



### 8.2.6 Floristic Community Types

The floristic data collected from the flora study area were compared against the floristic data from Gibson et al. (1994) and the floristic data for the SCP (Keighery et al., 2012) to determine the floristic community type (FCT) representation (Appendix C).

The sites sampled within the flora study area aligned with 20 separate FCTs (Table 8.4). The location of the FCTs across the flora study area and proposal footprint is provided on Figure 8.3. SCP21c was the most represented type across the flora study area with 23 sites, followed by SCP11 with 17 sites and SCP23b with 14 sites.

**Table 8.4 Floristic community type determination**

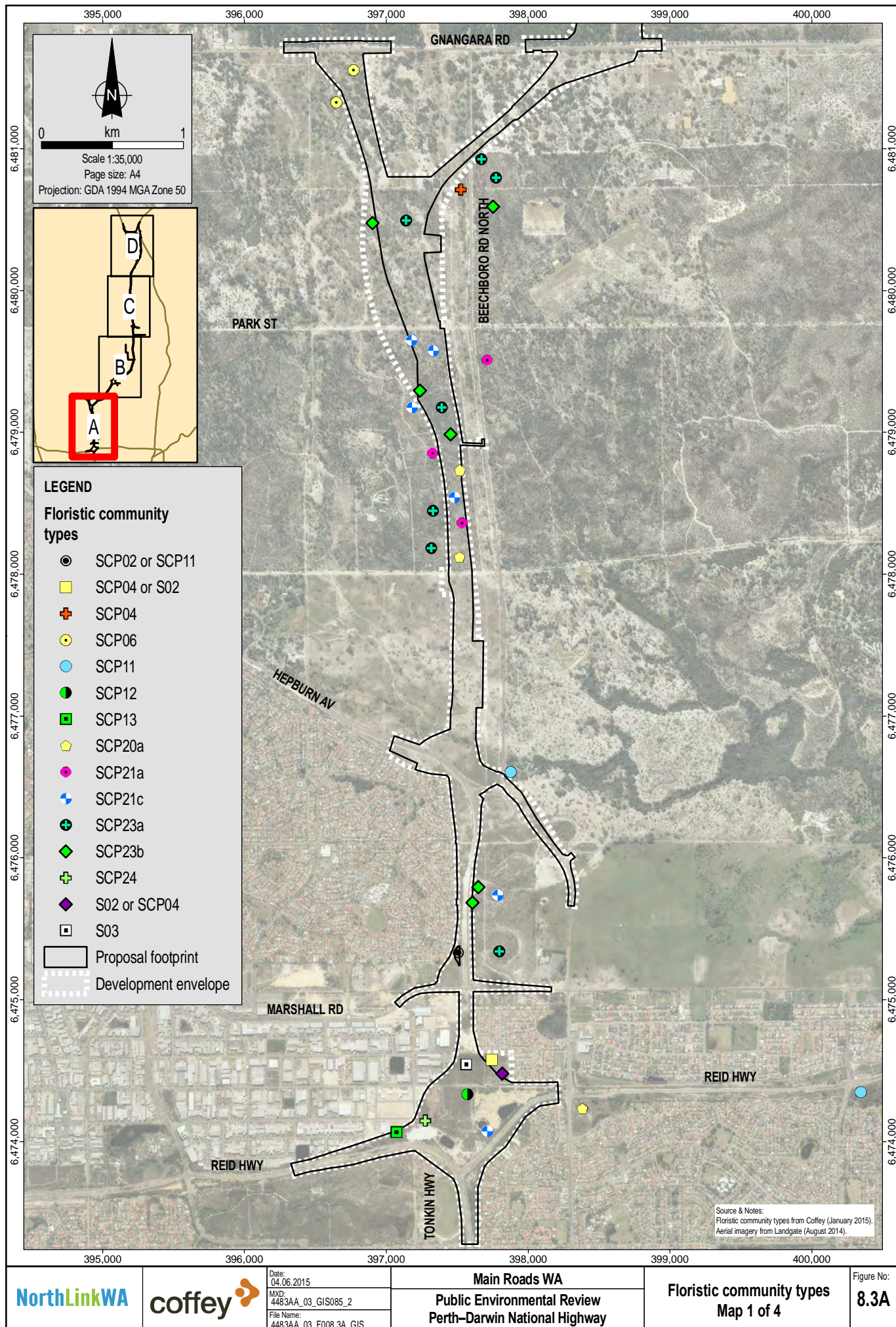
FCT	Description	State listing <sup>1</sup>
S02	Northern <i>Pericalymma ellipticum</i> dense low shrublands	–
S03	Wet sedgeland on sandy clays	–
S09	<i>Banksia attenuata</i> woodlands over dense low shrublands	–
SCP02	Southern wet shrublands	TEC (EN)
SCP04	<i>Melaleuca preissiana</i> damplands	–
SCP05	Mixed shrub damplands	–
SCP06	Weed dominated wetlands on heavy soils	–
SCP11	Wet forests and woodlands	–
SCP12	<i>Melaleuca teretifolia</i> and/or <i>Astartea</i> aff. <i>fascicularis</i> shrublands	–
SCP13	Deeper wetlands on heavy soils	–
SCP14	Deeper wetlands on sandy soils	–
SCP17	<i>Melaleuca raphiophylla</i> – <i>Gahnia trifida</i> seasonal wetlands	–
SCP20a	<i>Banksia attenuata</i> woodlands over species rich dense shrublands	TEC (EN)
SCP21a	Central <i>Banksia attenuata</i> – <i>Eucalyptus marginata</i> woodlands	–
SCP21c	Low lying <i>Banksia attenuata</i> woodlands or shrublands	PEC (3)
SCP22	<i>Banksia ilicifolia</i> woodlands	PEC (2)
SCP23a	Central <i>Banksia attenuata</i> – <i>Banksia menziesii</i> woodlands	–
SCP23b	Northern <i>Banksia attenuata</i> – <i>Banksia menziesii</i> woodlands	PEC (3)
SCP24	Northern Spearwood shrublands and woodlands	PEC (3)
SCP28	Spearwood <i>Banksia attenuata</i> or <i>Banksia attenuata</i> – <i>Eucalyptus</i> woodlands	–

1. State listing definitions:

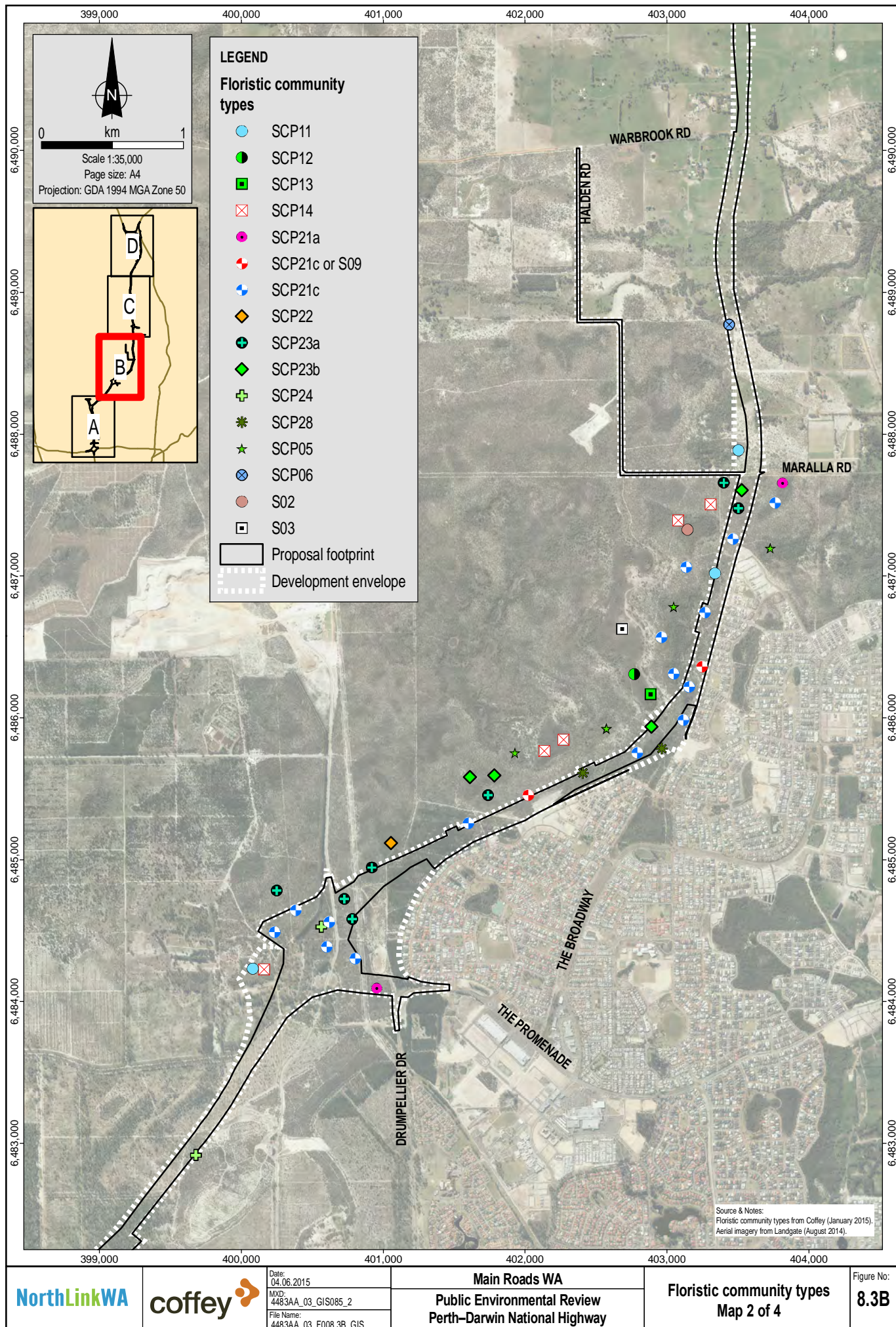
TEC (EN): Endangered Threatened Ecological Community.

PEC (2): Priority 2 Priority Ecological Community.

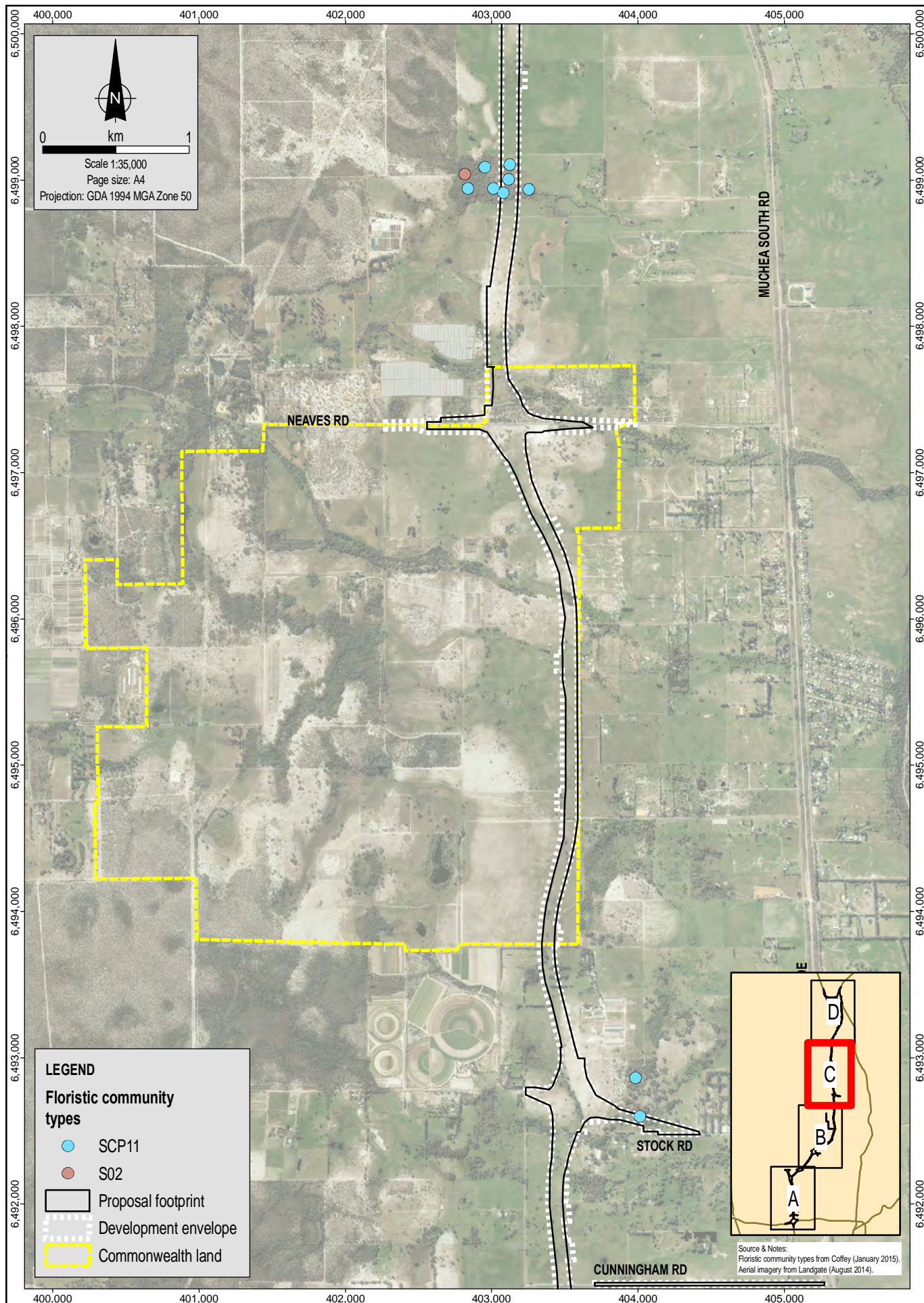
PEC (3): Priority 3 Priority Ecological Community.



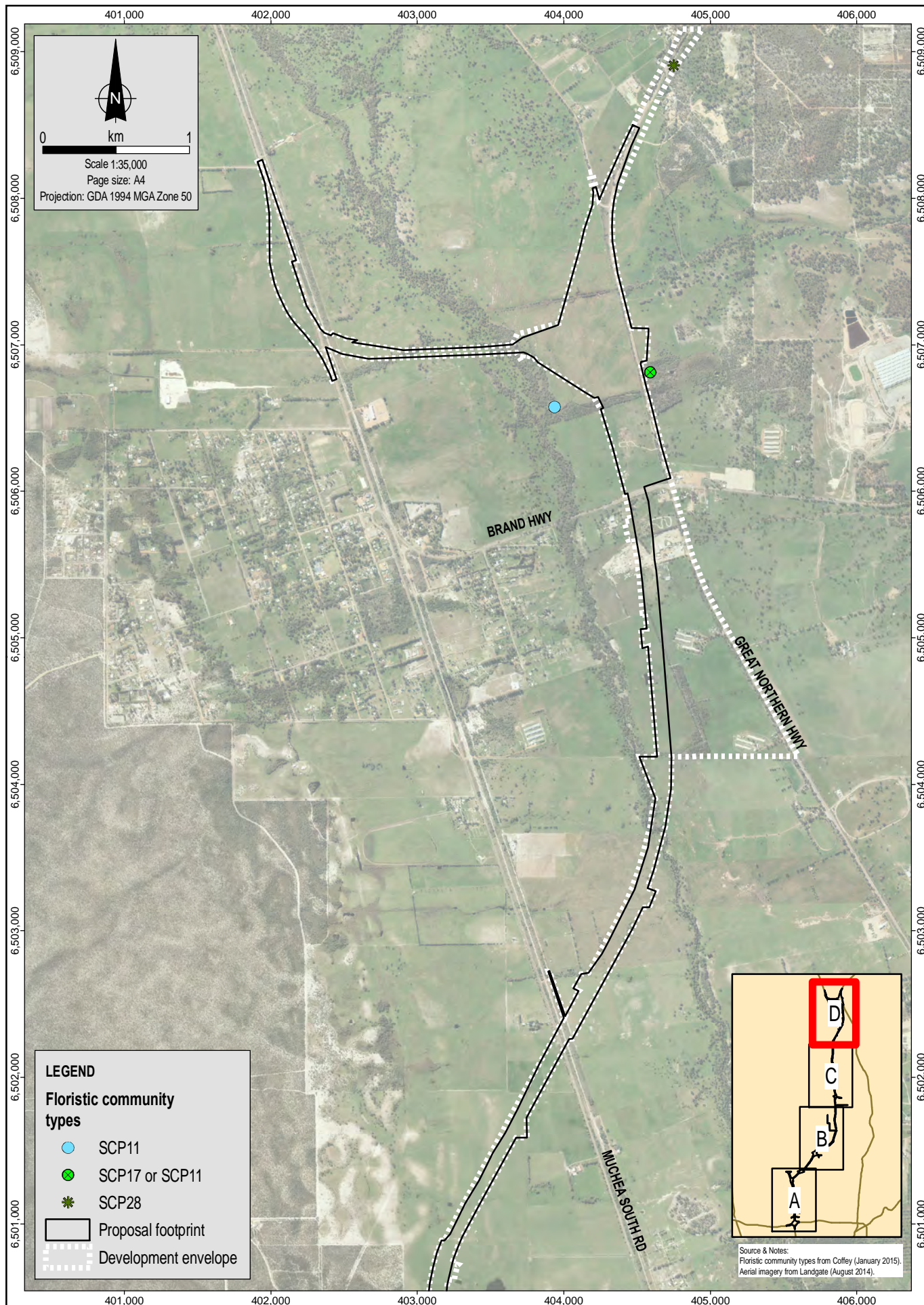














### 8.2.7 Threatened and Priority Ecological Communities

An ecological community is a naturally occurring group of plants, animals and other organisms interacting in a unique habitat. The complex range of interactions between the component species provides an important level of biological diversity in addition to genetics and species.

A desktop review of DPAW's Threatened Ecological Communities (TECs) and Priority Ecological Communities (PECs) database (DPAW, 2015) and DOTE protected matters search tool for TECs (DOTE, 2014c) identified nine State listed TECs, five State listed PECs, and seven Commonwealth listed TECs as potentially occurring within the flora study area (Figure 8.4). The search parameters used for each search (DPAW and DOTE) are provided in Appendix C.

In addition to the known PECs and TECs, the survey and statistical analysis (Coffey, 2015a) recorded one State and Commonwealth listed TEC (Claypans of the SCP - Claypans with mid dense shrublands of *Melaleuca lateritia* over herbs or *Casuarina obesa* association) and one State PEC (*Banksia* dominated woodlands on the Swan Coastal Plain) from the flora study area (see Figure 8.4). The State (Critically Endangered) and Commonwealth (Endangered) listed TEC, Mound Springs SCP, occurs within the flora study area, and outside of the development envelope.

The location of the Commonwealth TEC, Claypans of the SCP, may represent either the Priority 1 PEC Claypans with mid dense shrublands of *Melaleuca lateritia* over herbs or the Priority 1 PEC *Casuarina obesa* association. For the purposes of this assessment, this community is considered as the Commonwealth TEC, Claypans of the SCP. One site sampled within the flora study area was considered to correspond with either FCT SCP11 or SCP17. However, based on the vegetation present and the location, this may be a misclassification due to the presence of introduced taxa (Appendix C).

The presence of *Casuarina obesa* in the upper storey may suggest the site is better placed within the Priority 1 PEC *Casuarina obesa* association. Alternatively, the presence of clay based soils and *Melaleuca lateritia* may also indicate that the site closely resembles the Priority 1 PEC Claypans with mid dense shrublands of *Melaleuca lateritia* over herbs. This PEC is also classified as Claypans of the Swan Coastal Plain under the EPBC Act and is ranked as Critically Endangered. The PEC occurs on claypans (predominantly basins) usually dominated by a shrubland of *Melaleuca lateritia* and can occur on both the coastal plain and the adjacent plateau. The claypans are characterised by aquatic (*Hydrocotyle lemnoides* – P4) and amphibious taxa (e.g. *Glossostigma diandrum*, *Villarsia capitata* and *Eleocharis keigheryi* – T).

The State TEC SCP02 was identified based on the multivariate statistical analysis. The sample site was considered to match both SCP02 and SCP11. Given the location, soil type and species representation it is unlikely to be the TEC SCP02. Further survey work is required to confirm if the site is consistent with SCP02. MRWA is committed to completing additional surveys in spring 2015, including the establishment of new quadrats and the sampling of existing quadrats, to determine the FCT. The survey design and timing will be determined in consultation with the Species and Communities Branch of DPAW. It is anticipated that further analysis on the potential TEC will be available in spring 2015. Survey results will be provided to the EPA as part of the response to submissions process to inform the EPA's assessment of the proposal.

The '*Banksia* dominated woodlands on the Swan Coastal Plain' is listed as a Priority 3 PEC. Based on the description, the relevant vegetation associations dominated by *Banksia attenuata* and *Banksia menziesii* on the SCP represent this PEC. *Banksia dominated woodlands on the Swan Coastal Plain* is also represented by TEC SCP20a and PECs SCP21c, SCP22, SCP23b and SCP24.


The TECs and PECs known to occur within and adjacent to the flora study area and those recorded are described in Table 8.5.



**Table 8.5** TECs and PECs occurring near or within the flora study area

Community name	Community description	State conservation status	Commonwealth conservation status	Vegetation association occurrence	Indicative extent within the flora study area (ha)
Claypans of the SCP	Claypans of the SCP.	(TECs and PECs under numerous communities with clay soils)	Critically Endangered	Co and Mp <sup>10</sup>	9.77
SCP07	Herb rich saline shrublands in clay pans.	Vulnerable	Critically Endangered	–	–
Mound Springs SCP	Communities of Organic Mound Springs, SCP TEC.	Critically Endangered	Endangered	Mp <sup>1</sup>	1.49
Muchea Limestone	Shrublands and woodlands on Muchea Limestone of the SCP.	Critically Endangered	Endangered	–	–
SCP20c	Shrublands and woodlands of the eastern side of the SCP.	Critically Endangered	Endangered	–	–
SCP3a	<i>Corymbia calophylla</i> – <i>Kingia australis</i> woodlands on heavy soils, SCP.	Critically Endangered	Endangered	–	–
SCP3c	<i>Corymbia calophylla</i> – <i>Xanthorrhoea preissii</i> woodlands and shrublands, SCP.	Critically Endangered	Endangered	–	–
Coastal Saltmarsh	Subtropical and Temperate Coastal Saltmarsh.	Priority 1	Vulnerable	–	–
SCP20a	<i>Banksia attenuata</i> woodland over species rich dense shrublands.	Endangered	–	BaBm <sup>2</sup> and Et <sup>1</sup>	12.31
SCP20b	<i>Banksia attenuata</i> and/or <i>Eucalyptus marginata</i> woodlands of the eastern side of the SCP.	Endangered	–	–	–
SCP3b	<i>Corymbia calophylla</i> – <i>Eucalyptus marginata</i> woodlands on sandy clay soils of the southern SCP.	Vulnerable	–	–	–
SCP22	<i>Banksia ilicifolia</i> woodlands.	Priority 2	–	Mp <sup>2</sup>	3.37

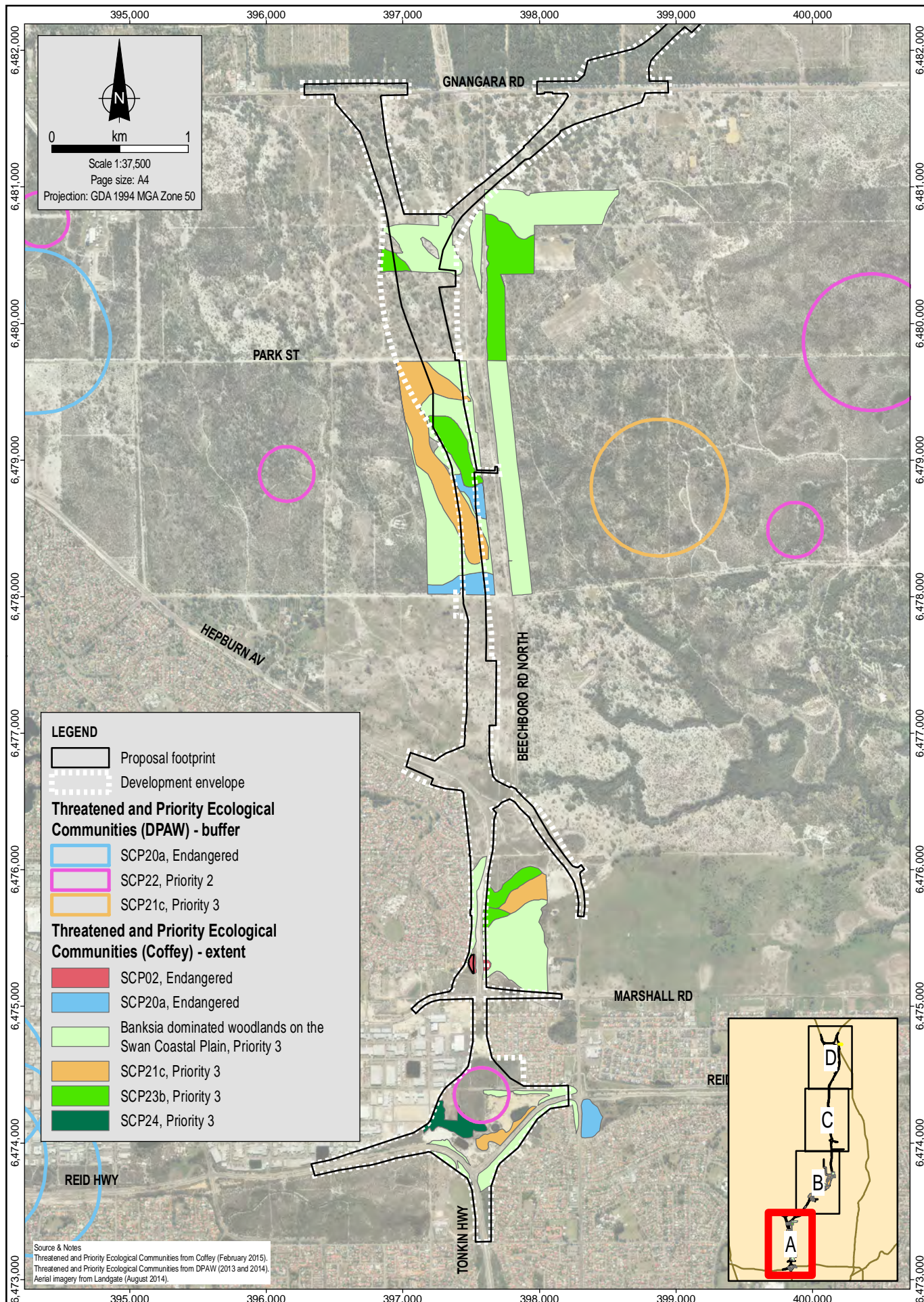




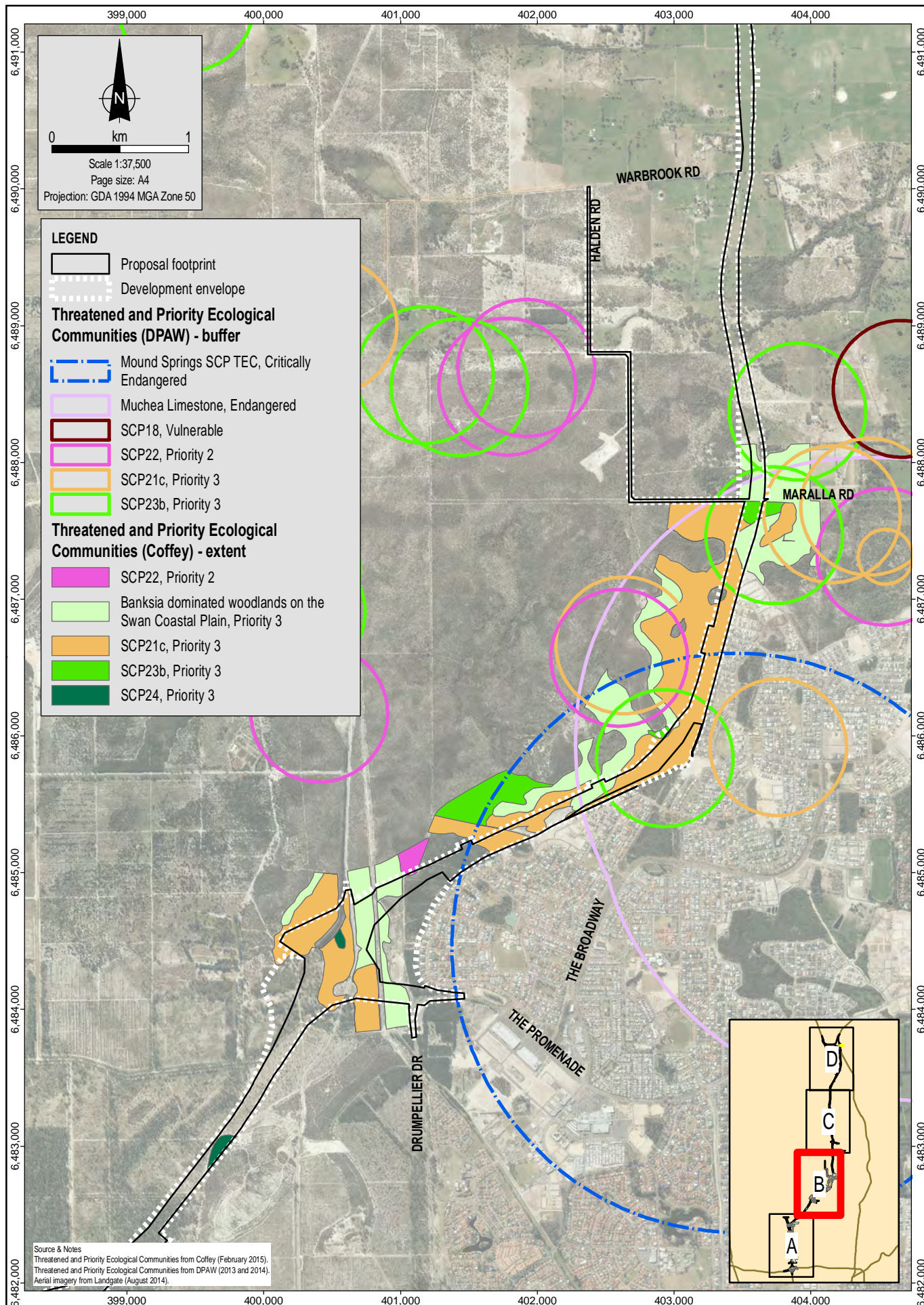
Community name	Community description	State conservation status	Commonwealth conservation status	Vegetation association occurrence	Indicative extent within the flora study area (ha)
SCP21c	Low lying <i>Banksia attenuata</i> woodlands or shrublands.	Priority 3	—	Ba, BaBm <sup>1</sup> , BaBm <sup>2</sup> , BaBm <sup>3</sup> , BaBmMp, Cc <sup>7</sup> , CcEm <sup>1</sup> , CcEm <sup>2</sup> , CcMp, Cc/Mp, Em <sup>1</sup> , Ep, Et <sup>2</sup> and Pr	177.95
SCP23b	Swan Coastal Plain <i>Banksia attenuata</i> – <i>Banksia menziesii</i> woodlands.	Priority 3	—	BaBm <sup>1</sup> , BaBm <sup>2</sup> , BaBm <sup>3</sup> , CcEm <sup>2</sup> , Et <sup>1</sup> and Et <sup>2</sup>	57.50
Central Granite Shrublands (Com 5, Markey)	Central Northern Darling Scarp Granite Shrubland Community.	Priority 4	—	—	—
SCP02	Southern Wet Shrublands	—	Endangered	Mp <sup>3</sup>	1.36
SCP24	Northern Spearwood shrublands and woodlands	Priority 3	—	BaBm <sup>3</sup> and Em <sup>1</sup>	8.09
<i>Banksia</i> dominated woodlands on the Swan Coastal Plain	<i>Banksia attenuata</i> and/or <i>Banksia menziesii</i> woodlands on deep sands on the SCP.	Priority 3	—	Ba, BaBm <sup>1</sup> , BaBm <sup>2</sup> , BaBm <sup>3</sup> , BaBmMp, Cc <sup>3</sup> , Cc <sup>6</sup> , Cc <sup>7</sup> , CcEm <sup>1</sup> , CcEm <sup>2</sup> , Em <sup>1</sup> , Et <sup>1</sup> , Et <sup>2</sup> and Et <sup>3</sup>	488.10

Source: Coffey (2015a) (Appendix C).

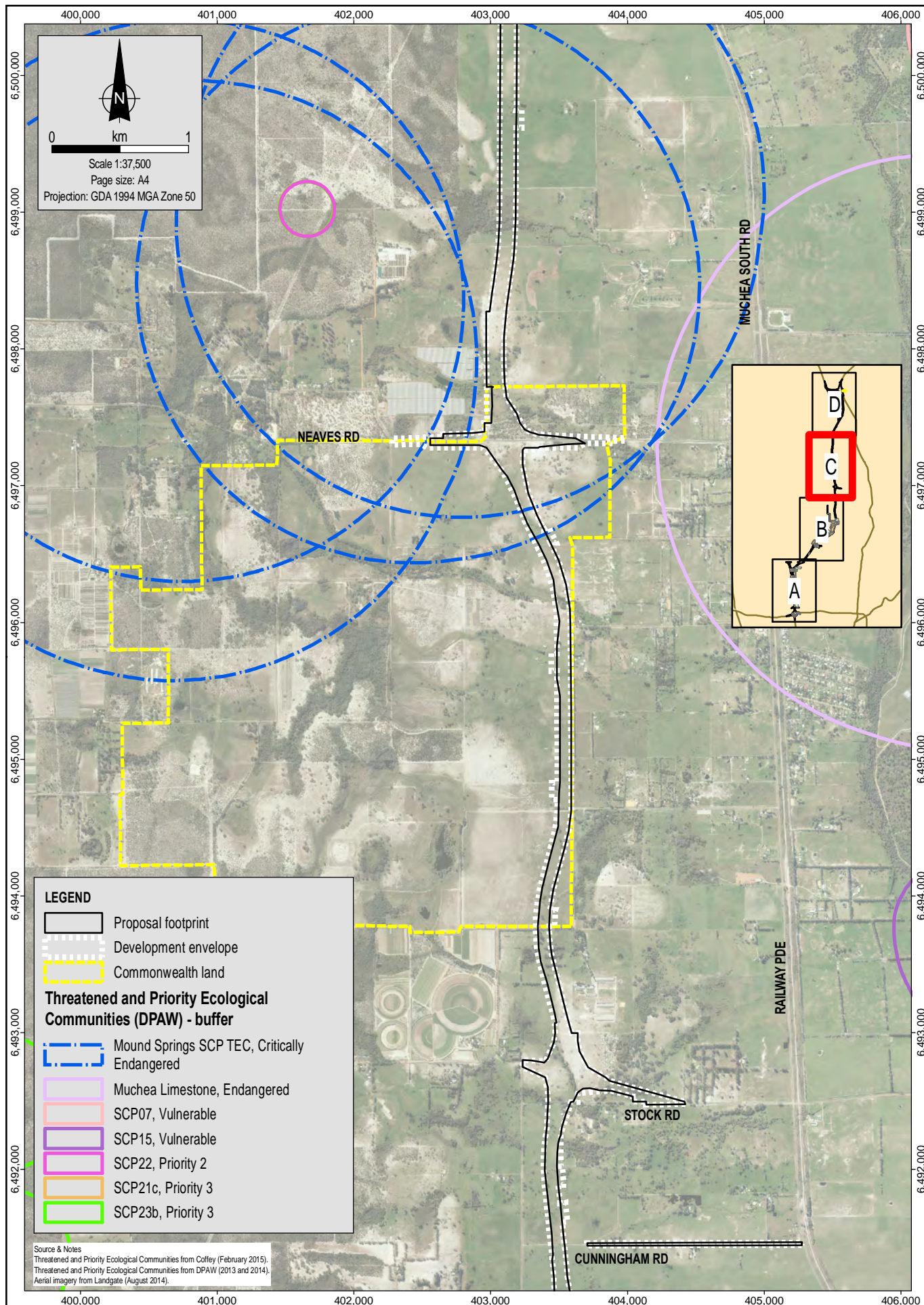




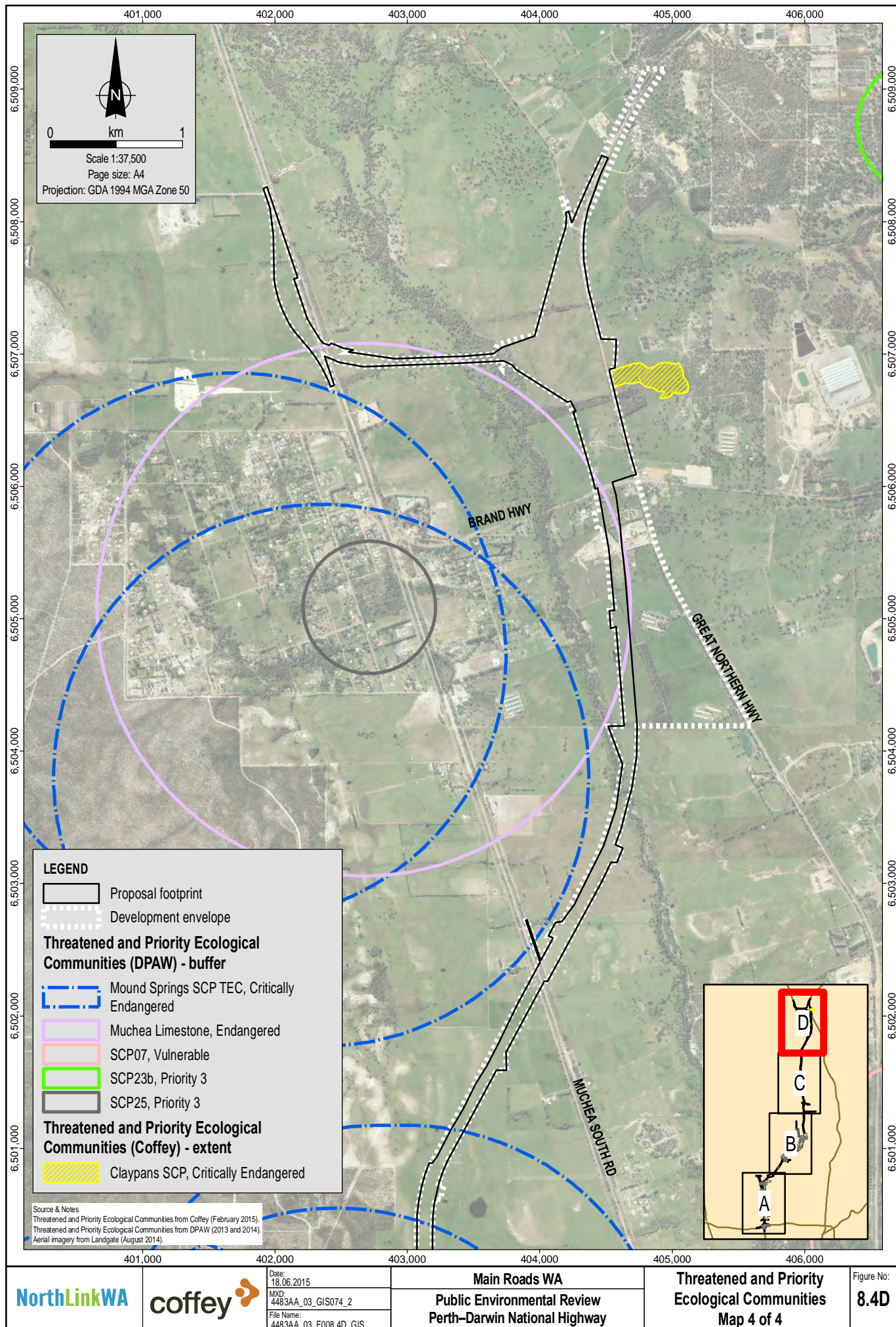














### 8.2.8 Vegetation Supporting Significant Flora

The vegetation associations that support habitat for conservation significant flora (Threatened and Priority listed) recorded from the study area that are considered to be locally significant for the continual survival of those significant flora are listed in Table 8.6.

**Table 8.6 Locally significant vegetation associations supporting threatened and priority taxa**

Vegetation association	Threatened and priority taxa present
AsMIEvCI	<i>Meeboldina decipiens</i> subsp. <i>decipiens</i> ms
BaBm <sup>1</sup>	<i>Poranthera moorokatta</i>
BaBm <sup>2</sup>	<i>Anigozanthos humilis</i> subsp. <i>chrysanthus</i> , <i>Hypolaena robusta</i> and <i>Millotia tenuifolia</i> var. <i>laevis</i>
BI	<i>Poranthera moorokatta</i>
Cc/Mp	<i>Millotia tenuifolia</i> var. <i>laevis</i> and <i>Poranthera moorokatta</i>
CcEm <sup>2</sup>	<i>Millotia tenuifolia</i> var. <i>laevis</i>
CcMpMr	<i>Grevillea curviloba</i> subsp. <i>Incurva</i>
Em <sup>2</sup>	<i>Stylidium striatum</i>
Er <sup>3</sup>	<i>Poranthera moorokatta</i>
Er <sup>6</sup>	<i>Ornduffia submersa</i>
Et <sup>2</sup>	<i>Anigozanthos humilis</i> subsp. <i>chrysanthus</i> , <i>Caladenia huegelii</i> , <i>Hypolaena robusta</i> and <i>Poranthera moorokatta</i>
Mp <sup>1</sup>	<i>Cyathochaeta teretifolia</i>
Mp <sup>6</sup>	<i>Cyathochaeta teretifolia</i>

Source: Coffey (2015a).


### 8.2.9 Fragmentation and Ecological Corridors

The flora study area is located within the Perth IBRA subregion, which has historically been cleared for urban and industrial development and silviculture/agriculture. The historical clearing has resulted in only 42% (or 473,176 ha) of the pre-European extent of native vegetation within the Perth IBRA subregion (1,117,757 ha) remaining intact (DPAW, 2013b). This historical clearing has placed greater emphasis on the importance of the remaining intact native vegetation and ensuring linkages are maintained to allow ecological movement, including fauna and genetic material.

A Regional Ecological Linkage Network plan produced aims to link protected regionally significant natural areas by retaining the best condition local natural areas available so they can act as linkage corridors for flora and fauna to move between regionally significant areas (WALGA, 2004). The flora study area is located across several of these key ecological linkages (Figure 8.5). Ecological linkage corridors occur at the following locations (from north to south):

- Gaston Road, Bullsbrook. This linkage corridor incorporates the known TEC Mounds Spring SCP and connects Bush Forever Site 97 in the west with Bush Forever Site 292 in the east.
- Raphael Road, Bullsbrook near the proposed Cooper Road separation. This corridor links Bush Forever Sites 6 and 399 in the west with Ellen Brook, which provides a north–south ecological corridor.



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- Maralla Road Nature Reserve. This linkage corridor connects the State Forest (F 65) with Ellen Brook and represents a pinch point between the State Forest in the west and native vegetation on the eastern SCP and the Darling Scarp.
  - Rocla mining lease area. A north–south ecological linkage corridor is located at the proposed Promenade grade separation in Ellenbrook. The corridor links the State Forest in the north with Whiteman Park in the south.
  - Cullacabardee. The east–west corridor links Lake Jandabup and Gngara Lake in the northwest with Whiteman Park in the east.
  - Reid Highway. The east–west linkage corridor connects vegetation from the coastline east towards Bennett Brook at the southern end of Whiteman Park.



