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# MEMORANDUM

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| **Date** | 8 May 2025 | **Title** | FCT SCP21c Cowalla Offset Site |
| **Ref.** | MRWA24002_MEM_21c_Rev0 | **Distribution** | Clare Collett – Main Roads Western Australia<br>Mel Portman – Main Roads Western Australia |
| **Author** | Lisa Chappell<br>Associate Environmental Scientist/ Botanist | **Review/ Authorisation** | John Braid<br>Principal Environmental Consultant<br>Kellie Bauer-Simpson<br>Principal Ecologist |

## 1 BACKGROUND AND SCOPE

Focused Vision Consulting (FVC) is currently assisting Main Roads Western Australia (Main Roads), in revising and updating the WA offset strategy for the Great Eastern Highway Bypass Interchanges (GEHBI) project. As part of this strategy, a number of offset sites have been proposed to counterbalance significant environmental impacts, including those affecting Priority 3 Ecological Community (P3 PEC) Swan Coastal Plain (SCP)21c – Low-lying *Banksia attenuata* woodlands and shrublands.

Lot 87 and 88 Duringen Road, Cowalla ('Cowalla' offset site) is one of the sites proposed as an offset for several environmental factors for the GEHBI project, including: the P3 PEC SCP21c – Low-lying *Banksia attenuata* woodlands and shrublands and P3 PEC Banksia Woodlands of the Swan Coastal Plain and wetlands. In 2021, FVC conducted a biological assessment within Lots 87 and 88 Duringen Road, Cowalla (formerly Lots 5324 and 8037), to identify flora, vegetation, fauna and Black-Cockatoo values (FVC 2023).

Statistical analysis of floristic data from quadrats within the offset site confirmed the presence of numerous Floristic Community Types (FCTs), including SCP21c. The biological assessment resulted in mapping of vegetation units, as per Environmental Protection Authority (EPA) Technical Guidance (EPA 2016), but did not include mapping of the extent of individual FCTs (FVC 2023), and vegetation units can be comprised of a mosaic of differing FCTs. To determine a suitable offset for SCP 21c within the broader Cowalla offset site, it is necessary to define the spatial extent of this FCT.

This memorandum outlines the methodology used to identify an offset for SCP21c (10.36 ha) within the Cowalla offset site as a suitable ecological offset for the GEHBI project.

### 1.1 SCP 21C – LOW LYING *BANKSIA ATTENUATA* WOODLANDS AND SHRUBLANDS

The SCP21c P3 PEC, is also a component of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed Banksia Woodlands of the Swan Coastal Plain Endangered Threatened Ecological Community. SCP21c is largely restricted to the Bassendean system and tends to occupy lower lying wetter sites and is variously dominated by *Melaleuca preissiana, Banksia attenuata, B. menziesii, Regelia ciliata, Eucalyptus marginata* or *Corymbia calophylla*. Structurally, this community type may be either a woodland or occasionally shrubland (DBCA 2023).

Two other *Banksia* dominated FCTs occur within the Cowalla offset site (SCP22 and SCP 23b) (FVC 2023). SCP 22 – *Banksia ilicifolia* Woodland also occurs on low lying sites; however, generally consist of *Banksia ilicifolia* and *Banksia attenuata* woodlands (DBCA 2023) where *Banksia ilicifolia* is dominant. SCP23b - Northern *Banksia attenuata – Banksia menziesii* woodlands (Gibson *et. al* 1994), quadrats occur within the offset site, but these differ from SCP 21c, as they occur on flat sandplain with very low dunes (DPIRD_027).

## 2 METHODOLOGY

In order to map areas of SCP21c within the Cowalla offset site, the following analysis was undertaken based on the results of FVC (2023):

1. Identify all quadrats within the survey area that were inferred to represent SCP21c
2. Determine the vegetation units that contain quadrats representative of SCP21c
3. Assessment of landform, relative elevation, soils and hydrology to determine areas of lower-lying Banksia woodlands
4. Identify a patch of vegetation that is likely to represent SCP21c that contains:
    a. A quadrat representing FCT SCP21c
    b. Low lying Banksia woodlands
5. Determine the extent of the patch based on the mapped extent of that vegetation unit and vegetation condition in that location.

## 3 RESULTS

A total of six vegetation units and two 'other' mapped areas (Open water and Cleared) were defined within the Cowalla offset site, consisting of *Banksia* Woodlands, *Melaleuca / Banksia* Woodland, *Melaleuca / Callitris* Woodland, *Melaleuca* Shrubland and Scattered *Xanthorrhoea* (FVC 2023). Floristic data analysis was carried out for all flora quadrat data recorded from within the survey area, utilising PATN™ multivariate cluster analysis of species presence/absence to determine similarities between each quadrat, and to group them as aligning vegetation units.

FCTs classify vegetation based on a combination of species composition, structure and the landform on which they occur (DBCA 2024). Floristic analysis of recorded quadrat data was then assessed against the complete Gibson *et al.* (1994) and Keighery *et al.* (2012) datasets for FCTs, in order to infer and assign FCTs to each of the quadrats.

Six FCTs were inferred as present within the defined vegetation units (**Table 1**) (FVC 2023). Vegetation units BaBmMp (*Banksia* Woodland) and MpBaBm (*Melaleuca / Banksia* Woodland) are the only two vegetation units with quadrats determined to be representative of SCP 21c (**Table 1**). The location of eight quadrats representative of SCP21c are presented in **Figure 1**.

**Table 1 – Summary of Recorded Vegetation Units in the Survey Area (FVC 2023)**

| Vegetation Unit | Quadrat | Inferred FCT |
|---|---|---|
| **BaBmEt**<br>Banksia Woodland | C01, C03, C05, C07, C10, C15, C21, C23, C24, C25, C30, C32, C35, C36, C41 | FCT 23b – Northern *Banksia attenuata – Banksia menziesii* woodlands |
| **BaBmMp**<br>Banksia Woodland | **C16, C27, C29, C33, C38** | **FCT 21c – Low lying *Banksia attenuata* woodlands or shrublands** |
| | C20, C28 | FCT 22 – *Banksia illicifolia* woodlands |
| | C02, C06, C18, C19, C26 | FCT 23b – Northern *Banksia attenuata – Banksia menziesii* woodlands |
| **MpBaBm**<br>Melaleuca / Banksia Woodland | C14, C22 | FCT 4 – *Melaleuca preissiana* damplands |
| | **C12, C13, C34** | **FCT 21c – Low lying *Banksia attenuata* woodlands or shrublands** |
| **MpCp**<br>Melaleuca / Callitris Woodland | C04, C08, C09, C40, C42 | FCT 4 – *Melaleuca preissiana* damplands |
| **MrKgMt**<br>Melaleuca Shrubland | C17, C37, C39 (inconclusive) | FCT S20 – Northern shrublands on sandy clays |
| | C17, C31, C39 | FCT 5 – Mixed Shrub Damplands |
| | C11 | No inferred FCT |

Vegetation unit BaBmMp recorded the largest number of quadrats (five) showing affinity to SCP21c (**Table 1**). In addition, vegetation unit BaBmMp recorded 76 species in common with the Gibson/Keighery dataset for SCP21c, whilst vegetation unit MpBaBm only recorded 34 species in common. Typically, common species of SCP21c, such as *Corymbia calophylla* and *Lyginia barbata*, *Petrophile linearis*, *Buchardia congesta* and *Lomandra caespitosa* were also recorded in vegetation unit BaBmMp. Due to the higher proportion of species in common with SCP21c, as well as the presence of typical characteristic species, vegetation unit BaBmMp was concluded to be more comparable to SCP21c than was vegetation unit MpBaBm.

Of the five quadrats (C16, C27, C29, C33 and C38) that were recorded within vegetation unit BaBmMp and representative of SCP21c, quadrat C38 (**Figure 1**) was determined to be the most suitable location for a SCP21c offset for the following reasons:

- It showed a high affinity with SCP21c based on floristic analysis results
- It is within a relatively small patch of vegetation unit BaBmMp (17.5 ha), all of which is in 'Excellent' condition (FVC 2023)
- It occurs in an area of consistent elevation (approximately 50 m AHD) within the lowest lying parts of the landform on the Cowalla site
- There is distinctly higher elevation to the west and east
- Soil mapping data (DPIRD_027) indicates that area is low-lying, comprising of humic dark grey swampy soils
- It occurs adjacent to wetlands and wetland vegetation (indicating low-lying area).

The patch of SCP21c was determined to be the extent of vegetation unit BaBmMp mapped in the proximity of quadrat C38. **Figure 2** shows the extent of the patch (10.36 ha) of SCP21c proposed as part of the GEHBI offset strategy.

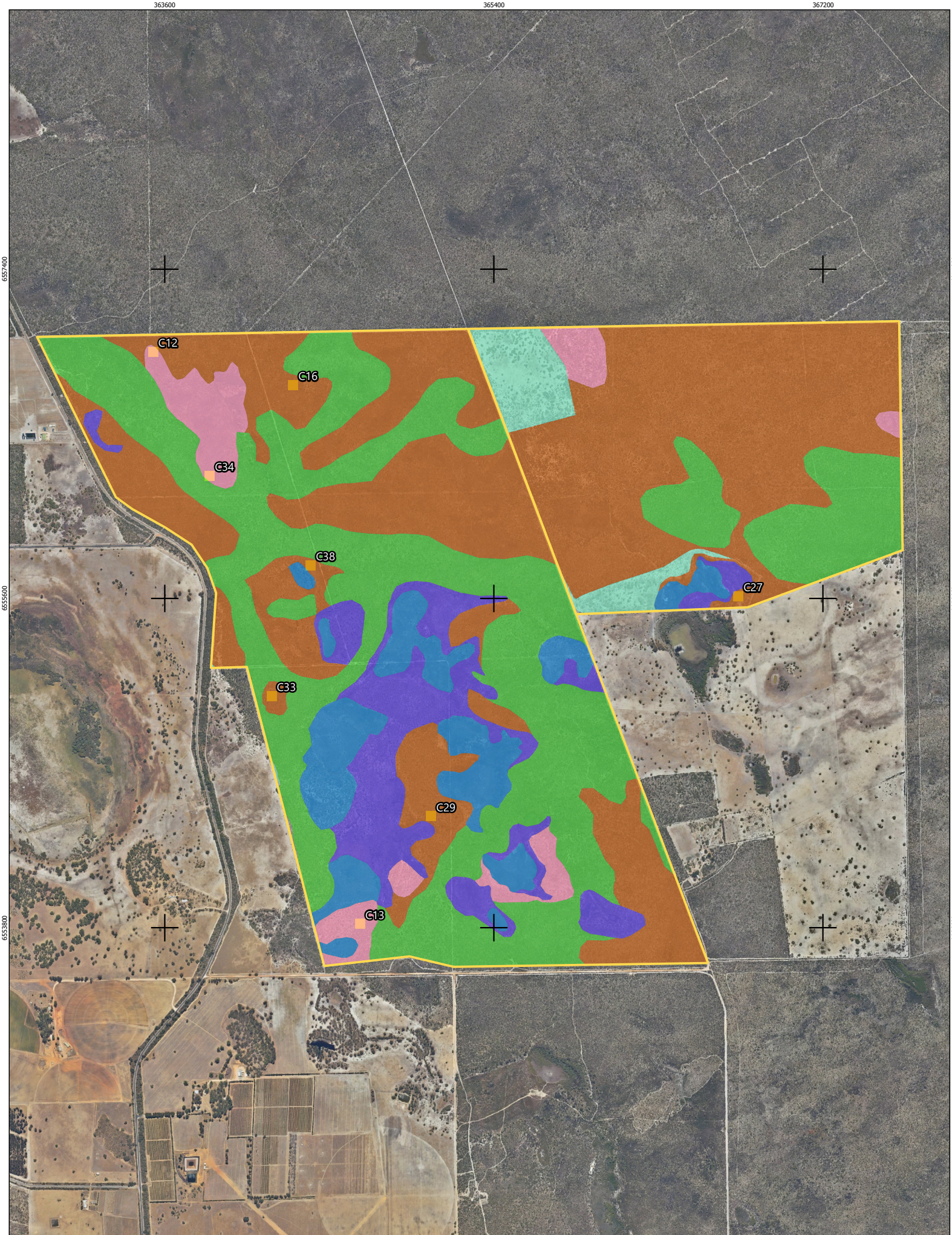


**Figure 1 - SCP 21c Quadrat Locations within all Defined Vegetation Units (FVC 2023)**

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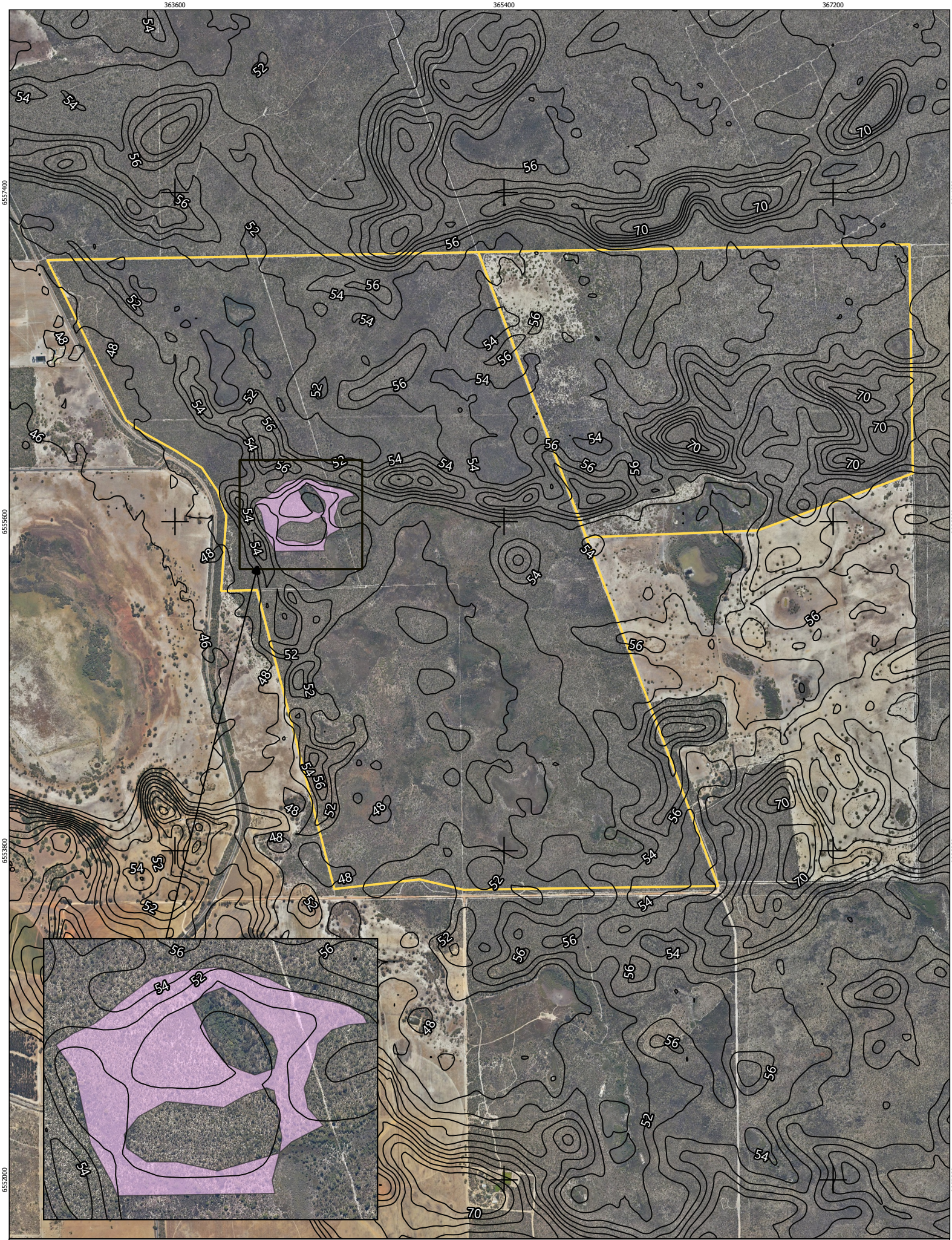


**Figure 2 - Proposed SCP21c Offset Site**

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# 4 DISCUSSION

The two-phase detailed flora and vegetation assessment reported in FVC (2023) sampled a total of 42 quadrats within the Cowalla offset site, with 28 quadrats containing *Banksia* spp. resampled during phase 2. This level of survey detail was considered adequate to assess the floristic values of the site, as per the DBCA recommended survey methodology to determine FCTs on the Swan Coastal Plain (DBCA 2024). Analyses using the "single site insertion" technique was not carried out, although similarities between each individual survey quadrat and reference quadrats were analysed via a dissimilarity matrix and this approach is not considered to have been a limitation of the FCT analysis.

A vegetation unit may contain one or a suite of FCTs (DBCA 2024). This is because FCTs can change rapidly within the same vegetation unit, without a visible change in the vegetation, due to the presence and absence of a small number of species altering the floristic composition, and therefore, the FCT. The only way to determine a FCT is through quadrat analysis, not vegetation mapping (DBCA 2024).

This analysis reported herein has attempted to map an area most likely to support SCP21c within the Cowalla offset site. It is considered that SCP21c certainly occurs within the Cowalla offset site since eight quadrats out of 42 were identified as likely to be representative of SCP21c – but its extent within any given vegetation unit cannot be conclusively determined by the survey information available. The proposed SCP21c offset site was chosen due to its relatively small size (17.5 ha), 'Excellent' condition and consistent environmental characteristics including soils and elevation within local landform, reducing the potential that the site might support more than one FCT. The approach used to determine the extent of a patch of SCP21c as described in this correspondence is considered sufficiently robust and conservative to provide adequate certainty that the extent presented in **Figure 2** is representative of SCP21c and therefore, an appropriate offset for unavoidable impacts to the FCT.

# 5 CLOSING

Should you require further information or clarification regarding the information provided in this report, please do not hesitate to contact the undersigned.

Best regards,

John Braid
Principal Environmental Consultant
Focused Vision Consulting Pty Ltd

# 6 REFERENCES

Department of Biodiversity, Conservation and attractions (DBCA) (2023) *List of Priority Ecological Communities. Accessed May 2025 from* List of Priority Ecological Communities. Department of Biodiversity, Conservation and Attractions (dbca.wa.gov.au)

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Gibson, N., Keighery, B., Keighery, G., Burbidge, A. and Lyons, M. (1994) *A floristic survey of the Southern Swan Coastal Plain.* Unpublished report for the Australian Heritage Commission, prepared by the Department of Conservation and Land Management and the Conservation Council of Western Australia (Inc.).