woodland of *Banksia menziesii* and *B. attenuata* over open heath of *Xanthorrhoea preissii*, *Hibbertia hypericoides* and *Mesomelaena pseudostygia* with emergent *Eucalyptus marginata*.	29.94	3.74
C	Cleared areas with exotic grasses and herbs.	3.06	0.36
Total		**33**	**4.10**

Vegetation within the Proposal area ranged from Completely Degraded to Excellent (EPA 2016;). All remnant vegetation within the CA was mapped as being in Very Good to Excellent condition. Vegetation condition is summarised in Table 4.2 and displayed in Figure 4.2.

Table 4.2: Vegetation condition recorded within the CA and Proposal area

Vegetation Condition	Area within the Proposal (ha)	Area within the CA (ha)
Very Good – Excellent	29.94	3.74
Cleared	3.06	0.36
Total	**33**	**4.10**

Vegetation within the survey area was assessed against the key diagnostic criteria for the federally listed Banksia Woodlands of the Swan Coastal Plain TEC (TSSC 2016), the results of which are presented below in Table 4.3.

Table 4.3: Assessment of Banksia woodland within the survey area against key diagnostic criteria

Key diagnostic criteria (TSSC 2016)	Banksia woodlands within the Proposal Area
Location: Occurs in the Swan Coastal Plain or Jarrah Forest IBRA bioregions.	Yes. Banksia woodlands within the Proposal Area occur on the Swan Coastal Plain.
Soils and landform: Occurs on: well drained, low nutrient soils on sandplain landforms, particularly deep Bassendean and Spearwood sands and occasionally on Quindalup sands sandy colluviums and aeolian sands of the Ridge Hill Shelf, Whicher Scarp and Dandaragan Plateau transitional substrates and sandflats.	Yes. Banksia woodlands within the Proposal Area occur on Bassendean sands.
Structure: Low woodland to forest with: a distinctive upper sclerophyllous layer of low trees (occasionally large shrubs more than 2 m tall), typically dominated or co-dominated by one or more of the banksia species identified below emergent trees of medium or tall (>10 m) height. Eucalyptus or Allocasuarina species may sometimes be present above the banksia canopy an often highly species-rich understorey.	Yes. Banksia woodlands within the Proposal Area display the structure characteristics described.
Composition: Contains at least one of the following species: *Banksia attenuata* *Banksia menziesii* *Banksia prionotes* *Banksia ilicifolia.*	Yes. Banksia woodlands within the Proposal Area contain *Banksia attenuata* and *B. menziesii*.
Condition (Keighery 1994): 'Pristine': no minimum patch size 'Excellent': 0.5 ha 'Very Good': 1 ha 'Good': 2 ha.	Yes. Banksia woodlands within the Proposal Area are predominantly in Very Good - Excellent condition and comprise 37.5 ha.

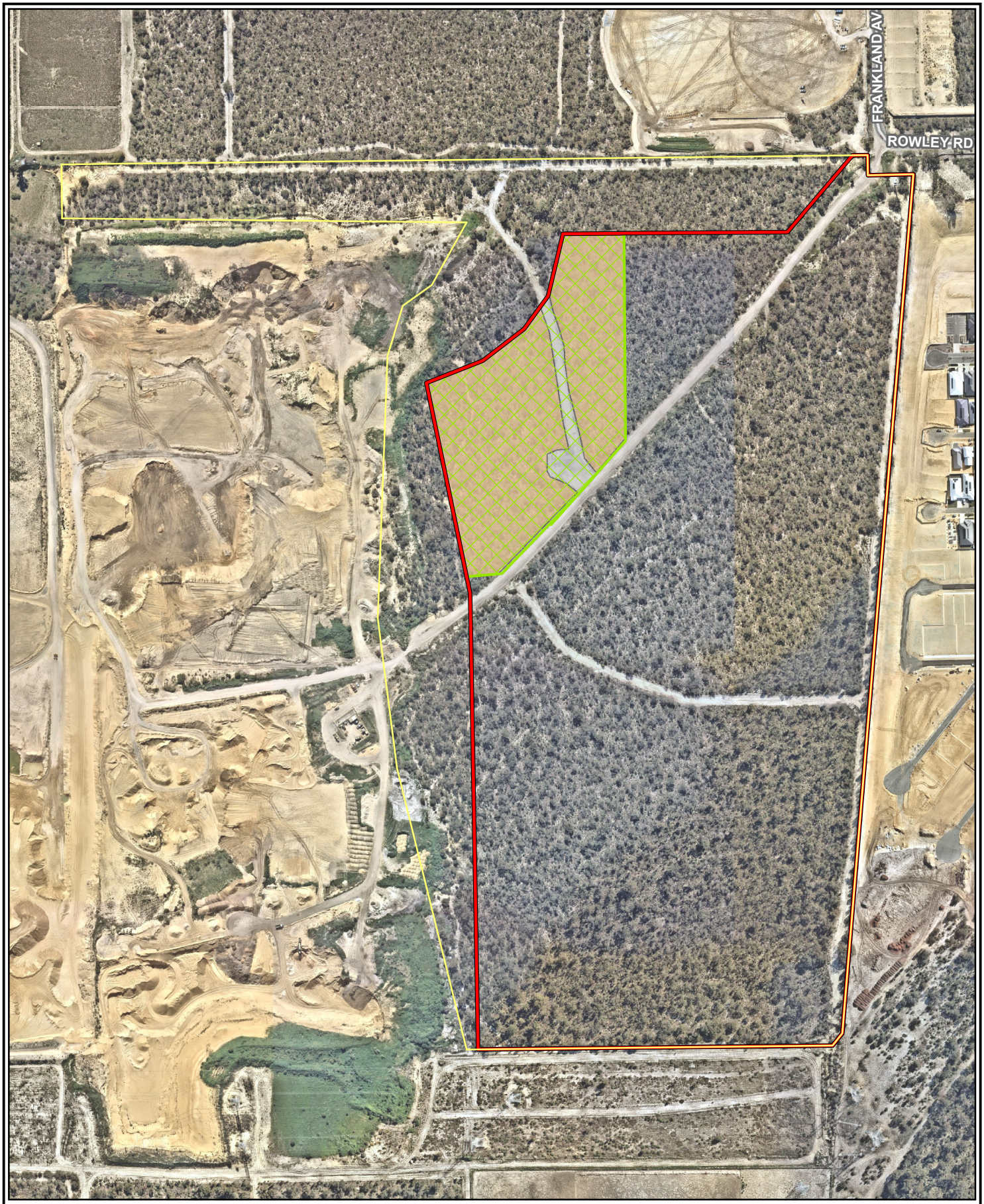
The results of the assessment against diagnostic criteria indicate that VT1 is associated with the Banksia Woodlands of the Swan Coastal Plain ecological community. Statistical analysis of the species composition of VT1 showed strong linkage of this VT to FCT28, which is described as Spearwood *Banksia attenuata* or *Banksia attenuata* – *Eucalyptus* woodlands (Strategen 2017). All vegetation mapped as VT1 met diagnostic criteria provided in the approved conservation advice for the Banksia Woodlands of the Swan Coastal Plain TEC (Strategen 2017).

No evidence of the presence of dieback within the CA or wider Proposal area was observed during the Biologic (2020) survey.

4.3.2 Flora

A total of 74 native vascular plant taxa from 25 plant families were recorded within the wider Proposal area, Threatened flora species as listed under section 178 of the EPBC Act were recorded within the Proposal area. No Threatened flora species as listed under section 19(1) of the BC Act and no Priority flora species as listed by the DBCA (Smith and Jones 2018) were recorded within the Proposal area (Strategen 2018).

A total of 15 introduced (exotic taxa) were recorded within the wider Proposal area, of which one species (*Zantedeschia aethiopica*) is a Declared Plant species in Western Australia pursuant to section 22 of the *Biosecurity and Agriculture Management Act 2007* (BAM Act) according to the Western Australian Department of Agriculture and Food (DAFWA 2017). It should be noted that the quadrat in which this species was recorded was not located within the CA (Strategen 2017).



Legend:

- Survey area
- Proposal area
- Conservation area

Vegetation type

- VT1: Low woodland of *Banksia menziesii* and *B. attenuata* over open heath of *Xanthorrhoea preissii, Hibbertia hypericoides* and *Mesomelaena pseudostygia* with emergent *Eucalyptus marginata*
- Cleared
- Roads (MRWA)

Scale 1:5,000 at A4 (0, 50, 100 metres)		**Lot 2 and 10 Rowley Road Mandogalup**
Coord. Sys. GDA 1994 MGA Zone 50		**VEGETATION TYPES**
Job No: 56799		
Client: Questdale Holdings Pty Ltd		**FIGURE 4.1**
Version: A	Date: 22-Sep-2021	strategen JBS&G
Drawn By: cthatcher	Checked By: WO	

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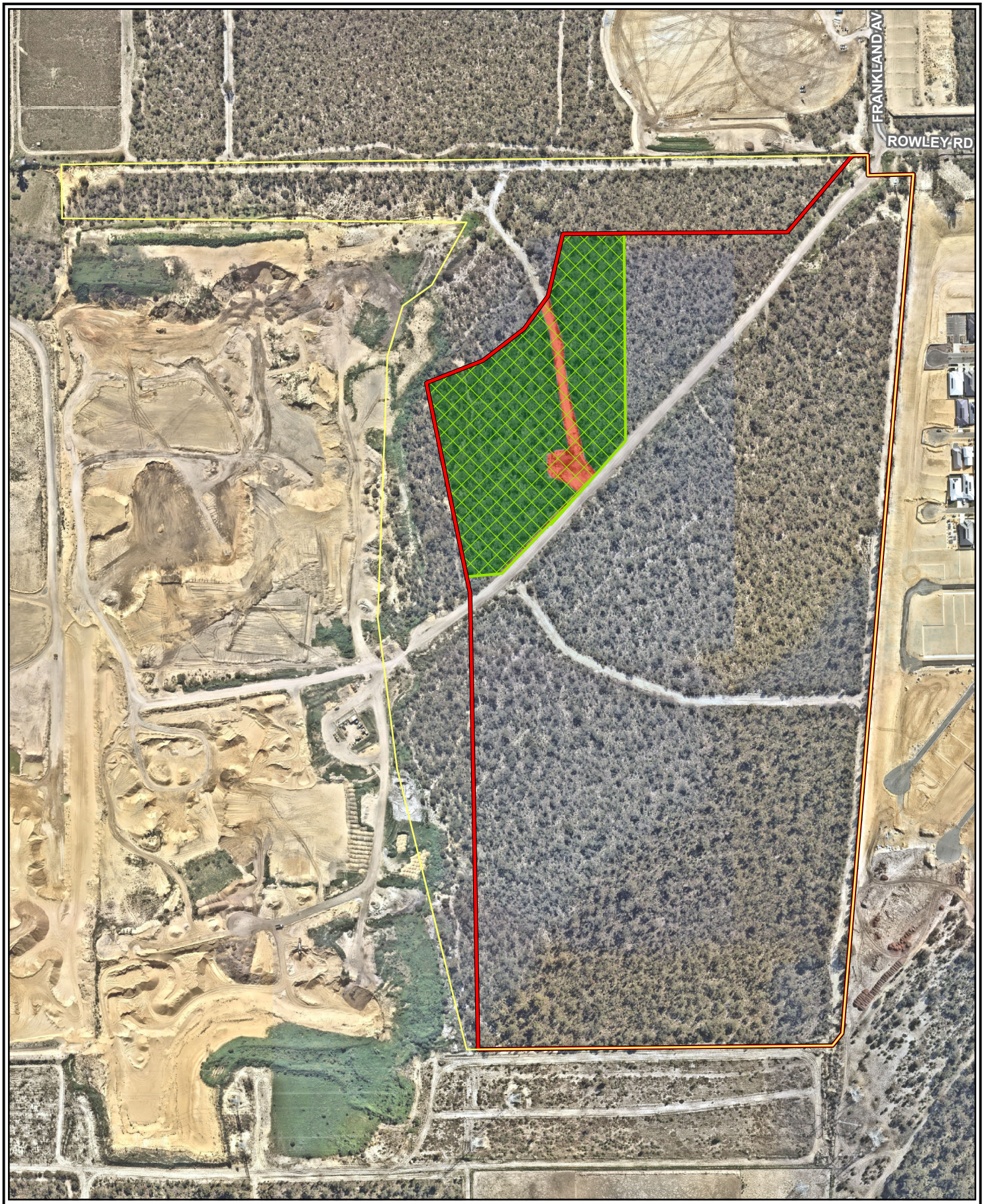

Legend:

- Survey area
- Proposal area
- Conservation area

Vegetation condition

- Cleared
- Very good - excellent
- Roads (MRWA)

Scale 1:5,000 at A4 (0, 50, 100 metres)		**Lot 2 and 10 Rowley Road Mandogalup**
Coord. Sys. GDA 1994 MGA Zone 50		**VEGETATION CONDITION**
Job No: 56799		
Client: Questdale Holdings Pty Ltd		**FIGURE 4.2**
Version: A	Date: 22-Sep-2021	strategen JBS&G
Drawn By: cthatcher	Checked By: WO	

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4.4 Fauna and habitat

To date, the following terrestrial fauna desktop assessments and field surveys have been conducted across the wider Proposal area:

- PGV Environmental (2015) – Field survey of the Project area. The survey indicated that the fauna values of associated with the Proposal area are likely to be:
    - Fauna assemblage: depauperate, limited medium and small mammals and some bird species reptiles and vertebrates
    - Species of significance include Quenda and Black cockatoos (Carnaby's Black Cockatoo (CBC) and Forest Red Tailed Black Cockatoo (FRTBC))
    - Ecological processes affecting fauna assemblage includes limited connectivity, influences in hydrology, fire and degradation processes.
- Strategen (2017) and Strategen-JBS&G (2019) – Desktop assessment and black cockatoo habitat survey
- Biologic (2020) – Desktop assessment and field survey for terrestrial fauna and impact assessment. This survey included the following survey work:
    - Survey of nest hollows for black cockatoos
    - Mapping of fauna habitat types.

4.4.1 Black cockatoos

Habitat quality analysis has been undertaken by Strategen-JBS&G for the purpose of offset calculations in line with the *EPBC Act Environmental Offsets Policy* (DSEWPaC 2012b), which requires consideration of impact site's condition, context and species stocking rates in determining significance of impact and offset requirements . This analysis assigned a foraging quality score to each vegetation type within the Proposal Area based on the scoring system developed by Bamford Consulting Ecologists (2018), for Carnaby's Black Cockatoo and Forest Red-tailed Black Cockatoo (Strategen JBS&G 2020). The scoring system developed by Bamford Consulting Ecologists (2018) comprises of:

- A score out of six for vegetation composition, condition and structure
- A score out of three for the context of the site
- A score out of one for species density.

Table 4.4 and Table 4.5 below present the foraging quality scores assigned to each vegetation type for Carnaby's Black Cockatoo and Forest Red-tailed Black Cockatoo, respectively. In total, the broader survey area contains 37.48 ha of Moderate quality foraging habitat for Carnaby's Black Cockatoo and 37.48 ha of Low to Moderate quality foraging habitat for Forest Red-tailed Black Cockatoo within VT1. A further 1.28 ha of Low quality foraging habitat occurs for Carnaby's Black Cockatoo within VT2 (Figure 4.3).

Table 4.4: Carnaby's Black Cockatoo foraging habitat quality

Vegetation type	Area (ha)	Vegetation composition score and corresponding quality description (out of 6)	Site context score (out of 3)	Species density score (out of 1)	Total foraging habitat quality score (out of 10)
VT1: Low woodland of *Banksia menziesii* and *B. attenuata* over open heath of *Xanthorrhoea preissii*, *Hibbertia hypericoides* and *Mesomelaena pseudostygia* with emergent *Eucalyptus marginata*.	3.74	4 – Moderate foraging value	1	1	6

Vegetation type	Area (ha)	Vegetation composition score and corresponding quality description (out of 6)	Site context score (out of 3)	Species density score (out of 1)	Total foraging habitat quality score (out of 10)
Cleared	0.36	0 – No foraging value	0	0	0

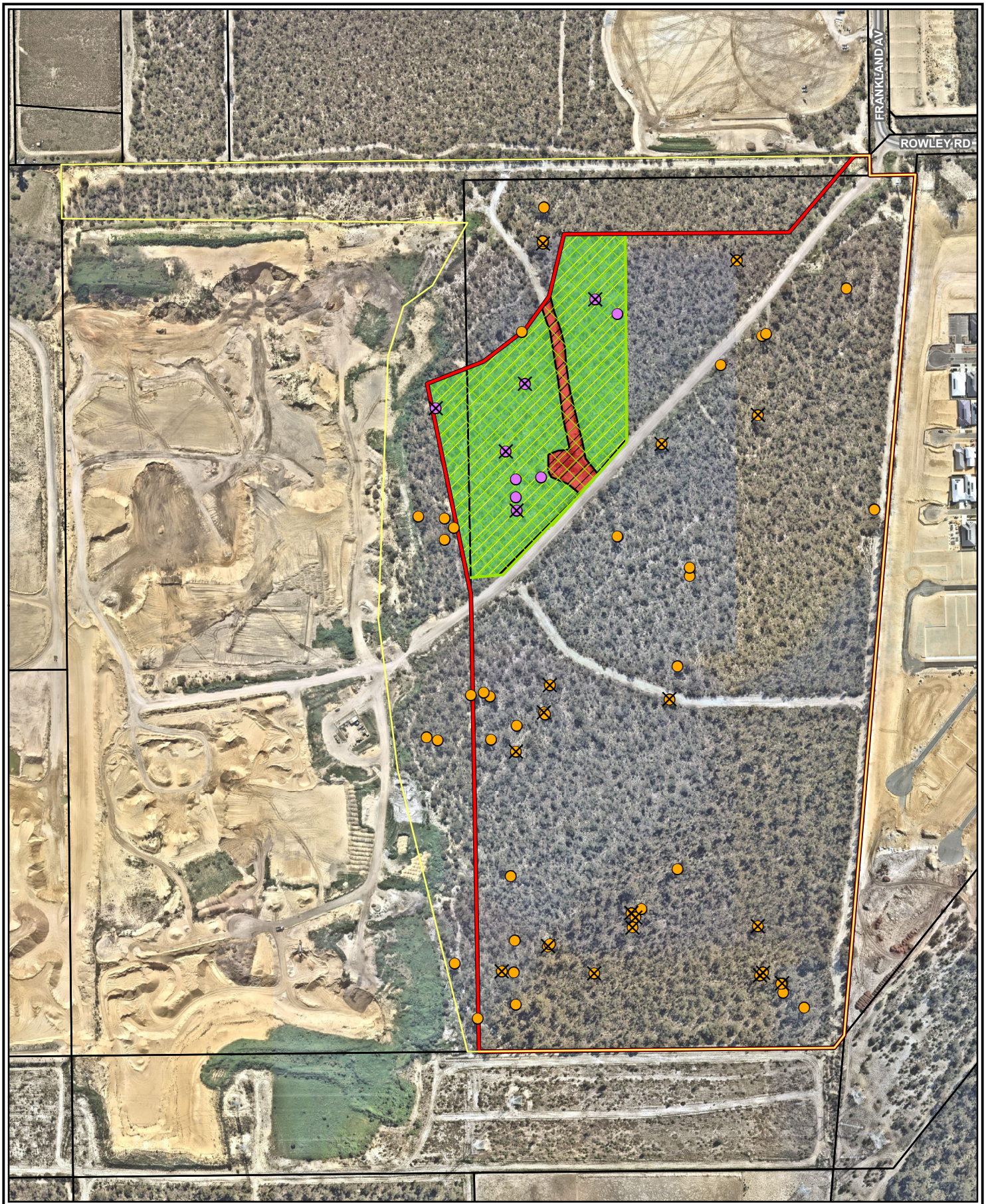
Table 4.5: Forest Red-tailed Black Cockatoo foraging habitat quality

Vegetation type	Area (ha)	Vegetation composition score and corresponding quality description (out of 6)	Site context score (out of 3)	Species density score (out of 1)	Total foraging habitat quality score (out of 10)
VT1: Low woodland of *Banksia menziesii* and *B. attenuata* over open heath of *Xanthorrhoea preissii*, *Hibbertia hypericoides* and *Mesomelaena pseudostygia* with emergent *Eucalyptus marginata*.	3.74	3 – Low to Moderate foraging value	1	1	5
Cleared	0.36	0 – No foraging value	0	0	0

The black cockatoo habitat assessments (Strategen 2017 and Strategen-JBS&G 2019) recorded a total of 64 potential nesting trees within the survey area and nine within the CA (of which five contained hollows), typically comprising *Eucalyptus marginata* (Figure 4.3). Of these 64 trees, 23 contained hollows that were considered suitable for breeding by black cockatoos. In this case, hollows were considered suitable if they appeared to have an appropriate depth, with an opening large enough to be used by black cockatoos.

Subsequent to these surveys, Biologic (2020) inspected hollows in each of the twenty-three trees originally identified. The survey collected information including the presence / absence of any known breeding signs (i.e. hollows showing evidence of wear and chew marks around the hollow entrance) or the presence of down feathers that may be attributed to black cockatoos (Johnstone *et al.* 2013). The observations were made using a pole-mounted camera in accordance with advice received from the EPA and (then) DoEE.

None of the 23 originally identified trees contained hollows considered suitable for use as breeding sites for black cockatoos, and no evidence of usage were observed.



Legend:

- Survey area
- Proposal area
- Conservation area
- Cadastral boundary

Carnaby's Black Cockatoo habitat

- Moderate
- Cleared

Forest Red-tailed Black Cockatoo habitat

- Very poor
- Nil
- Hollows present
- Significant trees to be retained (9)
- Significant trees to be removed (55)
- Roads (MRWA)

Scale 1:5,000 at A4 (0, 50, 100 metres)	**Lot 2 and 10 Rowley Road Mandogalup**
Coord. Sys. GDA 1994 MGA Zone 50	**BLACK COCKATOO FORAGING HABITAT**
Job No: 56799	
Client: Questdale Holdings Pty Ltd	**FIGURE 4.3**
Version: A — Date: 22-Sep-2021	strategen JBS&G
Drawn By: cthatcher — Checked By: WO	

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4.5 Cultural heritage and social values

4.5.1 Aboriginal heritage

A search of the Department of Planning Lands and Heritage – Aboriginal Heritage Places mapping tool (DPLH 2020) was conducted of the Proposal area and surrounding area. No Registered Aboriginal Heritage Sites or other aboriginal heritage places were identified within the CA or wider Proposal Area. The nearest aboriginal heritage place is Norkett Road (Place ID: 4360); which is registered for artefacts / scatter and located approximately 350 m south of the Proposal area.

4.5.2 European heritage

A search of the Heritage Council of Western Australia *inherit* database did not identify any European heritage places within or adjacent to the Proposal area.

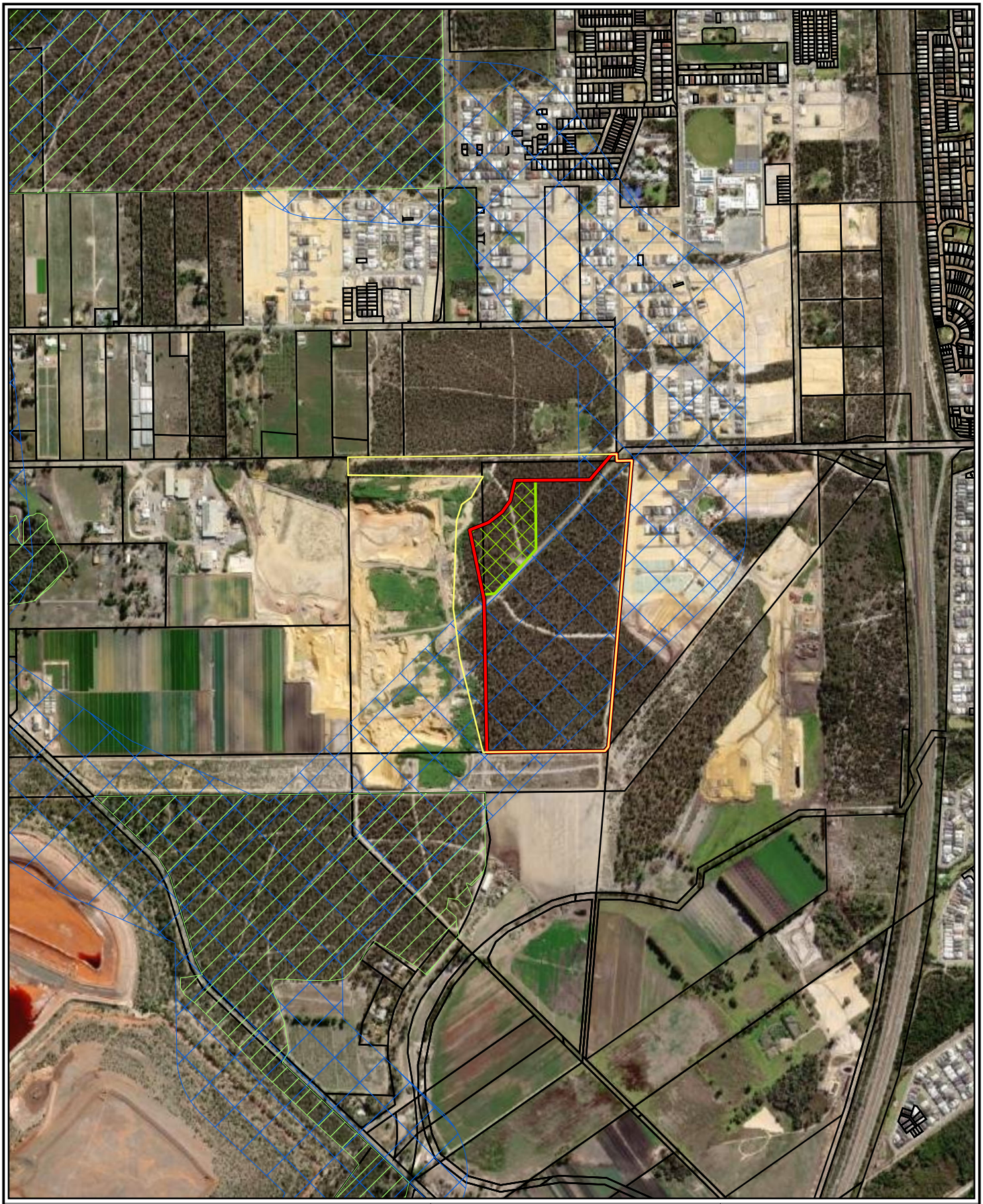
4.6 Contamination

A desktop review of previous land uses within the Proposal area was undertaken by Strategen-JBS&G from a selection of aerial imagery from 1953 to 2020. The existing land use has remained consistent over the past 67 years with the site comprising vacant land of remnant bushland. There is an established sand access track running through the centre and along the southern boundary of the CA. in addition, there are no buildings or infrastructure currently present within the Proposal area or CA. Overall, the aerial photographs between 1953 and 2020 demonstrate no potentially contaminating land uses present within the CA or wider Proposal area.

4.7 Regional Ecological Linkages

A search of the WALGA Regional Ecological Linkages for the Perth Metropolitan Region mapping tool (WALGA 2020) identified one Regional Ecological Linkage which runs directly through the Proposal area (Link ID: 4360). In a local context, this linkage serves to maintain habitat connectivity between Bush Forever site 268 to the southwest, and conservation areas to the north including Frankland Park, Harry Waring Marsupial Reserve, and Thompsons Lake Nature Reserve.

Retention and revegetation of the CA will ensure some habitat connectivity remains between key conservation land areas within the Mandogalup and Kwinana areas (Figure 4.4).



Legend:

- Survey area
- Proposal area
- Conservation area
- Cadastral boundary
- Regional ecological linkages

Scale 1:15,000 at A4

0 100 200
metres

Coord. Sys. GDA 1994 MGA Zone 50

Job No: 56799

Client: Questdale Holdings Pty Ltd

Version: A | Date: 22-Sep-2021

Drawn By: cthatcher | Checked By: WO

Lot 2 and 10 Rowley Road Mandogalup

REGIONAL ECOLOGICAL LINKAGES

FIGURE 4.4

strategen JBS&G

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Image Reference: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

5. Potential impacts to MNES

Activities associated with the Proposal have the potential to impact on MNES. These activities include:

- Native vegetation clearance
- Excavation activities that disrupt surface water flows and contribute to erosion
- Ground disturbance and topsoil movements
- Vehicle movements
- Demarcation activities (fencing) that create barriers to fauna movement or pathways for pest species
- Potential spills of hazardous waste materials
- Noise and dust emissions
- Bushfires
- Generation and storage of waste.

An assessment of the potential impacts and risks to the MNES resulting from the Proposal has been undertaken (Table 5.4) Results of the risk assessment have been used to develop management measures that from part of this CAMP.

5.1 Risk assessment

A qualitative risk assessment was conducted in accordance with the DAWE *Environmental Management Plan Guidelines* to assess the risks of the Proposal. Each environmental risk identified has been provided a likelihood and consequence rating using the criteria in Table 5.1 and Table 5.2 These ratings are then combines using Table 5.3 to generate a risk rating of low, medium, high or severe.

Table 5.1: Likelihood

Qualitative Measures for likelihood (How likely is it that this event/issue after control strategies have been put in place)	
Highly likely	Is expected to occur in most circumstances.
Likely	Will probably occur during the life of the project.
Possible	Might occur during the life of the project.
Unlikely	Could occur but considered unlikely or doubtful.
Rare	May occur in exceptional circumstances.

Table 5.2: Consequence

Qualitative Measures for consequence (what will be the consequence/result if this issue does occur rating)	
Minor	Minor incident of environmental damage that can be reversed.
Moderate	Isolated but substantial instances of environmental damage that could be reversed with intensive efforts.
High	Substantial instances of environmental damage that could be reversed with intensive efforts.
Major	Major loss of environmental amenity and real danger of continuing.
Critical	Severe widespread loss of environmental amenity and irrecoverable environmental damage.

Table 5.3: Risk rating

	Consequence				
	Minor	Moderate	High	Major	Critical
Highly likely	Medium	High	High	Severe	Severe
Likely	Low	Medium	High	High	Severe
Possible	Low	Medium	Medium	High	Severe
Unlikely	Low	Low	Medium	High	High
Rare	Low	Low	Low	Medium	High

Table 5.4: Environmental risk assessment

Value	Potential impacts	Inherent Risk Rating			Management measures	Residual Risk Rating		
		Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Delineation and access	Uncontrolled access within the CA may result in vandalism or damage to native vegetation as a result of waste discharge or soil contamination.	Possible	Moderate	**Medium**	Refer to section 6.1	Rare	Moderate	**Low**
Weed and Pathogens	Introduction and/or spread of weed species and pathogens leading to reduced flora species and system diversity.	Likely	Moderate	**Medium**	Refer to section 6.2.	Possible	Moderate	**Low**
Vegetation	Poor management and/or supervision during works associated with the Proposal may lead to the loss of remnant and native vegetation outside of clearing boundaries.	Possible	Moderate	**Medium**	Refer to sections 6.1, 6.2, and 6.7	Unlikely	Moderate	**Low**
Fauna	Poor management and/or supervision during works associated with the Proposal may lead to the loss of habitat for threatened fauna and migratory species.	Possible	Moderate	**Medium**	Refer to section 6.4.	Unlikely	Moderate	**Low**
	Vehicle interactions resulting in injury or death.	Possible	Moderate	**Medium**	Refer to section 6.4.	Unlikely	Moderate	**Low**
Fire	Works associated with the Proposal have the potential to cause bush fires in the surrounding environment leading to damage or death to local flora, fauna and/ or communities.	Possible	High	**Medium**	Refer to section 6.6	Unlikely	High	**Medium**
Waste	Uncontrolled release of waste may result in pollution to the CA.	Unlikely	Moderate	**Low**	Refer to section 6.3.	Unlikely	Moderate	**Low**
Revegetation	Upon formal handover of the CA to the CoK, any of the completion criteria are determined not to have been met	Possible	Moderate	**Medium**	Refer to section 6.7	Unlikely	Moderate	**Low**

6. Management provisions

6.1 Delineation and access

Delineation of the CA is important during the clearing and extraction phases of the proposal. If the CA is not effectively delineated, then degrading processes such as unapproved clearing and unmitigated vehicle and pedestrian access may become more prevalent, which may in turn increase the risk of weed, phytophthora and waste proliferation within the CA. Delineation and access measures are presented in Table 6.1

Table 6.1: Delineation and access measures

Reference No.	Action	Target	Timing	Responsibility
CAMP 1.	Clearly demarcate the boundary of the CA with star pickets and / or flagging at minimum	To ensure no clearing of vegetation within the CA	Prior to clearing commencing within the Proposal area	Construction contractor
CAMP 2.	• Install appropriate fencing, around the periphery of the CA. • Fencing will be 2 m in height. • Lockable gates are to be installed at appropriate locations to enable vehicle access when required.	To prevent unauthorised vehicle and pedestrian access to the CA	During clearing adjacent to the CA	Construction contractor
CAMP 3.	Install signage on periphery fencing detailing access restrictions and presence of the CA	To discourage unauthorised access to the CA	As periphery fencing is installed	Construction contractor

6.2 Weed and pathogen management

Appropriate management measures will be implemented both prior to and during the clearing and excavation phases of the Proposal to minimise potential introduction and spread of weeds and dieback to vegetation within the CA.

If required, weed management will be implemented using a variety of techniques, including:

- Spot spraying – where hand-spraying is applied directly to a target plant
- Hand weeding – physical removal of the weed.

The Biologic (2020) survey did not observe any evidence for the presence of dieback either within the CA or across the wider Proposal area. As such, there is not anticipated to be any risk of introducing dieback to the CA from the use of topsoil teknclearing activities within the Proposal area, undertaken as a part of the revegetation measures (see section 6.7).

Weed and pathogen management measures are presented below in Table 6.2.

Table 6.2: Weed and pathogen management measures

Reference No.	Action	Target	Timing	Responsibility
CAMP 4.	Prior to entering the CA, all vehicles and machinery are to be free of mud and soil that may have been brought onto site from outside of the Proposal area.	To prevent the introduction of weeds and dieback into the CA	For the duration of this CAMPs implementation	All personnel

Reference No.	Action	Target	Timing	Responsibility
CAMP 5.	Prior to clearing around the periphery of the CA, all vehicles and machinery are to be free of mud and soil that may have been brought onto site from outside of the Proposal area.	To prevent the introduction of weeds and dieback into the CA	During clearing adjacent to the CA	All personnel
CAMP 6.	If necessary, based on the results of monitoring, develop a weed control program and appoint an experienced contractor to manage weeds within the CA.	To ensure weed densities do not increase to a level above 10% cover	During the weed growing season (winter and spring) for the duration of this CAMPs implementation.	Environmental Consultant.
CAMP 7.	Topsoil from clearing activities to be retained and appropriately stockpiled within the Proposal area	To prevent the introduction of new weed species or dieback into the CA	During the clearing and excavation phases of the Proposal	Construction contractor Revegetation Contractor
CAMP 8.	Any seedlings used as part of revegetation activities are to be free of soil that may contain dieback or weeds (i.e., plants must be supplied by a NIASA accredited nursery).	To prevent the introduction of weeds and dieback into the CA	During revegetation	Revegetation Contractor
CAMP 9.	Retained topsoil to be used during revegetation activities	To prevent the introduction of weeds and dieback into the CA	During revegetation	Revegetation Contractor

6.3 Waste management

The increased use of areas surrounding the CA is likely to result in increased unregulated waste disposal within the CA. Unregulated waste can have adverse impacts on flora and fauna within the CA, through the introduction of weeds and dieback, contamination of soils, and by physically endangering native fauna. Waste management actions are presented below in Table 6.3.

Table 6.3: Waste management measures

Reference No.	Action	Target	Timing	Responsibility
CAMP 10.	Chemical, hydrocarbon and other hazardous waste material must be stored at minimum 50 m from the boundary of the CA	To prevent spills impacting native vegetation and fauna habitat within the CA	During the clearing and excavation phases of the Proposal	Construction Contractor
CAMP 11.	Portable ablution blocks must be stored at minimum 50 m from the boundary of the CA.	To prevent spills impacting native vegetation and fauna habitat within the CA	During the clearing and excavation phases of the Proposal	Construction Contractor
CAMP 12.	Undertake a waste removal programme within the CA as per the contingency actions stipulated within Table 8.1, based on monitoring results (Table 7.1).	To prevent the buildup of waste within the CA	As required based on the results of monitoring (Table 7.1)	Project Manager / Construction Contractor

6.4 Fauna and pest management

While the vast majority of the CA (91 %) currently contains suitable habitat for conservation significant fauna, significant opportunity remains beyond revegetation to increase habitat quality and availability within the CA. This includes the translocation of hollow bearing logs into the CA, and the installation of artificial hollows within significant trees.

Management actions for fauna and fauna pest management are detailed below in Table 6.4.

Table 6.4: Fauna and pest management measures

Reference No.	Action	Target	Timing	Responsibility
CAMP 13.	Engage a suitably qualified subcontractor to undertake pest fauna control / removal (including feral bee removal) as per the contingency actions stipulated within Table 8.1, based on monitoring results (Table 7.1).	To ensure artificial hollows remain available for use by black cockatoos, and to mitigate the impacts of herbivory on revegetation activities	As required based on the results of annual monitoring	Environmental Consultant / Project Manager
CAMP 14.	Trees with hollows that are felled during the clearing stage of development are to be trimmed and relocated to the CA where they may provide habitat to native fauna. This will be done to the extent that no degradation to the environment occurs within the CA, and no impediment is made to revegetation or fire management activities.	To increase the availability of native fauna habitat	To be installed during and / or following clearing, following the laying of topsoil within the revegetation area (see section 6.7)	Construction Contractor
CAMP 15.	Methods to reduce competition for breeding hollows from invasive bird species, such as Corella (*Licmetis*) and Galah (*Eolophus roseicapilla*), will be implemented, including: • Top entry artificial hollow design and Larger hollow opening (Groom, 2010) Additional measures, will be derived from *Fauna Note No. 2 - Scaring and Repelling Birds to Reduce Damage* (DEC, 2007).	To ensure artificial hollows remain available for use by black cockatoos	Ongoing following installation of artificial hollows	Environmental Consultant / Project Manager

6.5 Black Cockatoo management

The CA contains foraging and potential breeding habitat for Carnaby's Cockatoo and Forest Red-tailed Black Cockatoo. To minimise direct and potential indirect impacts of the Proposal to Black Cockatoos and their and habitat, a range of management actions have been identified.

Management actions for Black Cockatoos are detailed below in Table 6.5.

Table 6.5: Fauna and pest management measures

Reference No.	Action	Target	Timing	Responsibility
CAMP 16.	Habitat to be cleared within the area of the Proposal Area will be demarcated in the field to ensure clearing only occurs within the approved clearing area	Avoid direct impacts to retained Black Cockatoo habita within the CAs	As required based on the results of annual monitoring	Construction Contractor
CAMP 17.	Installation of three artificial hollows within the CA. Design and placement to be determined in consultation with DBCA and/or other subject matter experts.	To increase the availability of breeding habitat for Black Cockatoos	To be installed within the CA prior to clearing.	Environmental Consultant / Project Manager
CAMP 18.	Revegetation and landscaping within the CA with suitable endemic native species will be undertaken to provide foraging habitat for Black Cockatoos.	Rehabilitation provides suitable foraging habitat within 10 years of completion.	During revegetation	Revegetation Contractor

6.6 Bushfire Management

The CA and wider Proposal area is designated as bushfire prone on the WA map of bushfire prone areas (DFES 2020). Implementation of the Proposal may increase the risk of fire within the CA through:

- The operation of equipment and machinery
- Handling and storage of flammable liquids
- Inappropriate storage of waste materials including cigarette butts
- The presence of vegetation stockpiles which can act as fuel sources

Bushfire mitigation measures are presented below in Table 6.6.

Table 6.6: Bushfire mitigation measures

Reference No.	Action	Target	Timing	Responsibility
CAMP 19.	Store all flammable materials as specified by the manufacturer's instructions at minimum 50 m from the boundary of the CA.	To prevent the occurrence of fire within the CA	During the clearing and excavation phases of the Proposal	Construction Contractor
CAMP 20.	Vehicle movements within the CA will be prohibited during times of increased fire risk or total bans		For the duration of this CAMPs implementation	All personnel
CAMP 21.	Smoking within the CA will be prohibited		For the duration of this CAMPs implementation	All personnel
CAMP 22.	Vegetation stockpiles are to be stored at minimum 50 m from the boundary of the CA		During the clearing and excavation phases of the Proposal	Construction Contractor

6.7 Revegetation

The CA covers an area of approximately 4.1 ha, of which 3.74 ha is currently vegetated. As such, significant opportunity remains for enhancement of the environmental values of the CA, through revegetation.

Revegetation is proposed to be undertaken in all areas of the CA currently designated as "cleared" within Figure 4.2; a total area of 0.36 ha (3600 m^2). The transfer of topsoil from the wider Proposal area in combination with broadcast seeding is proposed as the primary means by which revegetation will be undertaken. Topsoil cuts for transfer purposes will be limited to depths of up to 10 cm to maximise the potential value of transferred topsoil (deeper cuts lead to many seeds being buried too deep for emergence in transfer sites due to mixing during collection, transport and redistribution). The collection of 5 cm of topsoil is optimal for rehabilitation results. Assuming a depth of 10 cm will be cut, a total volume of 360 m^2 will be required for the revegetation area.

Topsoil and native seed will be collected from VT1, within areas mapped as being in Very Good to Excellent condition. This will ensure a species assemblage consistent with the Banksia Woodlands of the Swan Coastal Plain TEC.

Should revegetation not meet the completion criteria within two years of revegetation commencing, then infill planting using native seedlings will be undertaken, and per the contingency actions within Table 8.1. Any seedlings used will be sought from NIASA accredited nurseries.

Revegetation will be undertaken to ensure the completion criteria within Table 6.7 are achieved prior to formal handover of the CA to the CoK. Should any completion criteria not be achieved prior

to formal handover, then the associated contingency measures within Table 8.1 will be implemented. Revegetation management measures are presented in Table 6.8.

Table 6.7: Revegetation completion criteria

Aspect	Completion Criteria
Weeds	No greater than 10% weed cover within the revegetation area
	No Weeds of National Environmental Significance are present within the revegetation area
Diversity	At least 20 native species are represented within the revegetation area
Cover	Native species have grown to cover at least 80% of the revegetation area

Table 6.8: Revegetation measures

Reference No.	Action	Target	Timing	Responsibility
CAMP 23.	Undertake seed collection from VT1 throughout the Proposal area	To ensure completion criteria are met (Table 6.7)	For at least one season prior to revegetation commencing	Environmental Consultant / Revegetation contractor
CAMP 24.	Undertake seed viability and germination testing if deemed necessary	To ensure completion criteria are met (Table 6.7)	Prior to application of seed	Revegetation Contractor
CAMP 25.	Treat seed as appropriate for each species to break dormancy and improve germination rates.	To ensure completion criteria are met (Table 6.7)	Prior to application of seed	Revegetation Contractor
CAMP 26.	Collect topsoil from the wider Proposal area, from locations mapped as VT1 and where vegetation is of Very Good to Excellent condition.	To ensure completion criteria are met (Table 6.7)	Immediately following clearing in the area	Construction Contractor
CAMP 27.	If topsoil is being stockpiled prior to reapplication, these stockpiles will be clearly marked so their source and future use are known.	To ensure topsoil is not contaminated or misplaced prior to use	Following topsoil collection, prior to reapplication	Construction Contractor
CAMP 28.	Minimise the length of time topsoil is stockpiled	To ensure seed viability is maintained	Following topsoil collection, prior to reapplication	Construction Contractor
CAMP 29.	Respread topsoil within revegetation area to a maximum thickness of 10 cm using appropriate machinery (e.g. loader, bobcat).	To ensure completion criteria are met (Table 6.7)	Winter	Construction Contractor
CAMP 30.	Combine treated seed with an appropriate medium (e.g. yellow sand or vermiculite) and manually distribute (i.e. broadcast by hand) by an experienced operator, ensuring an even coverage over the whole area.	To ensure completion criteria are met (Table 6.7)	Winter, following application of topsoil	Revegetation contractor

7. Monitoring and assessment

The following monitoring actions have been developed to enable an assessment of the effectiveness of the management actions (Table 7.1).

Fire management will be monitored in accordance with any future relevant Bushfire Management Plan.

Table 7.1: Monitoring actions

Parameter	Timing / frequency	Location	Purpose	Responsibility
Delineation and access				
Condition of delineation infrastructure	Quarterly for the duration of this CAMPs implementation	At perimeter of CA, where delineation infrastructure has been installed	To ensure that delineation infrastructure is in good condition and there has been no unauthorised access into the CA	Construction Contractor
Weed and pathogen management				
Assessment of distribution, species and density / cover of weed species	Annually for the duration of this CAMPs implementation	Within 30 meters of the perimeter of the CA	To minimise the spread, or introduction, of weeds within retained vegetation within the CA	Environmental Consultant / Project Manager
Inspection of vehicles and machinery entering the CA	Prior to entering the CA	Perimeter of CA	To ensure appropriate dieback hygiene measures are being undertaken	Vehicle operator
Waste management				
Assessment of volume of waste within the CA	Annually for the duration of this CAMPs implementation	Within 30 meters of the perimeter of the CA	To minimise the volume of waste deposited within the CA	Environmental Consultant / Project Manager
Fauna and pest management				
Evidence / presence of pests / feral animals and associated damage to native vegetation / fauna, including assessment of artificial black cockatoo nesting tubes for the presence of feral bees or invasive bird species.	Annually for the duration of this CAMPs implementation	Within 30 meters of the perimeter of the CA and at each artificial nesting tube	To determine the presence of pests / feral animals within the CA and whether damage is occurring to native vegetation or fauna as a result.	Environmental Consultant / Project Manager.
Black Cockatoo Management				
Clearing area (ha) of Black Cockatoo foraging habitat	Pre and Post clearing at perimeter of CA	At perimeter of CA, where delineation infrastructure has been installed	To ensure clearing of Black Cockatoo habitat within CA does not occur	Environmental Consultant / Project Manager.
Assessment of usage of artificial and natural hollows within the CA	Annually for the duration of this CAMPs implementation	at each artificial nesting tube and known natural hollow.	To determine usage of hollows by Black Cockatoos	Environmental Consultant / Project Manager.
Presence/absence and quality of foraging habitat available in CA	Annually in Spring following initial planting works	Throughout revegetation area (Figure 4.1).	To assess the efficacy of revegetation activities	Environmental Consultant / Project Manager
Revegetation				

Parameter	Timing / frequency	Location	Purpose	Responsibility
Annual revegetation monitoring, assessing: • Weed species and percentage cover • Native species and percentage cover • Evidence of threatening processes (such as herbivory)	Annually in Spring following initial planting works	Throughout revegetation area (Figure 4.1).	To assess the efficacy of revegetation activities	Environmental Consultant / Project Manager

8. Corrective actions

Corrective actions will be initiated if monitoring indicates that management measures have not been successful or effective and/ or trigger criteria are being met (Table 8.1).

Table 8.1: Corrective actions

Parameter	Trigger criteria	Action	Responsibility
Delineation and access	Damage has been reporting to delineation infrastructure, including fencing or signage	1. Determine cause of damage 2. Prevent recurrence of damage where possible 3. Take necessary steps to repair damaged infrastructure	Project Manager / Construction Contractor
	Unauthorised vehicle / personnel reported within the CA	1. Determine how access was gained and if possible, the likely time of access 2. Implement remedy, which may include repairing damaged infrastructure or the installation of additional signage	Project Manager / Construction Contractor
Weed and pathogen management	Identification of a "Declared Pest" weed species within the CA (e.g. *Zantedeschia aethiopica*)	1. Undertake weed control as required, with the objective of eradicating all identified Declared Pests from the CA	Environmental Consultant / Revegetation Contractor
	Monitoring indicates that weed densities are over 10%	1. Develop a weed control program and appoint an experienced contractor to manage weeds within the CA, with the objective of reducing weed cover to below 10%	Environmental Consultant / Revegetation Contractor
	Vehicles which have not been inspected for mud and soil access the CA	1. The vehicle must be stopped and inspected for mud and soil. If the vehicle is deemed to be clean it can to continue to be used within the CA. 2. If a build-up of mud and soil is identified, then the vehicle must be removed offsite for cleaning.	Vehicle operator
Waste	Monitoring indicated that the level of waste within the CA has increased from levels recorded in the first year of monitoring	1. Undertake waste removal from the CA as required	Environmental Consultant / Project Manager
Fauna and pests	Approximately 20 % of monitoring sites show evidence of damage by animals (i.e. herbivory)	1. Investigate cause 2. Undertake intervention or remediation works if required (move bins, fencing, trapping, baiting or hive removal). 3. Monitor success of works.	Environmental Consultant / Project Manager
	Evidence of feral predators observed within or surrounding the CA.		
	Artificial nesting tubes are observed to contain feral bees		

Parameter	Trigger criteria	Action	Responsibility
Black Cockatoos	Clearing of Black Cockatoo foraging/breeding habitat beyond area of the Proposal	1. Stop works (temporary) 2. Record environmental incident 3. Investigate cause 4. Update environmental training of personnel (if appropriate)	Project Manager / Construction Contractor
	Failure of rehabilitation	1. Investigate cause 2. Refine species lists and rehabilitation methodologies (if appropriate) 3. Update environmental training of personnel (if appropriate) 4. Schedule repeat of rehabilitation works or supplementary infill planting in failed areas	Environmental Consultant / Revegetation Contractor.
	Failure of artificial hollows	1. Investigate cause 2. Consider redesign and relocation (if appropriate)	Environmental Consultant / Revegetation Contractor.
Bushfire	Fire incident within the CA	1. Investigate cause 2. Consult with local fire authorities in relation to improvements in fire mitigation measures 3. Amend and update figure mititgation measures following consultation 4. Communicate outcomes to all contractors	Project Manager / Construction Contractor / Environmental Consultant
Revegetation	Annual monitoring indicates that less than 20 native plant species are represented within the revegetation area	1. Undertake infill planting / seeding with additional species as required.	Environmental Consultant / Revegetation Contractor.
	Annual monitoring indicates that native plant species are not achieving 80 % cover of the revegetation area	1. Determine cause of deficient coverage. 2. Undertake infill planting / seeding as required	Environmental Consultant / Revegetation contractor
	Annual monitoring indicates herbivory as the primary cause of plant mortality within the revegetation area	1. Determine scale and extent of herbivory observed. 2. Undertake preventative measures, which may include the installation of exclusion fencing, tree guards, or the implementation of a pest animal control program.	Environmental consultant / Revegetation Contractor.

Parameter	Trigger criteria	Action	Responsibility
	Upon the transfer of responsibility for management of the CA to the CoK, any of the completion criteria are determined not to have been met	1. In consultation with the CoK, determine additional management actions to be implemented. These may include: a. Extending the period of management of the CA for another year b. Revising the completion criteria c. Undertaking additional infill planting / weed control	Environmental consultant

9. Reporting

A report summarising the results of all monitoring will be prepared annually, for provision to the Project Manager. This monitoring report is also to be provisioned to the CoK, EPA, or DAWE upon request. The report may be used as evidence of legal compliance or non-compliance and must be correct and auditable. The annual monitoring report will include at minimum:

- Methodology employed during monitoring
- Monitoring results
- Assessment of revegetation against completion criteria
- Details of any contingency actions implemented
- Recommendations for changes to this CAMP if required.

10. Adaptive management and review

The Proponent will implement an adaptive management system to provide a robust management plan, which effectively meets the environmental objectives. To achieve this, this CAMP will be reviewed regularly (at least biennially) to ensure that the plan takes into consideration:

- Any revision or change to the Proposal
- Results of annual monitoring
- Outcomes of compliance assessment reporting
- Continuous improvement
- Changes in regulatory or corporate requirements.

If revised, a copy of the revised CAMP will be provided to DWER and DAWE for approval prior to implementation of the revised CAMP.

11. Plan implementation

This CAMP will be implemented by Questdale Holdings Pty Ltd in association with Frankland Sand Supplies until responsibility for management of the CA is transferred to the CoK. Management of the CA is proposed to be transferred to the CoK within five years from the date of commencement of the proposed action.

11.1 Roles and responsibilities

All contractors and staff are required to operate in accordance with this CAMP. Key personnel and responsibilities are described in the following sections.

11.1.1 Project Manager

The primary responsibilities of the Project Manager include:

- Act as primary liaison between the Construction Contractor, Environmental Consultant, and CoK
- Ensure all construction contracts contain relevant environmental management provisions
- Review all relevant reports provided by the construction contractor and Environmental consultant
- Report to DAWE and the EPA in accordance with the requirements of section 9 of this CAMP

11.1.2 Construction Contractor

The primary responsibilities of the Construction Contractor include:

- Overall accountability to ensure construction activities do not adversely affect retained vegetation and fauna habitat within the CA
- Ensure all site personnel are aware of the requirements of the CAMP and related management plans, in particular dieback management
- Undertake regular monitoring of the integrity of delineation infrastructure during construction.

11.1.3 Environmental Consultant

The primary responsibilities of the environmental consultant will include:

- Act as primary liaison between the Revegetation Contractor and Project Manager
- Ensure the Construction Contractor is aware of the vegetation and fauna habitat to be retained within the CA
- Undertaking required monitoring within the CA and implementation of any associated corrective actions.

11.1.4 Revegetation Contractor

The primary responsibilities of the revegetation contractor include:

- Implementation of seed collection, storage, and revegetation works, including associated maintenance, within the CA.

11.1.5 City of Kwinana

It is proposed that the primary responsibility of the CoK is to provide for the long-term management and protection of retained vegetation and habitat within the CA.

12. Limitations

Scope of services

This report ("the report") has been prepared by Strategen-JBS&G in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Strategen-JBS&G. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

Reliance on data

In preparing the report, Strategen-JBS&G has relied upon data and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise expressly stated in the report, Strategen-JBS&G has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. Strategen-JBS&G has also not attempted to determine whether any material matter has been omitted from the data. Strategen-JBS&G will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to Strategen-JBS&G. The making of any assumption does not imply that Strategen-JBS&G has made any enquiry to verify the correctness of that assumption.

The report is based on conditions encountered and information received at the time of preparation of this report or the time that site investigations were carried out. Strategen-JBS&G disclaims responsibility for any changes that may have occurred after this time. This report and any legal issues arising from it are governed by and construed in accordance with the law of Western Australia as at the date of this report.

Environmental conclusions

Within the limitations imposed by the scope of services, the preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted environmental consulting practices. No other warranty, whether express or implied, is made.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

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