

Report of a Targeted Rare Flora Survey for *Verticordia attenuata* along Bussell Highway between  
Capel and the Sabina River

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Prepared for Main Roads Western Australia  
January 2017



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## Statement of limitations

### Reliance on Data

In the preparation of this report, Ecoedge has relied on data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations, most of which are referred to in the report. Unless stated otherwise in the report, Ecoedge 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 are based in whole or in part on the data, those conclusions are contingent upon the accuracy and completeness of the data. Ecoedge will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, unavailable, misrepresented or otherwise not fully disclosed to Ecoedge.

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## 1 Introduction

Ecoedge was engaged by Main Roads Western Australia (Main Roads) in August 2016 to undertake a rare flora survey targeting *Verticordia attenuata*, a Priority 3 species under the *Wildlife Conservation Act 1950* (WC Act), along Bussell Highway between Capel and the Sabina River (**Figure 1**).

Main Roads intends to expand the dual carriageway along this section of Bussell Highway. The Department of Environment Regulation has issued a clearing permit (CPS 7016) for part of the clearing associated with the roadworks subject to the *Verticordia attenuata* survey.

Ecoedge carried out a Level 1 Flora and Vegetation Survey across the majority of the Survey Area (excluding the northern-most 3.75 kilometres (km)) in the spring of 2013 (Ecoedge, 2014), however as *Verticordia attenuata* is a summer flowering species, it was not identifiable at the time. A follow-up targeted survey for the species during its flowering period was therefore required.

The survey was undertaken in accordance with the Environment Protection Authority (EPA) and Department of Parks and Wildlife (DPaW) Technical Guide (EPA and DPaW, 2015).

This report compiles findings of the desktop study and field survey.

### 1.1 Scope of works

The scope of works for the survey was to:

- Map the location of any *Verticordia attenuata* plants found (record Global Positioning System (GPS) coordinates);
- Mark these in the field with metal stakes and day-glo flagging tape;
- Record relevant information for each, including number of individuals and distance from the bitumen edge;
- Briefly assess the nearby area adjacent to the study area boundary to determine the extent of the population; and
- Prepare an associated report, including maps, detailing findings of the survey.

### 1.2 Site Location and Description

The Survey Area, situated between the Capel and Busselton townsites, is comprised of three sections of Bussell Highway totalling approximately 12.5 km in length. They are dispersed along a 17.15 km stretch of the Bussell Highway (**Figure 1**).

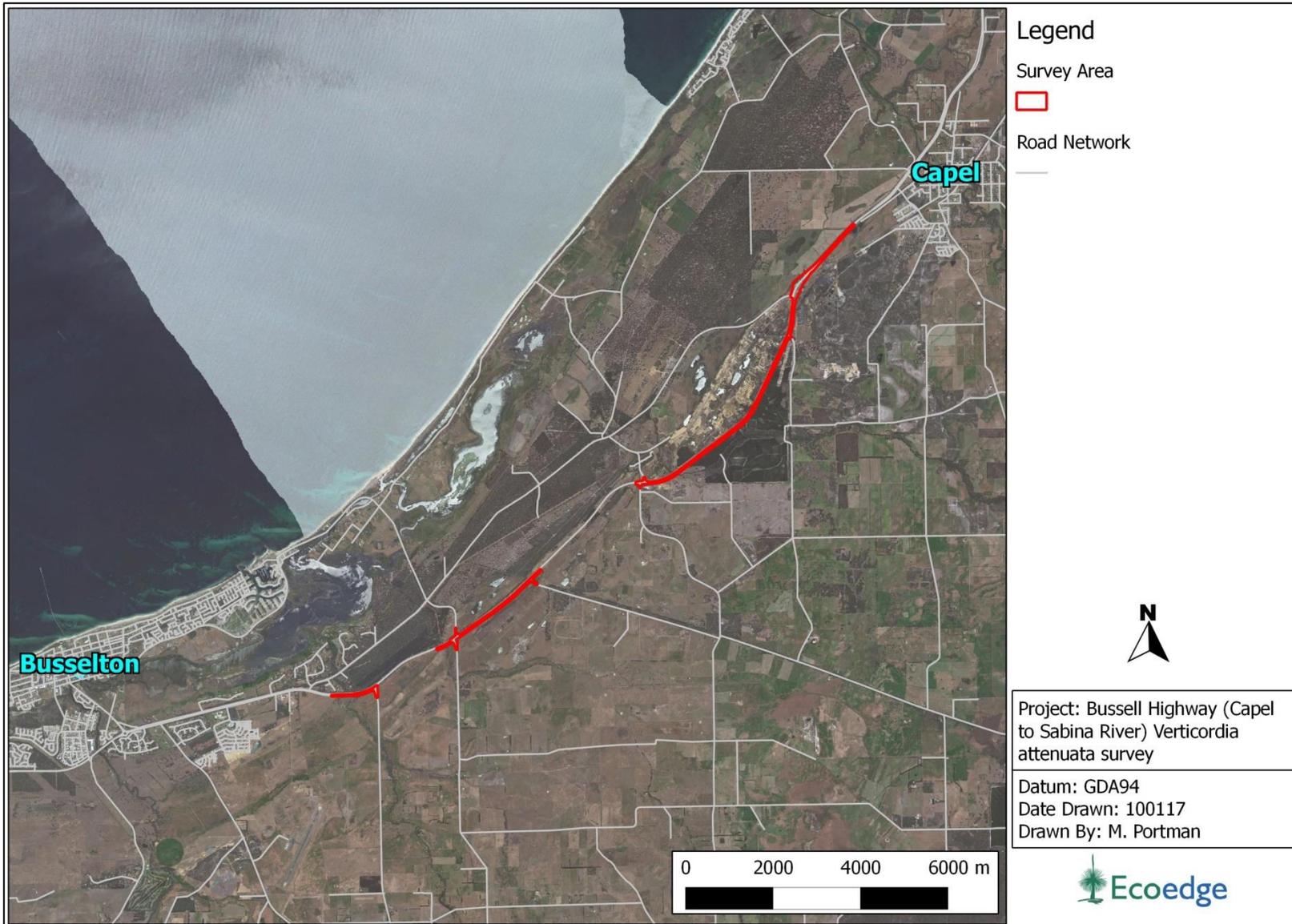


Figure 1. Map showing the Survey Area location.

### 1.3 Species Description, Distribution and Habitat

*Verticordia attenuata* is a small woody shrub, 0.4 - 1 metres high. Its pink flowers are usually present between December or January to May (**Figure 3, 3**). Its preferred habitat is white or grey sand winter-wet depressions on the southern Swan Coastal Plain between Australind and Fish Road reserve south of Busselton. It is represented by 53 records in the NatureMap database (DPaW, 2016a). A photograph of the species' habitat is presented in **Figure 4**.



Figure 2. *Verticordia attenuata*. (Photo taken by Russell Smith)



Figure 3. *Verticordia attenuata* in flower. (Photo taken by Tiffany Bennet).



Figure 4. Photograph of *Verticordia attenuata* habitat within the Survey Area (the pink flowers of the species can be seen in the background). (Photo taken by Russell Smith).

### 1.3.1 Conservation Status

*Verticordia attenuata* is listed as Priority Three (P3) under the WC Act. Priority Three species are described as:

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent

threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey (DPaW, 2015).

## 2 Methods

### 2.1 Desktop Study

Prior to the conducting field survey, a 'desktop study' was carried out. This involved assessments of reports of previous flora surveys in the area and of extracts from DPaW's and the Western Australian Museum's (WAM's) Rare and Priority flora databases (DPaW, 2016b). Known locations of *Verticordia attenuata* within a 5 km radius of the Survey Area are shown in **Figure 5**.

### 2.2 Field Survey

The survey was carried out on 12 December 2016. The search targeted areas previously mapped by Ecoedge (2014) as Vegetation Units G (*Kunzea glabrescens* (*Viminaria juncea*) tall shrubland) and H (*Melaleuca preissiana* low open forest/low woodland), or areas of wetland vegetation in the part of the Survey Area not previously surveyed. These vegetation units were targeted because they constitute the preferred habitat of the species.

A GPS unit was used to record the locations of any *Verticordia attenuata* observed, and assessments of distance to the bitumen edge and the size of the populations were also recorded.

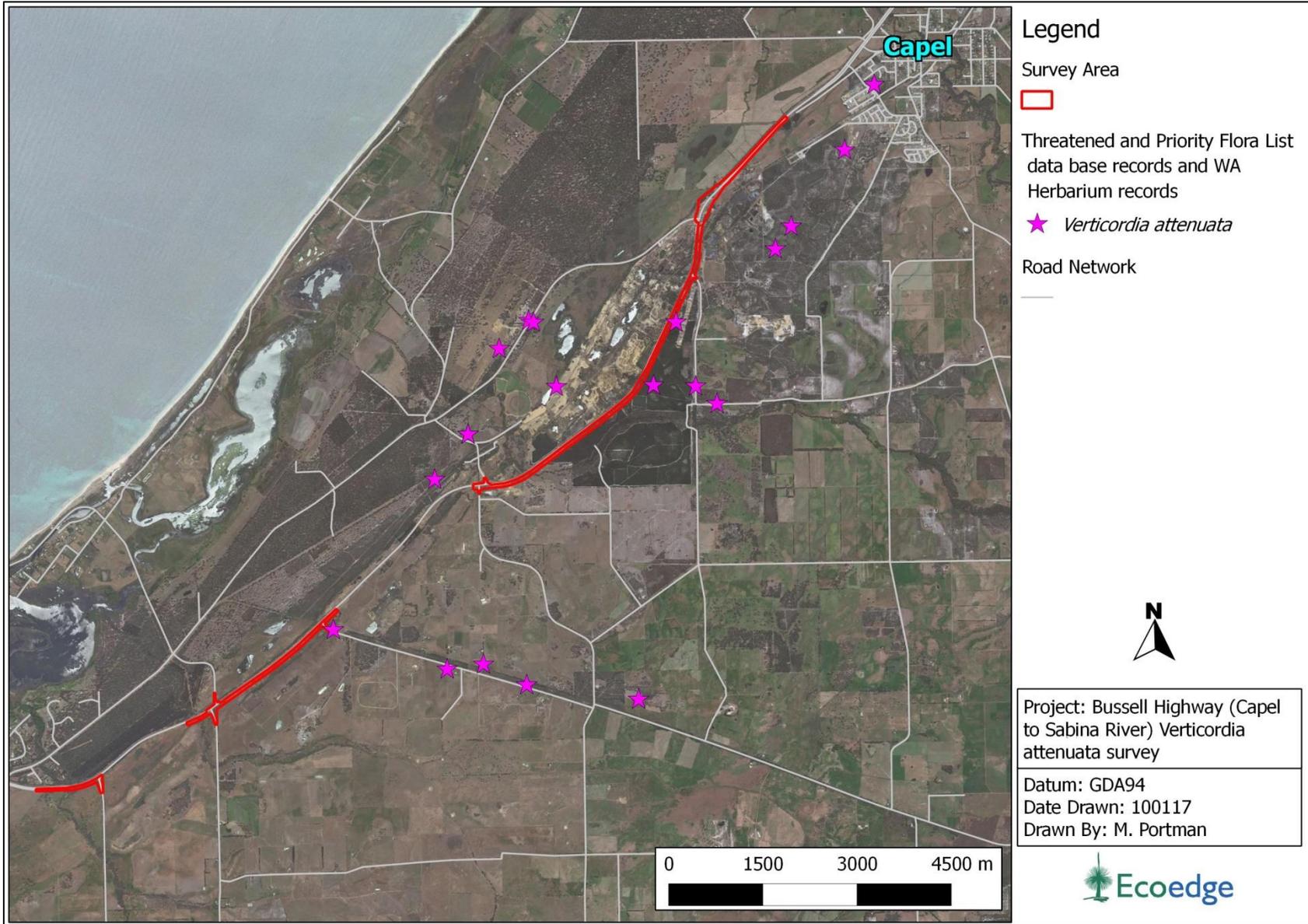


Figure 5. Known locations of *Verticordia attenuata* as recorded in DPaW and WAM databases (DPaW, 2016a)

### 2.3 Survey Limitations

Limitations in regards to the survey are presented in **Table 1**.

Table 1. Limitations of the *Verticordia attenuata* survey.

Aspect	Constraint	Comment
Scope	No	The survey scope was prepared in consultation with the relevant stakeholders and was designed to comply with EPA requirements.
Access	No	All of the survey area was accessible on foot.
Proportion of flora identified	No	The survey area was searched thoroughly on foot.
Completeness of the survey	No	The 2016 winter/spring season was ideal for the species because of high winter rainfall. Rainfall over three winter months was slightly above average, and September was also above average.
Skill and knowledge of the botanists	Negligible	The senior field botanist conducting the survey has had extensive experience in botanical survey in south west Australia over a period of 25 years.

### 3 Results

Seven discrete populations of supporting approximately 2879 *Verticordia attenuata* plants were identified (two of them comprised of two sub-populations) – the details of each of presented in **Table 2**, below. The population sizes range from a few to over two thousand plants, and cover 0.63 ha in total area. Mostly the nearest point of the populations to the bitumen is more than 20 m, however there are three closer than this – with Population B being only 10 m from the bitumen.

For mapping purposes, the Survey Area has been divided into three sections, as shown in **Figure 6**.

Maps showing the distribution of the populations are presented in **Figure 7** and **8**. *Verticordia attenuata* was only found in Sections 1 and 2 of the Survey Area; no plants were found in Section 3.

Metal stakes and flagging were put up at each of the populations, however two of the southern sub-populations extend over a distance of 200 m each and it was not practicable to demarcate them for their full length.

Table 2. Information pertaining to each of the seven populations recorded within the Survey Area.

Population Name	Area (sq. m)	No. Plants	SLK	Distance from Bitumen edge (m) (LHS)
A	233	50	30.39 – 30.41	14
B	295	6	31.53 - 31.57	10
C1	44	10	39.07	30
C2	97	50	39.09 – 39.10	45
D1	40	1	39.53	24
D2	42	2	39.62 – 39.63	16
E	1897	250	40.16 – 40.31	27
F	531	10	40.34 – 40.38	23
G	3099	2,500	40.54 – 40.76	32
<b>TOTAL</b>	<b>6,278</b>	<b>2,879</b>		

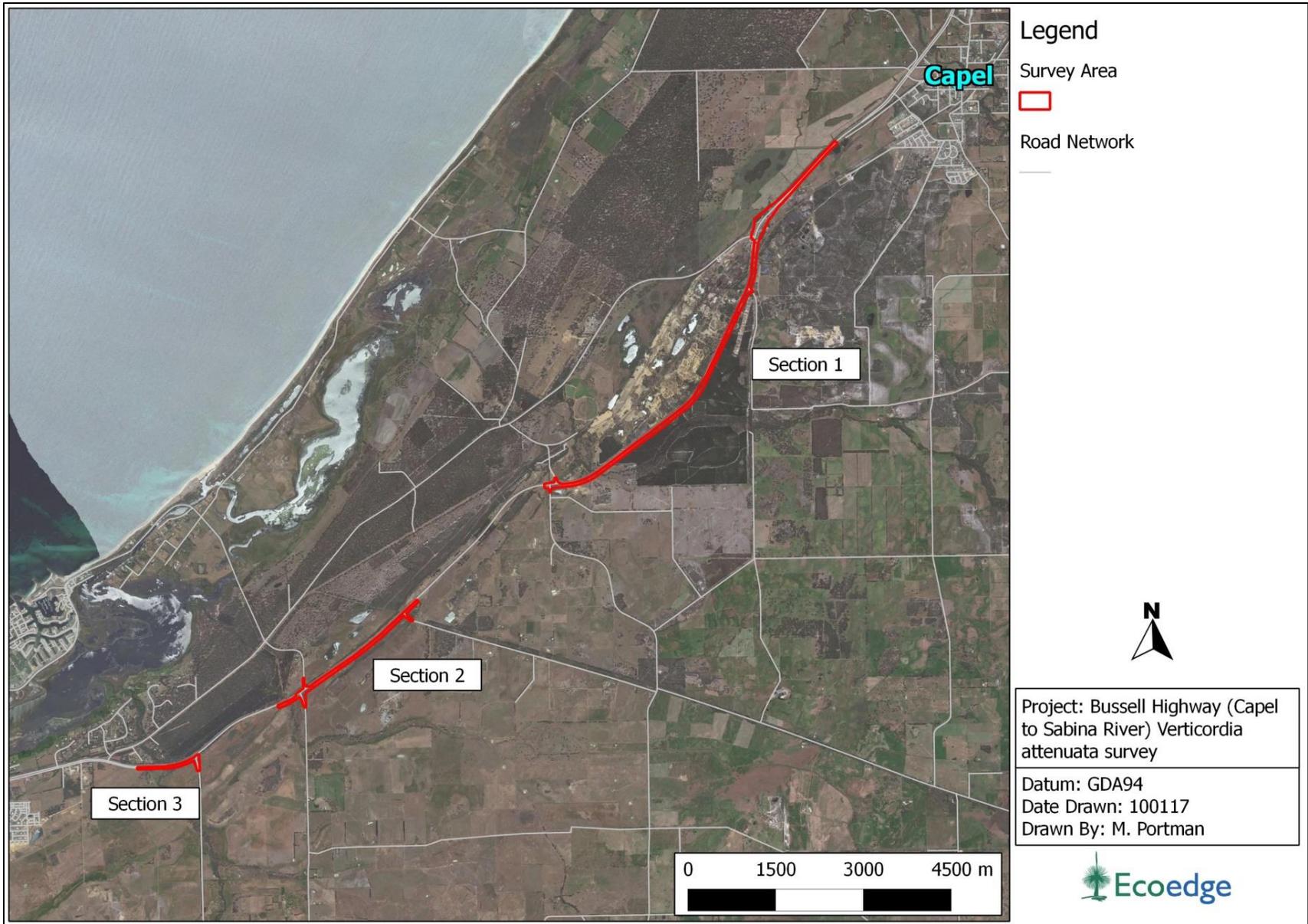


Figure 6. Showing the three sections of the Survey Area.

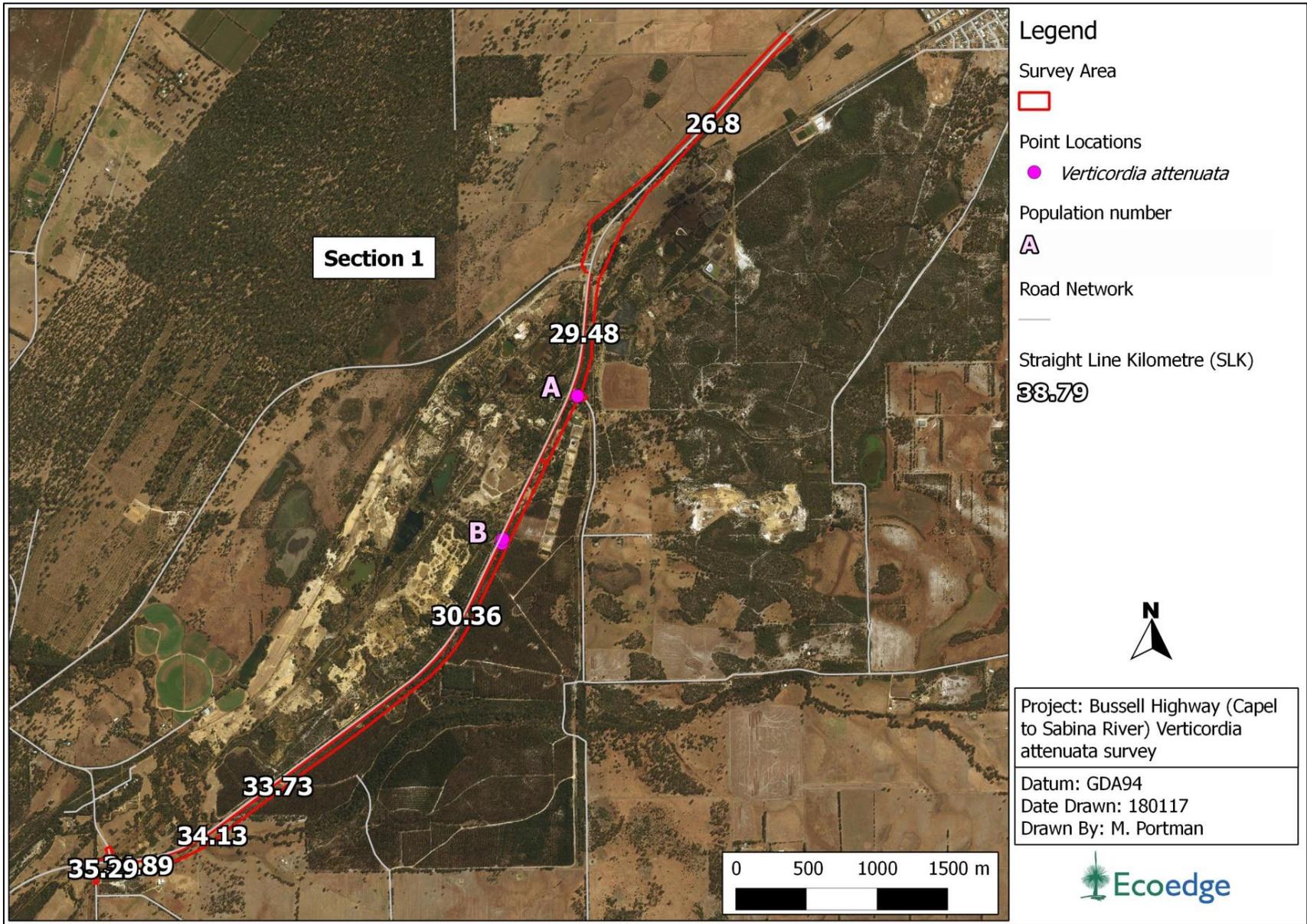


Figure 7. Locations of *Verticordia attenuata* plants and populations in Section 1 of the Survey Area.



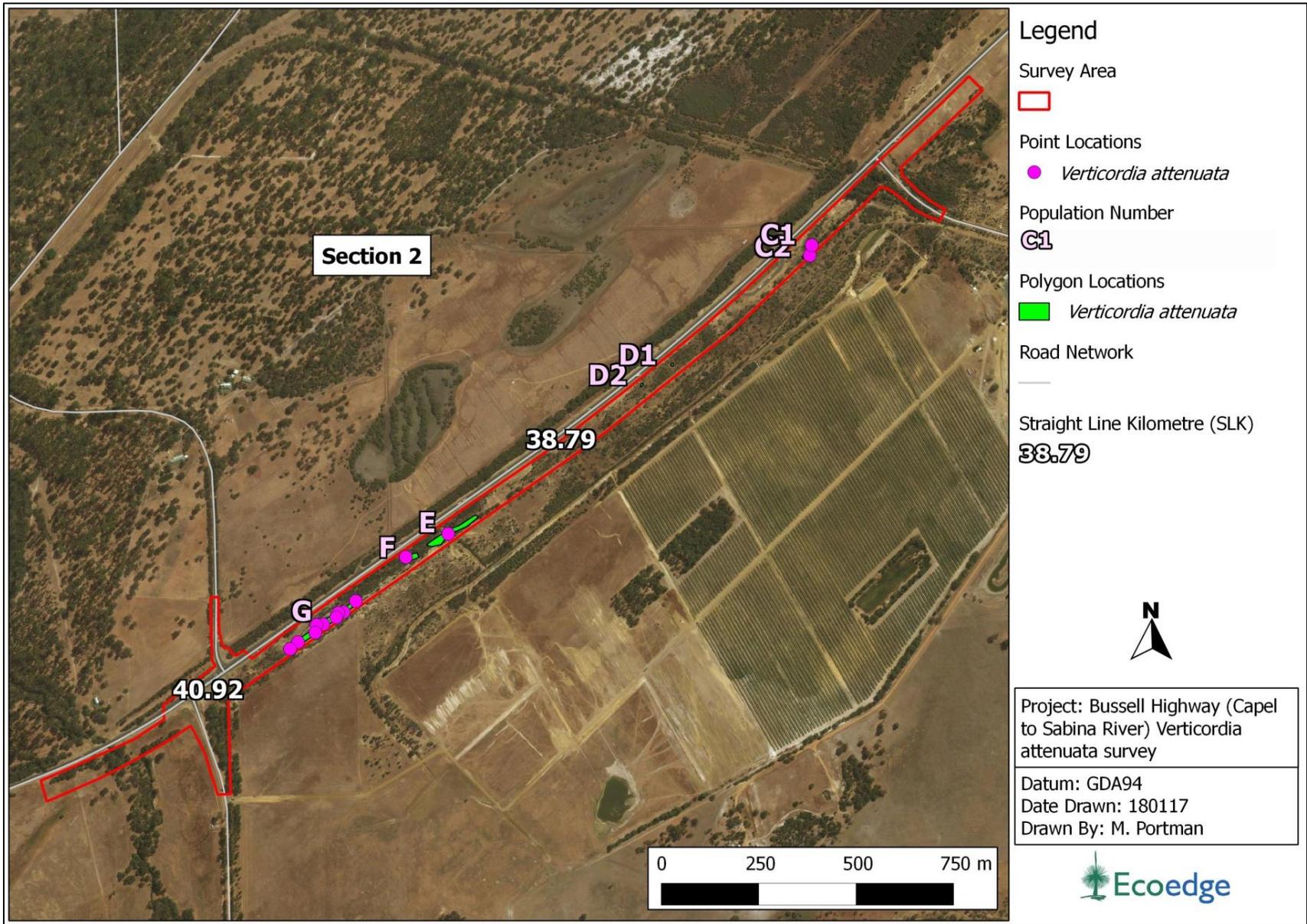


Figure 8. Locations of *Verticordia attenuata* plants and populations in Section 2 of the Survey Area.

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