

DISTRIBUTION OF *CONOSPERMUM CAERULEUM* SUBSP. BUSSELTON



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SUMMARY

On 1st to 5th April 2019, Dr Eleanor Bennett undertook a survey to determine the location of a plant currently known as *Conospermum caeruleum* subsp. Busselton. The plants were distinctive in amongst the vegetation as the leaves were a bright green compared to the dark green of most native taxa. This taxon is filed under *Conospermum caeruleum* subsp. *marginatum* at the Western Australian Herbarium.

Conospermum caeruleum subsp. Busselton is a prostrate plant with a spread up to 10m. The leaves are clustered at the base of the plant, up to 6cm long with a stalk up to 7cm and a width up to 10 mm. The central vein and marginal vein are prominent. With age the basal stems become corky but its response to fire is unknown as none of the areas where it was located had been burnt recently. In some locations the plant formed carpets making it impossible to determine the number of plants present in each. Several seedlings were recorded from some areas. Typically, it grew in association with *Agonis flexuosa* var. *flexuosa* and *Kunzea glabrescens* both of which are relatively widespread through the area.

It is restricted to the Spearwood landform, growing in grey sand with scattered outcropping limestone. It occurs in damp sand above swamps etc but never in inundated areas. Another taxon which is also listed at the Western Australian Herbarium as *Conospermum caeruleum* subsp. *marginatum* occurs in seasonally inundated wetlands further south, and is referred to in the report as the swamp form. It has a thicker, rounder, prominently veined leaf which is not clustered at the base of the plants. This plant regenerates after fire from a lignotuber as observed at a recently burnt area where it occurred.

Fifteen areas were searched for subsp. Busselton. It was recorded from seven. A total of 489 GPS assessments were made of which 4 were the swamp form. Each assessment consisted typically of more than one plant and often there were carpets, which included several plants. Of the 498 assessments:

1. 185 were on Water Corporation Land along and adjacent to a major drain;
2. 194 were in the western remnant bushland at Lot 301 Busselton Bypass which is private land;
3. 47 were along the southern verge of the Busselton Bypass adjacent to Lot 301;
4. 28 at the Geographe Leisure Centre;
5. 19 along the cycle path and verge of the par 3 Golf Course in Fairway Drive;
6. 4 at St Mary Mackillop College;
7. 6 at a small reserve on Queen Elizabeth Avenue; and
8. 2 along College Road verge.

To determine if subsp. Busselton and the swamp form are the same or different taxa, a genetic analysis should be undertaken. If both forms are the one taxon then it is widely distributed but if they prove to be two separate taxa, then subsp. Busselton is under threat as it does not occur in any secure land. It is restricted to the Spearwood landform where it grows in damp grey sand with scattered outcropping limestone.

It should be noted that at the time of submitting this report subsp. Busselton has not been formally recognised by the herbarium staff as distinct from the swamp form with leathery and distinctly veined leaves that does not form large carpets.

1. INTRODUCTION

1.1 Background

Dr Eleanor Bennett was contracted by Water Corporation to undertake a search for a potential new subspecies of *Conospermum caeruleum* currently referred to as *Conospermum caeruleum* subsp. Busselton. It had been recorded from some locations by members of the Busselton Wildflower Society as well as Andrew Webb, a researcher at the Bunbury Office of the Department of Biodiversity Conservation and Attractions. Andrew Webb provided Water Corporation with a map illustrating where he and members of the Wildflower Society had recorded this taxon and other potential sites where it may occur in Busselton.

1.2 Scope of Works

The Scope of Work is to:

- Locate and count of the number of plants of subsp. Busselton;
- Search undeveloped private properties where permission was granted; and
- Search similar habitats where this taxon may occur.

Where plants of the taxon were located a record was to be made of the GPS location, their condition and any other important features.

1.3 Research Prior to Field Work

The genus *Conospermum* was revised by Bennett, E.M. (1995) where *Conospermum caeruleum* was subdivided into 6 subspecies, most of the research being undertaken on pressed specimens at the Herbarium of Western Australia or sent from Eastern Australian and overseas Herbaria (see Diagram 1 where an illustration shows the different subspecies of *Conospermum caeruleum*).

Prior to undertaking the field work a check was made of the collections at the Western Australian Herbarium of the subspecies of *Conospermum caeruleum* known to occur in the Busselton region. They are subsp. *debile* and subsp. *marginatum*. *Conospermum caeruleum* subsp. *debile* has leaves at the base of the plant which are linear and very narrow stem leaves. *Conospermum caeruleum* subsp. *marginatum* varied considerably in the collections. The basal leaves varied between oblong to spatulate, typically very dense at the base of the plant and the stem leaves were obovate.

The collections of *Conospermum caeruleum* subsp. Busselton made by A. Webb were also viewed at the Herbarium. They appeared to match several of the collections included in the vaults included under *Conospermum caeruleum* subsp. *marginatum*. All had been collected in the Busselton or surrounding areas.

Generally, there appears to be a lot of confusion between the different subspecies in the Herbarium collections with some labelled subsp. *marginatum* which should be subspecies *spathulatum*. Plus, as mentioned above the two different shaped leaf forms included under subspecies *marginatum* have been surveyed. Water Corporation obtained permission for a survey to be undertaken on private land at St Mary MacKillop College and lot 301 adjacent to the Busselton Bypass.



Figure 108. *Conospermum*. **A–D**, *C. caeruleum* subsp. *caeruleum*. **A**, flowering stem (A.Beaglehole 12753, PERTH); **B**, lateral view of flower; **C**, view of abaxial portion of dissected flower; **D**, view of adaxial portion of dissected flower (**B–D**, E.Bennett 5181, PERTH, KPBG). **E**, *C. caeruleum* subsp. *debile*, flowering stem (G.McCutchen 438, PERTH). **F**, *C. caeruleum* subsp. *oblanceolatum*, flowering stem (E.Wittwer 231, PERTH). **G**, *C. caeruleum* subsp. *spatulatum*, flowering stem (A.George 15254, PERTH). **H**, *C. caeruleum* subsp. *contortum*, flowering stem (R.Royce 3000, PERTH). **I**, *C. caeruleum* subsp. *marginatum*, flowering stem (J.Drummond 2: 306, MEL). Scale bar: **A**, **E–I** = 4 cm; **B–D** = 8 mm. Drawn by C.Vasilii.

Diagram 1. From Flora Australia (Bennett, 1995). *Conospermum caeruleum* subsp. *debile* and subspecies *marginatum* are highlighted

2. PROVIDED LOCATIONS

The map provided to Water Corporation by A. Webb is shown in Diagram 1. Surveys have been undertaken previously of most of the public land but the larger areas of privately-owned land have not been surveyed. Water Corporation obtained permission for a survey to be undertaken at St Mary MacKillop College (red area in the north) and lot 301 adjacent to the Busselton Bypass (numbered 3).

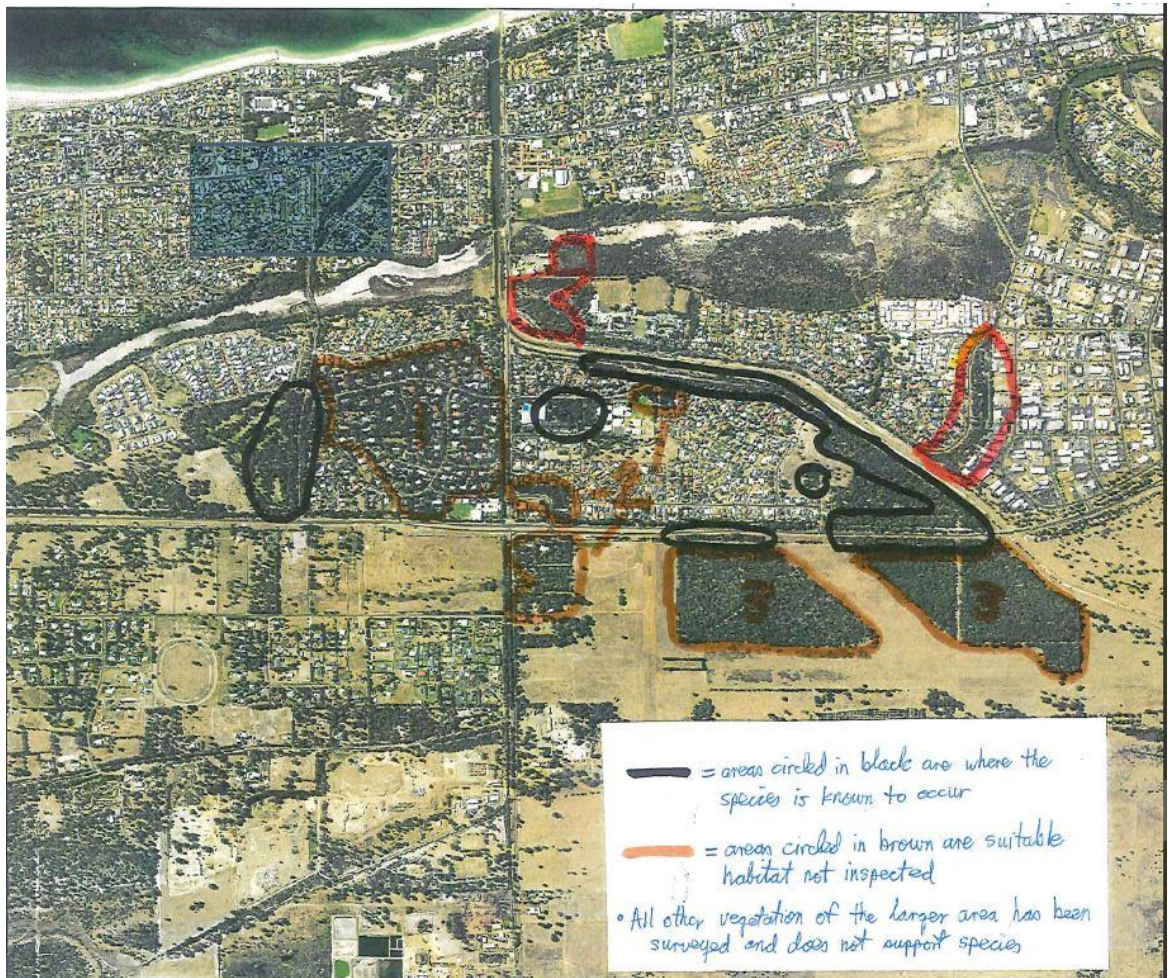


Diagram 2. Map prepared by A. Webb and supplied to Water Corporation.

3. METHODS

All locations on the provided map, including the areas where it was previously recorded, were searched. Transects were walked through the bushland recording all plants of subsp. Busselton observed, their GPS (WGS84) and condition. The condition of plants was recorded, as the percentage of the plant with dead leaves or totally dead. Any other observations of interest were recorded.

4. RESULTS

Field work was undertaken between 1st and 5th April 2019 when the plants of subsp. Busselton were vegetative. This taxon proved to be readily recognised in the field as it was prostrate and a bright green colour compared to the darker green of the surrounding foliage. Appendix A Map 1 illustrates the areas searched for this plant.

4.1 Variations Observed in the Plants

It was intended to record the exact number of plants, but often there appeared to be more than one plant at each GPS location. An attempt was made to determine how many were at one site but the plant was readily broken. Visually there often appeared to be more than one “centre” so if the plant covered a large area, the number of these “centres” were counted as individual plants. Photograph 2 illustrates an area with several vigorously growing plants that could eventually form a carpet and Photograph 1 an example of a carpet. After the first day, in consultation with staff at Water Corporation, it was decided to count individual plants where possible but where there was a carpet, its area of cover was recorded.



Photograph 1 (on left). Dense carpet of *Conospermum caeruleum* subsp. Busselton on both sides of bank of a small creek in Area 2 (See Appendix A, Map 1). Total length of the carpet in this area was over 10x1.5m

Photograph 2 (above). Several young plants of *Conospermum caeruleum* subsp. Busselton which could eventually form one large carpet.

Juvenile plants were often located indicating they had grown from seeds. These were always counted individually. All counts were made within a 5m radius of the GPS point unless stated.

In none of the carpets was there any indication that the taxon may sucker at the nodes although plants have been propagated by the Geographe Community Landcare Nursery from cutting material. Similarly, as there have been no recent fires it is unknown if the plant will regenerate from a lignotuber.



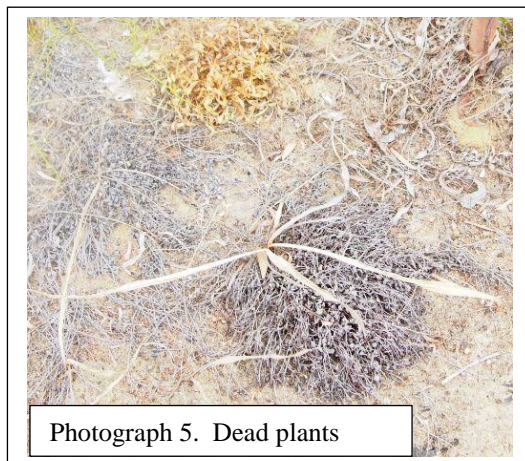
Photograph 3. Single juvenile plant.



Photograph 4. Several small plants.

4.2 Condition of Plants

Very few totally dead plants of the taxon were recorded during the survey. Several dead plants were recorded along the edge of the drain, where it appeared that the soil became too damp at some stage killing the plants. At several locations scattered plants were affected by what appeared to be a scale infestation. These plants looked very unhappy but there was no evidence that they would be killed.



Photograph 5. Dead plants



Photograph 6. Plant covered with scale

4.3 Description of *Conospermum caeruleum* subsp. Busselton

Habitat: The taxon is restricted to the Spearwood dunes south of Busselton, occurring in shallow sand 30-70cm deep over massive limestone (pers.comm. A. Webb). Small outcropping rocks of limestone were observed at all locations where it was recorded.

This taxon is typically associated with trees of *Agonis flexuosa* var. *flexuosa* and occasional *Corymbia calophylla* over tall shrubs of *Kunzea glabrescens*. These species are relatively common through the area, including areas where this taxon has not been located.

The vegetation units where *Conospermum caeruleum* subsp. Busselton was present varied. A brief description of the units where these plants were observed is provided below, and a detailed reference for each location is in Appendix B:

Veg A. Woodland to Open Forest of *Agonis flexuosa* var. *flexuosa* with occasional *Corymbia calophylla* over Tall Open Shrubland to Tall Open Scrub dominated by *Kunzea glabrescens* with scattered *Acacia saligna* over Low Open Shrubland or Low Shrubland dominated by *Adenanthos meissneri*, *Acacia pulchella* and *Jacksonia sternbergiana*. *Acacia saligna* was common where the area had been disturbed.

Veg B. Woodland of *Agonis flexuosa* var. *flexuosa* and *Corymbia calophylla* with occasional *Melaleuca preissiana* over Sedgeland of *Baumea vaginalis*.

Veg C. Open Woodland of *Corymbia calophylla* and *Allocasuarina fraseriana* over Low Shrubland dominated by *Adenanthos meisneri*

Veg D. Open Woodland of *Agonis flexuosa* var. *flexuosa* over Tall Open Shrubland of *Acacia saligna* over Open Sedgeland of *Lomandra sonderi* and *Baumea vaginalis*.

Veg E. Open Woodland of *Agonis flexuosa* var. *flexuosa* and *Melaleuca preissiana* over *Baumea vaginalis*.

Veg F. Tall Open Scrub of *Kunzea glabrescens* over Sedgeland of *Desmocladius flexuosus* and *Lepidosperma pubisquamea*.

Veg G. Woodland of *Agonis flexuosa* var. *flexuosa* over Tall Open Shrubland of *Kunzea glabrescens* over *Baumea vaginalis* and *Gahnia trifida*.

Veg H. Low Open Woodland of *Melaleuca preissiana* over Tall Shrubland of *Kunzea glabrescens* over Open Sedgeland of *Baumea vaginalis*.

Veg I. Tall Open Scrub of *Kunzea glabrescens* over Open Low heath to Closed Low Heath of *Conospermum caeruleum* subsp. Busselton.

The understory varied considerably but was always open, never dense, and could be a Shrubland to Low Shrubland of *Acacia saligna*, *Adenanthos meisneri*, *Jacksonia sternbergiana* and *Xanthorrhoea brunonis* or Open Sedgeland of *Baumea vaginalis*, *Lomandra sonderi* or *Lepidosperma pubisquameum*, or in some instances only litter, both leaves and branches.

Occasionally a few low trees of *Melaleuca preissiana* were recorded with *Kunzea glabrescens* but where *Melaleuca preissiana* became dense *Conospermum caeruleum* subsp. Busselton was no longer present. Similarly, in some locations *Agonis flexuosa* subsp. *flexuosa* and *Kunzea glabrescens* had a dense understory of *Baumea vaginalis*, but no *Conospermum caeruleum* subsp. Busselton were recorded. However, this taxon was the dominant understorey plant at location 10 (Appendix A).

This taxon appears to be very specific in its requirements. It requires a damp soil but not inundated soil, as it occurs in seasonally damp rises, e.g. above a swamp (at the leisure Centre) or drains (along Water Corporation land and Fairway Drive). At all sites there were outcropping limestone rocks. It does not grow where the canopy is dense, preferring a slightly open canopy.

Habit: it is a prostrate shrub often forming carpets up to 10m across (see photograph1). The stems are soft, with long flowering trailers which turn upwards towards their tips. The mature stems are corky at their base with the corky layer becoming less obvious further away from the base of the plant. The height was typically about 25cm.



Photograph 7. Corky stems exposed and damaged by kangaroos scratching around the plant. Lying on top of the corky stem is a young green stem with leaves attached.

Leaves: The leaves are clustered towards the base becoming more spread out along the stem. The mature leaves are a bright green, the blade is narrow oblanceolate to narrow spatulate 5.5 – 7 mm long and 6-10 mm wide with a petiole 5.5-7mm long. The leaves of juvenile plants are broader than those of mature plants. The leaves are illustrated in Photographs 8 and 9.



Photograph 8. Illustrating the pale green leaves of a juvenile plant.



Photograph 9. Illustrating the pale green linear leaves of a mature plant.

4.4 Locations Searched for *Conospermum caeruleum* subsp. Busselton

The various searched areas are numbered in Appendix A, Map 1 and the locations where the taxon was found are shown in Map 2. Each of these search areas will be discussed separately. It must be remembered that each GPS assessment often consisted of several plants, particularly where carpets of the plant are recorded. So, although a total of 489 assessments were undertaken the actual number of individual plants was several times greater.

4.4.1 Area 1 – Water Corporation drain between Queen Elizabeth Avenue and the fence across the drain at Pennyworth Ramble

There were many plants of subsp. Busselton located along the damp areas on both sides above the Water Corporation drain itself. Most of the plants were in very good condition but there was one drier area where several plants were recorded dead. Close to Queen Elizabeth Avenue weeds had replaced the endemic vegetation where no plants of the taxon were located. Similarly, behind the houses on the drain side of Clydesbank Road and Pennyworth Ramble only occasional plants were recorded due to a lot of plant litter, dead trunks, branches, and leaves, plus additional litter from the houses and others who walk through the area. There was no fence around the Water Corporation land between Queen Elizabeth Avenue and the fence across the drain at Pennyworth Ramble. A total of 152 assessments were recorded from here.

The northern edge of the drain along College Road was also searched for the plant. Two plants were located along College Road, one opposite St Mary Mackillop College and the other opposite the continuous reserves (see section 4.4.4).

4.4.2 Area 2– Water Corporation drain between the fence at Pennyworth Ramble and Busselton Bypass

Transects were walked through this area but no plants of the taxon were located until near Pennyworth Ramble. Until the plants were located the soil appeared to be too dry, although *Agonis flexuosa* var. *flexuosa* and *Kunzea glabrescens* were the common upper storey species. Once the taxon was located it became a dominant plant up to the boundary fence across the drain at Pennyworth Ramble. Forty-three assessments of the taxon were made.

This means that the total length of the Water Corporation drain, from Queen Elizabeth Avenue to the Busselton Bypass recorded a total of 195 assessments.

4.4.3 Area 3– Remnant Bushland behind the new development in Clydesbank Road

No plants of the taxon were recorded from this area although from the information received from A. Webb plants had been recorded there prior to the housing development.

4.4.4 Area 4 – Series of small continuous reserves off College Road

This area had not been previously searched. No plants of the taxon were recorded. These reserves had limited remnant weed infested vegetation.

4.4.5 Area 5 – Remnant Bushland behind the Geographe Leisure Centre

Many plants of the taxon were recorded from the bushland to the east of the Busselton Leisure Centre. It was common along tracks, indicating that it survives where there is an open canopy as well in open areas in the bushland away from tracks. There is a concrete path from the school adjoining the site to the Leisure Centre which is utilised by the students and public as access to the centre. This taxon was recorded from 28 assessments at this site.

4.4.6 Area 6 – Remnant Bushland where Queen Elizabeth Avenue is accessed north of the Busselton Bypass

Six assessments of the subsp. Busselton were recorded from this area. This bushland was degraded and the adjoining land owners dump rubbish there.

4.4.7 Area 7 – St Mary Mackillop College

Four assessments of subsp. Busselton were recorded in the remnant bushland. It is possible that it may have been more common prior to the establishment of the garden along College Road. The College should be made aware of the status of this plant and encouraged to retain the plants of subsp. Busselton that remain, and to in fill with additional plants of this taxon.

4.4.8 Area 8 – Lot 301 Busselton Bypass beside the drain

Cattle grazed this area. No plants of the taxon were recorded.

4.4.9 Area 9 – Lot 301 Busselton Bypass beside Area 8

Cattle grazed this area although there were some areas where there were dense sedges. No plants of the taxon were recorded.

4.4.10 Area 10 – Lot 301 Busselton Bypass eastern area

Two hundred and eight assessments were recorded in this area. There were two disjunct locations where these plants were recorded. The first was on the northern edge of the property adjacent to the Busselton Bypass road verge and the second was further east where often it was very dense. The locations varied in size from individual plants to dense continuous carpets for several metres. Between the two disjunct locations the bushland was dense with *Baumea vaginalis* but once the canopy opened out many plants of subsp. Busselton were recorded.

At this location *Conospermum caeruleum* subsp. Busselton was the dominant understorey species, making it difficult to count and to determine where one carpet started and finished. Carpets formed by this taxon were up to 10m wide, due to many plants having grown together. Cattle only grazed the edge of this area, possibly due to the density of fallen branches of *Kunzea glabrescens*, but kangaroos rested here. It was in this area that the stems of some plants had been uncovered by kangaroos. Throughout the bushland there were pockets of dense trees of *Melaleuca preissiana* where no plants of subsp. Busselton were recorded.

4.4.11 Area 11 – Busselton Bypass Road Verge northern end

This area had previously recorded plants of subsp. Busselton being present. Three assessments were recorded in the current survey.

4.4.12 Area 12- Busselton Bypass Road Verge southern end

Forty-five assessments of subsp. Busselton were recorded during this survey. Plants had been recorded here previously.

4.4.13 Area 13 – Small Reserve off Clydesbank Road

No plants of subsp. Busselton were recorded.

4.4.14 Area 14 – Road verge along Par 3 Golf Course, Fairway Drive

The verge between Settlers Gate and the Busselton Bypass on both sides of Fairway Drive were searched. There were several plants along the western side of the road but only scattered ones along the eastern side. Although permission had not been obtained to access the remnant bushland of the par 3 golf course, numerous plants of subsp. Busselton were observed through the fence. A total of 18 assessments were made along the cycle path and road verge.

4.4.15 Area 15– Housing development south of Melaleuca Drive

This area was driven to determine if there was remnant vegetation but none was observed. Some of the houses had retained a small amount of the original vegetation but no plants of subsp. Busselton were observed.

4.4.16 Other Reserves

When observed other reserves in the area (e.g. Westminster Avenue and Frederick Street) were checked but most had dense trees of *Melaleuca preissiana* with damp understorey species.

4.5 Locations Searched for *Conospermum caeruleum* subsp. *marginatum*

As agreed, to in the quote, time was spent searching other areas for *Conospermum caeruleum* subsp. *marginatum*. The areas searched were south of Busselton where this taxon had previously been recorded. These areas were:

1. Margaret West Road. This location was accessed off Sues Road. *Conospermum caeruleum* subsp. *marginatum* was a low spreading shrub. It occurred in a shrubland dominated by *Taxandria parviceps*, *Beaufortia sparsa*, *Adenanthos meissneri* and *Mesomelaena tetragona*.

This is the swamp form. The soil was pale grey to dark grey sand which is seasonally inundated. Only 2 plants were observed here, one of which was affected by scale.



Photograph 10. *Conospermum caeruleum* subsp. *marginatum*. It has the same prostrate habit, but the leaves are rounder, thicker and not dense at the base of the plant but it did not form carpets.

2. Adelaide Road. This area was accessed off Margaret Road West. This location was recovering from a fire earlier in the season but there were many plants of *Conospermum caeruleum* subsp. *marginatum*. This is the swamp form which occurred in a Low Open *Melaleuca preissiana* Woodland in dark grey to black sandy loam which is seasonally inundated. The plant was low spreading prostrate shrub which after fire was regrowing from the root stock. The leaves resembled those from Margaret River West Road in that they were rounder and leathery compared to subsp. Busselton and again did not form carpets.



Photograph 11. Two plants of *Conospermum caeruleum* subsp. *marginatum* regenerating from root stock after fire

3. Fish Road Reserve

Many transects were walked through this reserve but no plants *Conospermum caeruleum* subsp. *marginatum* were located although this plant had previously been recorded there. The reserve was in very poor condition with an abundance of weeds

4. Ambergate Reserve

Transects were walked through a section of this reserve but no plants of *Conospermum caeruleum* subsp. *marginatum* were located although other species of *Conospermum* were noted.

5. Busselton Pony Club

A member of the local Wildflower Society stated that plants of *Conospermum caeruleum* subsp. Busselton had been recorded from the Pony Club bushland. The area was fenced and although the area was driven past, no contact details were on their gate. It could be worth pursuing to determine the presence or otherwise of this taxon.

5. DISCUSSION

From the searches undertaken for *Conospermum caeruleum* subsp. Busselton it appears to be well represented in the area predominantly along the Water Corporation land and private property Lot 301 Busselton bypass. It is not recorded in any secure reserves so although, many plants were located, it is under threat if any major development was to occur. Busselton has been developed for grazing etc since its foundation in 1832 by the Bussell family, and in recent years by housing developments, so any remnant bushland where this plant may have occurred is now developed. Prior to the housing developments it is assumed this plant would have been more widespread. It is limited to the Spearwood Dunes south of Busselton where it occurs in shallow sand 30-70cm deep, over massive limestone. This is the area where a large amount of the housing development has occurred. Reserves are recorded in this area but when checked they were wetlands where *Conospermum caeruleum* subsp. Busselton does not occur or grassed.

Prior to undertaking the field work a search of the collections at the Western Australian herbarium resulted in *Conospermum caeruleum* subsp. *marginatum* being the name of the plant at Busselton. However, after several days of field work it was determined that there were 2 taxa present in the area, one at Busselton and the swamp form in the swamps further south. A search of the type specimen collected from the Swan River by James Drummond, number 306



Photograph 12

included in his second collection of plants. Between 1836 and 1838 collections (his second collection) were made by Drummond from Swan River, Darling Range, Avon valley, sandplains to the east of Toodyay valley, Salt River, east of Northam, and the Albany and Vasse River districts.

Type collections, of what was originally named *Conospermum marginatum*, are held at the Herbariums in Melbourne, Sydney, Kew in England and Lund in Sweden (JStor, 2019). The collection at Lund and Melbourne are those of *Conospermum caeruleum* subsp. Busselton whereas the others are those collected from the swamp. Photograph 12 is one of these which shows it is the same as *Conospermum caeruleum* subsp. Busselton



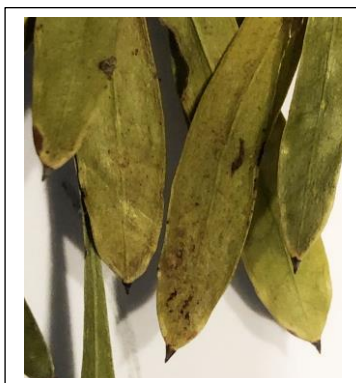
Photograph 13

Photograph 13 from Kew has the same Drummond Collecting number but has the rounded, more spaced leaves of the plant from the swamps, not the longer, dense leaves of the Busselton form.

Although the field examination indicates that these two forms are distinct, it is recommended that additional genetic work be undertaken to determine if these taxa are distinct or the same. A genetic analysis should be able to determine the similarities and/or differences of these two forms.

Table 1. Field comparison between *Conospermum caeruleum* and subsp. Busselton and swamp form

Feature	subsp. Busselton	Swamp form
Habit:	Prostrate	Prostrate
Habitat:	Damp ground	Swamp
Associated vegetation:	Woodland of <i>Agonis flexuosa</i> var. <i>flexuosa</i> over Shrubland of <i>Kunzea glabrescens</i>	Low Open Woodland of <i>Melaleuca preissiana</i> or Shrubland of seasonally inundated taxa
Leaves:	Bright green	Dark green
Lamina Length	3.5-6cm	2-5.5cm
Marginal vein	Faint, slightly raised	Obvious, raised
Veining	Not apparent	Reticulate, raised, obvious
Midvein	Raised and obvious	Raised and obvious
Widest area	6-10mm	10-15mm
Petiole	4.5-7cm	2.5-4.5cm
Shape	Linear lanceolate to narrow spatulate	Ovate lanceolate
Colour	Bright green	Dark green
Texture	Soft,	Leathery
Internode length:	<1cm	>2cm
Lignotuber:	Unknown	Yes
Soil:	Grey sand with scattered outcropping limestone; in damp sand above swamp	Grey to black sandy loam; seasonal swamp
Landform:	Spearwood landform	Alluvial soils of Abba Plain and Margaret River headwaters



Photograph 13. Leaves of subsp. Busselton. Marginal vein faint, no reticulate veining



Photograph 14. Leaves of swamp form.

Marginal vein obvious, reticulate veining obvious

There are 7 subspecies of *Conospermum caeruleum* recorded. It would appear from the collections in WA Herbarium that a complete revision of all forms of *Conospermum caeruleum* needs to be undertaken. This includes subsp. *marginatum* and subsp. Busselton but preferably any survey should be undertaken in the spring when the plants are in flower.

6. CONCLUSION

From observations during the field work it would appear that *Conospermum caeruleum* subsp. Busselton is a different taxon from the swamp form. Both of these taxa are already included

under *Conospermum caeruleum* subsp. *marginatum* at the Western Australian Herbarium as a result of the revision of this genus (Bennett, 1996). *Conospermum caeruleum* subsp. Busselton is very restricted in its distribution, only occurring in the Spearwood sands west and south of Busselton.

A total of 489 GPS assessments were recorded during the survey, 4 being of the swamp form. Each assessment varied from an individual plant, to several plants to a carpet consisting of an unknown number of plants, so the number of individual plants is many times greater than the 489 assessments. Most of the plants of *Conospermum caeruleum* subsp. Busselton recorded during the current survey were from two areas:

9. Water Corporation land (185 GPS assessments), and
10. Lot 301 Busselton Bypass (194 GPS assessments) which is private land.

Only 106 were recorded from other locations. Forty-seven assessments were recorded along the road verge of the Busselton Bypass adjacent to Lot 301 and twenty-eight assessments from the Geographe Leisure Centre.

None of the areas where subsp. Busselton was located are secure, all occurring in readily accessed areas, a farming property where cattle graze the remnant vegetation, along the Busselton Bypass Road verge, the Geographe Leisure centre and the Par 3 cycle-way/ Fairway Road verge.

This taxon could readily be under threat from any proposed development as it is not recorded from any secure land. It is restricted to the Spearwood landform where it grows in damp grey sand with scattered outcropping limestone and where most of the housing development has occurred.

It should be noted that at the time of submitting this report subsp. Busselton has not been formally recognised by the herbarium staff as distinct from the other taxon with leathery and distinctly veined leaves. Both forms are still listed under *Conospermum caeruleum* subsp. *marginatum*.

7. **REFERENCES**

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APPENDIX A

Maps

Map 1: Locations of search areas around Busselton

Map 2: Locations where *Conospermum caeruleum* subsp. Busselton was recorded

Map 3: Locations of *Conospermum caeruleum* subsp. Busselton at Sr Mary Mackillop College and along Water Authority drain

Map 4: Locations of *Conospermum caeruleum* subsp. Busselton at the Geographe Leisure Centre and Queen Elizabeth Ave.

Map 5: Locations of *Conospermum caeruleum* subsp. Busselton at the Par3 golf course

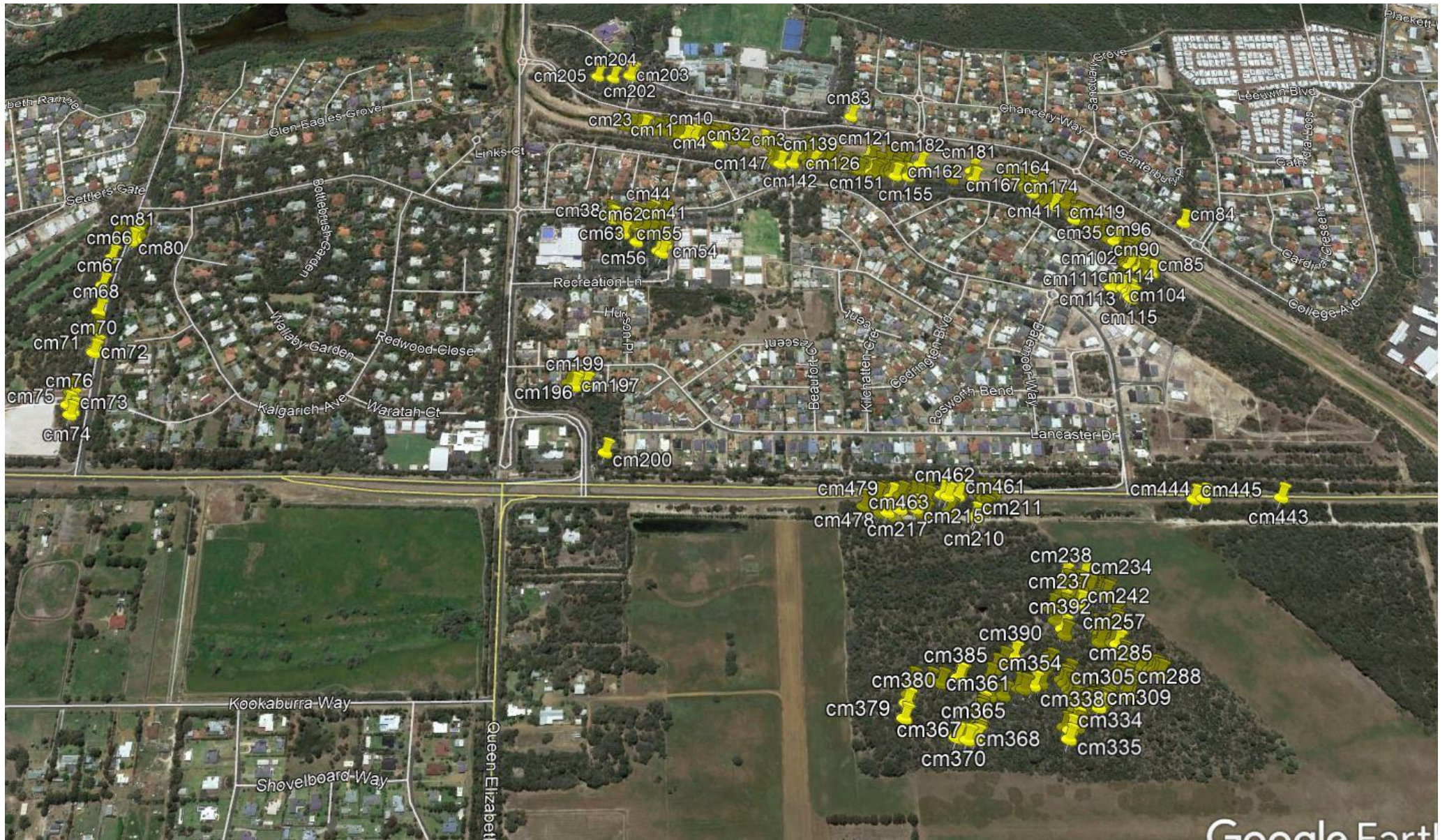
Map 6: Locations of *Conospermum caeruleum* subsp. Busselton on Lot 301 and along Busselton Bypass

Map 7: Relationship between the locations of *Conospermum caeruleum* subsp. Busselton and *Conospermum caeruleum* subsp. *marginatum*

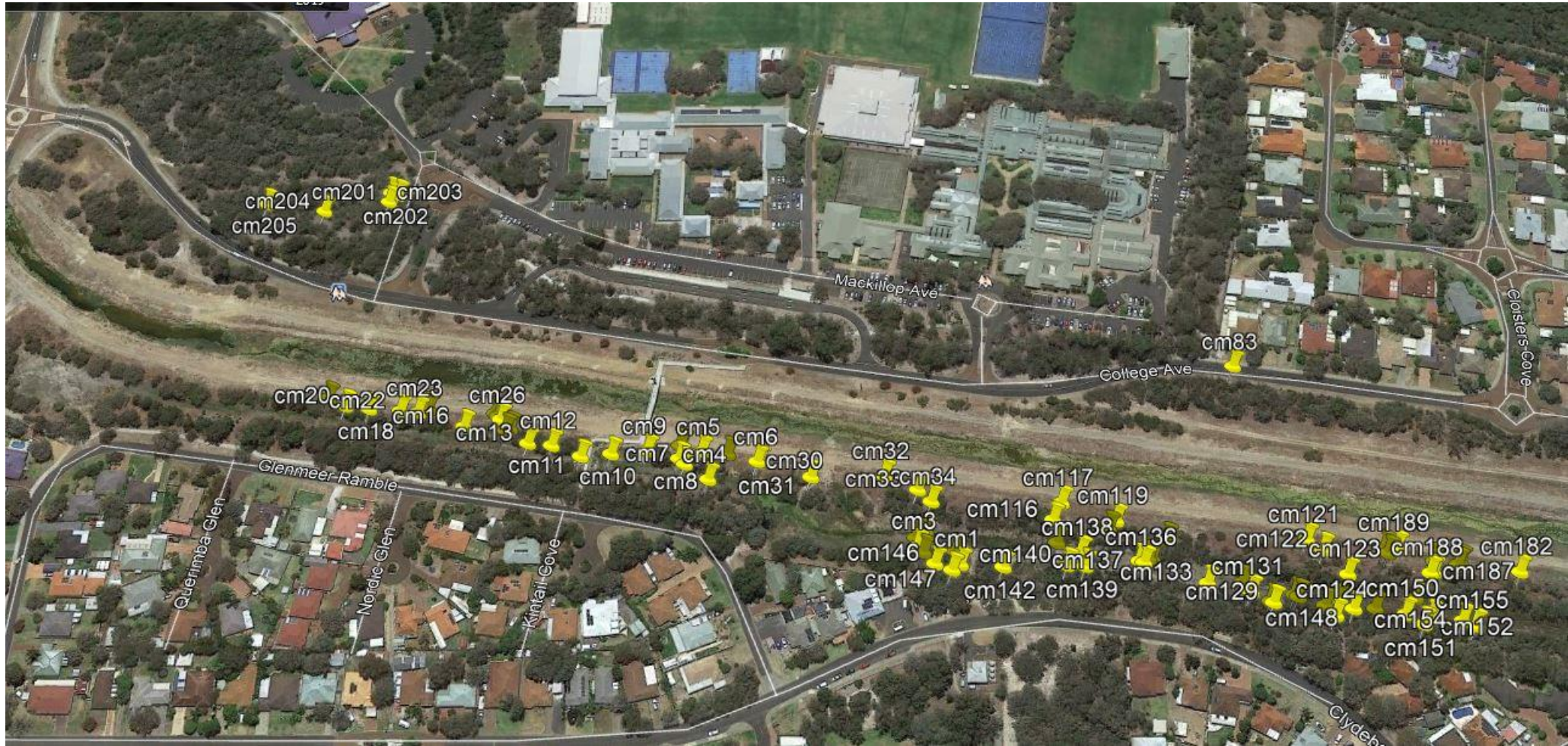
Map 8: Location of *Conospermum caeruleum* subsp. *marginatum*

Map 1. Locations of search areas around Busselton





Map 2. Locations where *Conospermum caeruleum* subsp. Busselton was recorded



Map 3. Locations of *Conospermum caeruleum* subsp. Busselton at St Mary Mackillop College and along Water Authority drain



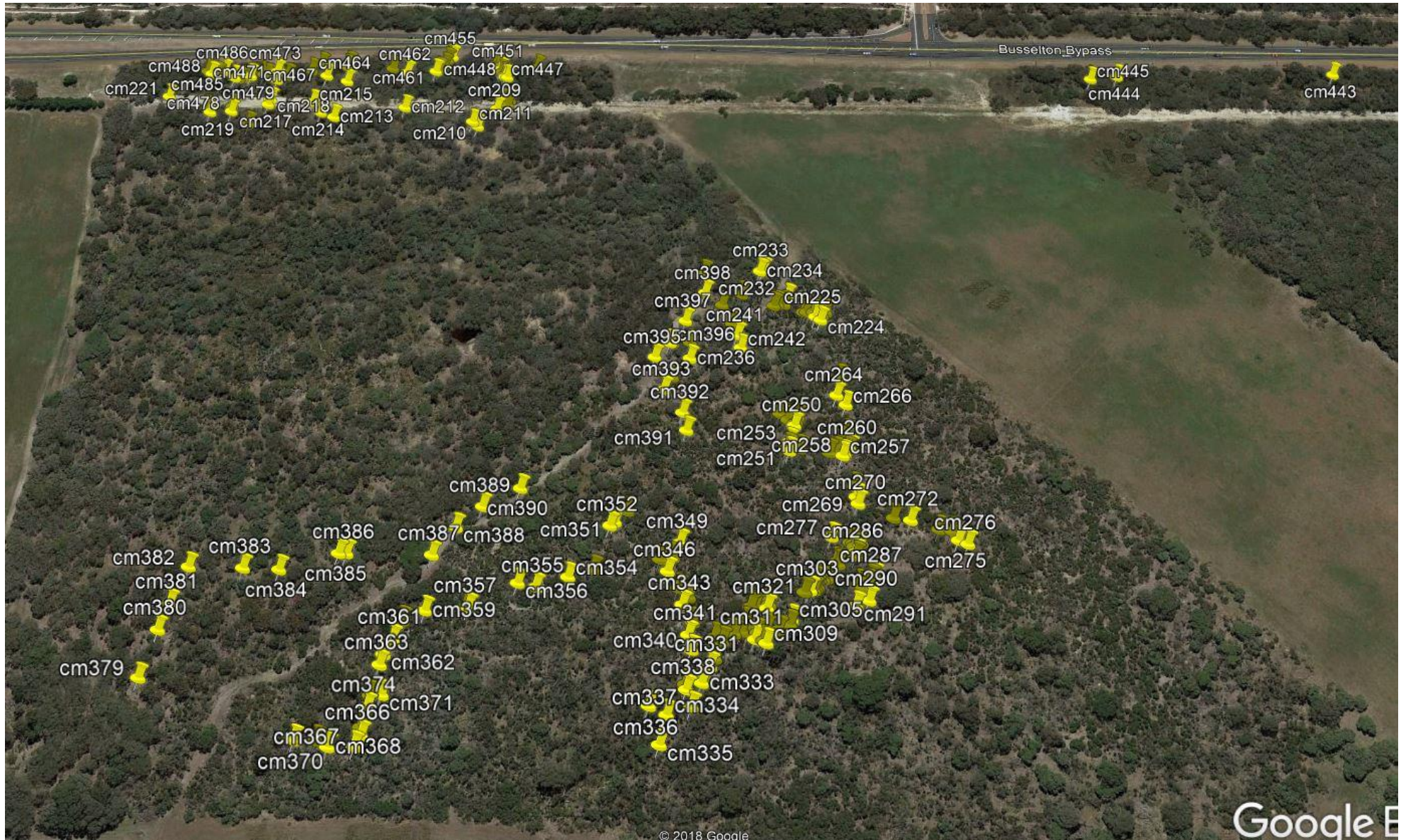
Map 4. Locations of *Conospermum caeruleum* subsp. Busselton along eastern section of Water Authority drain



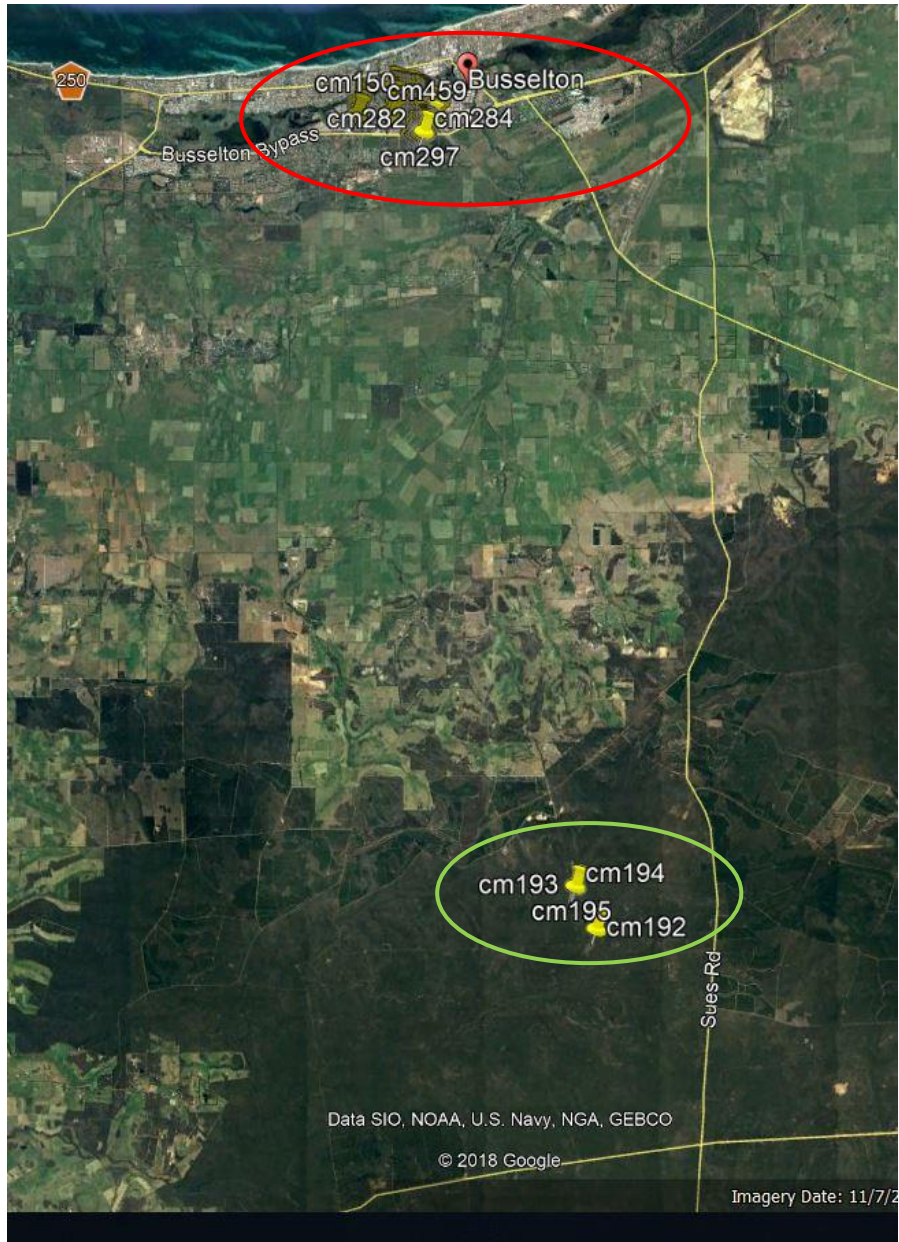
Map 4 and 5.

Map 4. Locations of *Conospermum caeruleum* subsp. Busselton at the leisure Centre and Queen Elizabeth Ave.

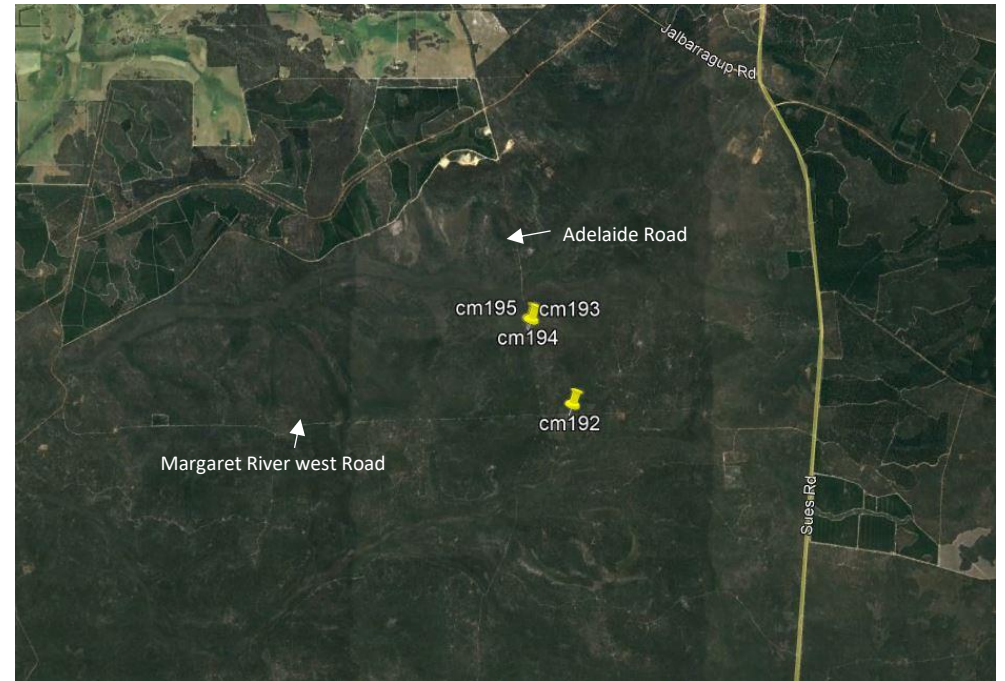
Map 5. Locations of *Conospermum caeruleum* subsp. Busselton at the Par 3 golf course



Map 6. Location of *Conospermum caeruleum* subsp. Busselton on Lot 301 and along Busselton Bypass



Map 7. Relationship between the locations of *Conospermum caeruleum* subsp. Busselton (red line) and *Conospermum caeruleum* subsp. marginatum (green line)



Map 8. Locations of *Conospermum caeruleum* subsp. marginatum

APPENDIX B

Field data

A. Data listed numerically

All counts and carpets are made within a 5m radius of the GPS (WGS84, Area 50H) point, unless otherwise stipulated

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
ALONG WATER CORPORATIN DRAIN UP TO QUEEN ELIZABETH AVENUE						
cm001	345151	6273717	11 plants	15 up to 200	100% alive	Veg A
cm002	345133	6273724	2 plants	30 up to 90	100% alive	Veg A
cm003	345130	6273726	3 plants	30 up to 95	100% alive	Lot of * <i>Cenchrus clandestinus</i> . Veg A
cm004	345027	6273760	4 plants	30 up to 200	1 plant <5% dead	Veg A
cm005	345022	6273776	3 plants	150 up to 300	100% alive	Lot of * <i>Cynodon dactylon</i> Veg A
cm006	345051	6273770	15 plants	5 up to 105	100% alive	Veg I
cm007	345015	6273769	5 plants	25 up to 150	1 plant <5% dead	Lot of * <i>Cynodon dactylon</i> Veg I
cm008	345011	6273771	7 plants	10 up to 55	1 plant 90% dead	Veg B
cm009	344995	6273776	7 plants	10 up to 70	100% alive	Veg B
cm010	344978	6273773	25 plants	5 up to 50 mostly seedlings	100% alive	Veg A
cm011	344963	6273772	6 plants	30 up to 70	100% alive	Veg A
cm012	344947	6273778	31 plants	5 up to 150 (mostly <40cm)	1 plant 5% dead	Veg A
cm013	344936	6273779	impossible to count	400	100% alive	Veg A
cm014	344925	6273786	47 plants	25 up to 95 (mostly <75cm)	100% alive	Veg A
cm015	344924	6273785	13 plants	5 up to 350 (mostly <85cm)	100% alive	Veg A
cm016	344903	6273787	30 plants	30 up to 320 (mostly <100cm)	12 dead plants	Veg A
cm017	344883	6273796	4 plants	15 up to 175	100% alive	Lot of * <i>Cynodon dactylon</i> very degraded Veg A
cm018	344854	6273797	2 plants	285, 290	100% alive	Veg A
cm019	344832	6273802	2 plants	35, 50	Healthy	Very degraded. Veg A
cm020	344841	6273798	1 plant	185	Healthy	Veg A
cm021	344866	6273804	3 plants	25, 40, 60	Healthy	<i>Agonis flexuosa</i> trees over litter
cm022	344869	6273795	10 plants	15 up to 300 (mostly <75cm)	Healthy	Veg A
cm023	344878	6273794	2 plants	35, 500	Healthy	Veg A
cm024	344918	6273794	2 plants	145, 400	Healthy	Veg A
cm025	344919	6273793	14 plants	15 up to 300 (mostly <85cm)	Healthy	Open area between trees
cm026	344920	6273792	5 plants	45 up to 180	Healthy	Open area between trees
cm027	345011	6273778	4 plants	75 up to 215	Healthy	Veg A
cm028	345012	6273779	3 plants	85 up to 110	Healthy	Veg A

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm029	345035	6273775	4 plants	50 up to 350	Healthy	Veg A
cm030	345050	6273771	19 plants	15 up to 175	Healthy	Veg A
cm031	345077	6273763	16 plants	15 up to 300 (7 only <100)	Healthy	Veg A
cm032	345114	6273764	8 plants	50 up to 150	100% alive	Open area between trees
cm033	345130	6273757	1 carpet	500	100% alive	Veg A
cm034	345137	6273751	5 plants	45 up to 420	100% alive	Veg A
cm035	345783	6273552	9 plants	35 up to 480	100% alive	Veg A
BUSSELTON LEISURE CENTRE REMNANT BUSHLAND						
cm036	344815	6273596	12 plants	120 up to 150	100% alive	Slightly open area. Veg A
cm037	344817	6273591	40 plants	10 up to 150	100% alive	On both side of drain. Veg A
cm038	344823	6273585	26 plants	5 up to 150 (mostly <40cm)	100% alive	Veg A
cm039	344843	6273581	11 plants	Carpet 10m; mostly <85cm	100% alive	Common along drain bank. Veg A
cm040	344857	6273582	19 plants	10 up to 30; Carpet 250	100% alive	Veg A
cm041	344866	6273580	25 plants	20 up to 175 (mostly <85cm; Carpet 220x150)	100% alive	Some plants heavily infested with scale Veg A
cm042	344869	6273588	5 plants	30 up to 120; Carpet 220cm	100% alive	Veg A
cm043	344891	6273595	3 plants	175, 185, 185	100% alive	Veg A
cm044	344898	6273598	13 plants	40 up to 205 (mostly 30 up to 75cm)	100% alive	Veg A
cm045	344917	6273603	1 plant	310	100% alive	Veg A
cm046	344921	6273603	4 plants	75, 175, 195, 250	100% alive	Veg A
cm047	344923	6273599	1 plant	125	100% alive	Veg A
cm048	344923	6273599	8 plants	Carpets 175 up to 185; mostly 30 up to 75	100% alive	Veg A
cm049	344923	6273599	34 plants	5 up to 300 (mostly 5 up to 10cm); Carpet 300	100% alive	Veg A
cm050	344923	6273599	10 plants	Dense, total spread 10m x 5m	100% alive	Veg A
cm051	344923	6273599	3 plants	50, 70, 195	100% alive	Veg A
cm052	344918	6273551	4 plants	65, 95, 175, 190	100% alive	Veg A
cm053	344929	6273535	numerous plants	20 up to 300	100% alive	Some plants with scale. Veg A
cm054	344927	6273530	7 plants	15, 25, 75, 95, 95, 120, 135	100% alive	Veg A
cm055	344920	6273511	20 plants	40 up to 275	100% alive	Veg A

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm056	344913	6273516	3 plants	175, 195, 200	100% alive	Near concrete path to school. Veg A
cm057	344900	6273553	1 plant	195x175	100% alive	Veg A
cm058	344887	6273563	13 plants	10 up to 125 (mostly 10 up to 75)	100% alive	Veg A
cm059	344872	6273566	numerous plants	Continuous carpet up to 2000	100% alive	Veg A
cm060	344861	6273568	5 plants	15 up to 45	100% alive	Veg A
cm061	344848	6273561	5 plants	65 up to 175	100% alive	Veg A
cm062	344846	6273552	12 plants	55 up to 400	100% alive	Veg A
cm063	344871	6273535	2 plants	55, 70	100% alive	Veg A
PAR 3 GOLF COURSE CYCLE WAY ALONG FAIRWAY DRIVE <i>Conospermum caeruleum</i> subsp. Busselton was common inside the Golf Course fence but not surveyed						
cm064	343884	6273535	1 plant	210x125	100% alive	Veg A
cm065	343876	6273529	2 plants	200x230	100% alive	Veg A
cm066	343877	6273485	1 plant	300x400	100% alive	Veg A
cm067	343870	6273425	several plants	Up to 200	100% alive	Veg A
cm068	343874	6273370	1 plant	200 x 175	100% alive	Veg A
cm069	343875	6273333	19 plants	5up to150 (mostly <25cm)	100% alive	Veg A
cm070	343882	6273295	9 plants	10up to95	100% alive	Veg A
cm071	343878	6273288	13 plants	15up to90	100% alive	Veg A
cm072	343880	6273286	5 plants	40up to95	100% alive	Veg A
cm073	343864	6273168	Numerous carpets along drain	Large carpets & 5 plants10up to20	100% alive	Along the edge of a small drain. Veg A
cm074	343859	6273162	3 plants	55 up to 110	100% alive	Veg A
cm075	343851	6273180	12 plants	Several up to 300 x 200	100% alive	<i>Hakea varia</i> , <i>Melaleuca preissiana</i> and <i>Banksia littoralis</i> Veg A
cm076	343859	6273187	4 plants	75, 75, 105, 110	100% alive	Veg A
cm077	343855	6273192	numerous carpets	1.5m width along drain	100% alive	Veg A
cm078	343852	6273205	11 plants	Up to 250 wide	100% alive	Veg A
cm079	343855	6273209	5 plants	Up to150 wide	100% alive	Veg A
cm080	343908	6273521	5 plants	300x250	20% dead	Veg A
cm081	343914	6273526	14 plants	600x 200	100% alive	Veg F
cm082	343922	6273537	19 plants	All >100, continuous along drain for 12m	100% alive	Along narrow drain at the edge of private property. Veg F

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
ROAD VERGE COLLECCE ROAD						
cm083	345291	6273828	1 plant	400 x 275	100% alive	Veg A
cm084	345920	6273594	1 plant	225 x 195	100% alive	Veg A
WATER AUTHORITY DRAIN FROM BUSSELTON BYPASS TO PENNYWORTH RAMBLE						
cm085	345844	6273483	3 plants	85 up to 250	10% dead	Veg A
cm086	345849	6273483	3 plants	45 up to 200	100% alive	Veg A
cm087	345834	6273496	9 plants	10 up to 155	100% alive	Several leaves with scale. Veg A
cm088	345828	6273492	4 plants	35 up to 105	100% alive	Veg A
cm089	345822	6273494	7 plants	35 up to 450 (3 >350)	100% alive	Veg A
cm090	345823	6273491	6 plants	35 up to 200	100% alive	Veg A
cm091	345823	6273501	1 plant	220X170	100% alive	Veg A
cm092	345818	6273537	2 plants	35x20; Carpet 1200cm along bank	100% alive	Veg A
cm093	345816	6273539	2 carpets	Mainly 1m radius	100% alive	Veg A
cm094	345813	6273539	7 major carpets in 10m radius	250 x 250	100% alive	Veg A
cm095	345812	6273537	2 plants	55 x 35; 75 x 45	100% alive	Veg A
cm096	345813	6273534	5 plants	43 up to 175	100% alive	Veg A
cm097	345812	6273531	4 plants	35x35; 110 x 35	100% alive	Few <i>Banksia littoralis</i> . Veg A
cm098	345800	6273518	9 plants	4 <10mm; up to 250x400	100% alive	Veg A
cm099	345797	6273504	5 plants	75x45 up to 110 x 75	100% alive	Plants with scale. Veg A
cm100	345800	6273501	6 plants	75 x 45 up to 210 x 135	100% alive	Scale on one plant. Veg A
cm101	345803	6273501	25 carpets	400 x 400 in 50m radius	100% alive	Veg A
cm102	345805	6273496	1 plant	35 x 45	100% alive	Veg A
cm103	345826	6273482	6 carpets	Up to 200mm radius	100% alive	Veg A
cm104	345788	6273450	1 plant	105 x 55	100% alive	Veg A
cm105	345781	6273456	dense carpet	1000x1500	100% alive	Veg A
cm106	345784	6273463	5 plants	35x35 up to 135 x 110	100% alive	Veg A
cm107	345782	6273462	5 plants	55 x 30 up to 155 x 135	100% alive	Veg A
cm108	345780	6273459	4 plants	50 x 40 up to 175 x 200	100% alive	Large amount of litter. Veg A
cm109	345777	6273457	dense carpet	400 x 300	100% alive	Dense litter. Veg A

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm110	345762	6273456	2 plants	130 x 170; 210 x 110	100% alive	Veg A
cm111	345766	6273451	5 plants	50 x 10 up to carpet 400x350	5% dead	Veg A
cm112	345787	6273454	1 plant	112x75	100% alive	Veg A
cm113	345796	6273443	4 plants	50x50; 100x55; 175x100; 300 150	100% alive	Beside cycle path. Veg A
cm114	345798	6273434	7 plants	55x35 up to 120x75	100% alive	Beside cycle path. Veg A
cm115	345801	6273428	5 plants	95x35 up to 195x195	One plant 25% dead	Veg A
WATER CORPORATION LAND EAST OF PENNYWORTH RAMBLE						
cm116	345197	6273742	33 plants	5 x 5 up to 275x200 (24 <35m)	100% alive	Scale dense on one plant. Veg C
cm117	345201	6273750	6 plants	25 x25 up to 135 x 135	100% alive	Veg C
cm118	345224	6273738	2 plants	15x10; 45x20	100% alive	Veg D
cm119	345228	6273742	1 plant	Carpet 225 x 235	100% alive	Veg D
cm120	345252	6273732	1 carpet	250 x250	100% alive	Veg D
cm121	345320	6273733	4 plants	105 x 75; 105 x 80; 215x175; 225x175	100% alive	Veg E
cm122	345328	6273728	several plants	Carpet 450 x 120	100% alive	Veg E
cm123	345339	6273716	10 and 1 carpet	Mainly 5x to 75 x 35. Carpet 201 x 145	100% alive	Veg F
cm124	345331	6273694	6 plants	10 x10; up to 210x125	100% alive	Veg F
cm125	345332	6273701	2 plants	25x125; 175 x 45	100% alive	Veg C
cm126	345326	6273699	10 plants	55 x 35; up to 105 x 30	100% alive	Veg A
cm127	345312	6273704	13 plants	20 x 20; up to 115 x 95	100% alive	Veg A
cm128	345314	6273703	7 plants and 1 carpet	25 x 10 up to 205 x 205	100% alive	Veg A
cm129	345302	6273700	dense carpet	175 x 205	100% alive	Veg A
cm130	345300	6273701	9 plants and 2 carpets	30 x 30 up to 205 x 175	One plant 25% dead	Veg A
cm131	345291	6273705	3 plants and 1 carpet	35 x 15; 985x55; 105x75; 215 x 175	100% alive	One plant with 25% scale. Veg A
cm132	345287	6273710	3 plants and 1 carpet	55 x 40; 95x75; 175x125; 205 x 125	100% alive	Plant developing a woody base. Veg A
cm133	345271	6273710	1 plant	300 x 200	100% alive	Veg A
cm134	345244	6273722	2 carpets	225 x 150	100% alive	Veg A
cm135	345243	6273722	1 carpet	175 x 205	100% alive	Veg A
cm136	345241	6273720	1 plant	95x 40	100% alive	Adjacent to <i>Gahnia trifida</i> . Veg G
cm137	345238	6273721	2 plants	45 x 45; 210 x 100	10% dead	Veg A

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm138	345210	6273724	8 plants and 1 carpet	60 x 20 up to 205 x 175	100% alive	Veg A
cm139	345212	6273717	3 plants and 1 carpet	85 x 20; 75x60; 95x45; 150 x 45	100% alive	Veg A
cm140	345203	6273717	2 plants and 1 carpet	90 x 35; 95 x 40; 325 x 240	100% alive	Veg A
cm141	345199	6273729	1 plant and 1 carpet	75 x 35; 225 x 225	100% alive	Veg A
cm142	345172	6273717	4 plants 1 carpet	110 x 95 up to 300 x 150	100% alive	Plant with scale. Veg A
cm143	345149	6273724	1 plant	25 x 40	100% alive	Veg A
cm144	345134	6273735	5 plants and 1 carpet	10 x 10 up to 175 x 150	1 Plant 75% dead	Veg A
cm145	345130	6273731	2 plants	95 x 50; 105 x 45	100% alive	Veg A
cm146	345139	6273718	1 plant	115 x 95	100% alive	Veg A
cm147	345147	6273715	4 plants 1 carpet	85 x 20 up to 230 x 200	100% alive	Veg A
cm148	345340	6273697	2 plants	75 x 35; 80 x 60	100% alive	Veg G
cm149	345350	6273698	4 plants 1 carpet	45 x 20 up to 275 x 210	100% alive	Veg A
cm150	345364	6273695	11 plants	25 x 10; up to 105x75	100% alive	2 <i>Nuytsia floribunda</i> .Veg A
cm151	345372	6273690	1 carpet	155 x 120	1 plant 10% dead	Veg A
cm152	345376	6273693	3 plants	25 x 40; 95 x 65; 95 x 95	100% alive	Veg A
cm153	345238	6273721	6 plants	20 x 25 up to 105 x 45	100% alive	Veg G
cm154	345391	6273692	1 plant	155 x 105	100% alive	Lot of scale on plant. Veg A
cm155	345397	6273690	1 carpet	205 x 175	100% alive	Veg A
cm156	345370	6273704	1 carpet	410 x 350	100% alive	On edge of <i>Baumea vaginalis</i> swamp. Veg G
cm157	345483	6273684	2 plants	95 x 95; 140 x 100	100% alive	Veg A
cm158	345482	6273685	1 carpet	225 x 110	100% alive	Veg A
cm159	345483	6273687	1 carpet	440 x 210	100% alive	Just above <i>Baumea</i> swamp. Veg D
cm160	345483	6273688	1 carpet	320 x 225	100% alive	Reasonably open tree canopy. Veg D
cm161	345521	6273688	1 carpet	500 x 300	100% alive	Growing amongst leaf litter. Veg A
cm162	345525	6273684	1 plant	135 x 110	100% alive	Growing amongst * <i>Cynodon dactylon</i> . Veg A
cm163	345615	6273674	5 plants	75 x 35; 75 x 45; 115 x 95; 135 x 80; 195 x 105	100% alive	Veg A
cm164	345624	6273670	1 carpet	500 x 450	100% alive	Growing amongst * <i>Cynodon dactylon</i> and litter. Veg A

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm165	345624	6273664	1 carpet	300 x 400	100% alive	Veg A
cm166	345632	6273660	2 plants 1 carpet	95 cx 65; 115 x 105; 205 x 205	100% alive	Veg A
cm167	345636	6273655	4 plants	65 x 30; 75 x 45; 95 x 95; 126 x 105	100% alive	Veg A
cm168	345653	6273638	1 carpet	700 x 200	100% alive	Veg A
cm169	345653	6273636	1 carpet	375 x 275	100% alive	Veg A
cm170	345660	6273635	1 plant 1 carpet	210 x 175; 375 x 295	100% alive	Veg A
cm171	345664	6273637	1 carpet	275 x 275	100% alive	Growing amongst * <i>Cenchrus clandestinus</i> Veg A
cm172	345664	6273640	1 plant	210 x 170	100% alive	Growing amongst * <i>Cynodon dactylon</i> VEG A
cm173	345665	6273639	1 carpet	375 x 240	100% alive	Amongst a lot of litter. Veg A
cm174	345674	6273627	2 plants	210 x 95; 210 x 100	100% alive	Veg A
cm175	345708	6273609	1 carpet	Up to 1000	100% alive	Veg A
cm176	345705	6273632	2 plants	210 x 160; 170 x 130	100% alive	Veg A
cm177	345698	6273631	1 plant	220 x 100	100% alive	Plant covered with litter. Veg A
cm178	345650	6273673	2 and 1 carpet	95 x 55; 120 x 130; 300 x 350	100% alive	just above <i>Gahnia trifida</i> . Veg A
cm179	345633	6273682	1 plant	225 x 175	100% alive	Veg A
cm180	345594	6273694	1 plant	175 x 110	100% alive	Veg A
cm181	345521	6273704	1 plant	275 x 175	80% dead	Leaves yellow to green. Veg A
cm182	345422	6273718	1 plant, 1 carpet	95 x 105; 200 x 120	100% alive	Veg A
cm183	345393	6273722	1 carpet	210 x 175	100% alive	Growing in litter. Veg A
cm184	345392	6273721	1 carpet	230 x 170	10% dead	Veg A
cm185	345381	6273723	1 carpet	450 x 400	10% dead	Veg A
cm186	345379	6273718	2 plants	95 x 25; 240 x 120	100% alive	Open area with dead trees. Veg A
cm187	345380	6273717	3 plants 1 carpet	110 x 130; 150 x 100; 150 x 125; 350 x 350	100% alive	Veg A
cm188	345379	6273717	1 carpet	250 x 175	100% alive	Several small plants in the area. Veg A
cm189	345364	6273729	dense carpet	275 x 300	100% alive	Shaded area tree cover 80%. Veg A
cm190	345357	6273729	1 carpet	400 x 400	10% dead, scale affected	In open dry area Veg A
cm191	345359	6273727	3 plants	10 x 10; 25 x 15; 75 x 75	100% alive	Veg A

SOUTHERN WETLAND SPECIES

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm192	350790	6250997	2 Plants	95 x95; 75 x50	Larger plant 65% dead	Growing in dampland
cm193	350207	6252146	6 plants	5x5; to 30 x 15	All plants <13 x 15cm,	Regenerating after fire
cm194	350199	6252155	4 plants	10x5; 15x5; 20x15; 25x15	100% alive	Regenerating from rootstock
cm195	350192	6252160	numerous plants	<25x15	100% alive	Regenerating after fire
RESERVE OFF WIRRIWA STREET AND QUEEN ELIZABETH AVENUE						
cm196	344786	6273235	2 plants	5x5; 10x5	100% alive	Many * <i>Acacia longifolia</i> . Veg A
cm197	344766	6273232	2 carpets	200 x 95; 400 x250	100% alive	Veg A
cm198	344756	6273238	1 carpet	400x250	100% alive	Growing through a large amount of * <i>Briza maxima</i> . Veg A
cm199	344772	6273236	1 carpet	600 x 200	100% alive	Large number of * <i>Acacia longifolia</i> dumped on top of plant Veg A
cm200	344828	6273104	3 plants	75x45; 95x30; 115x115	100% alive	Veg A
cm201	344848	6273925	1 plant	205 x 175	100% alive	Degraded area. Veg A
ST MARY MACKILLOP COLLEGE						
cm202	344852	6273923	1 carpet	250 x 450	100% alive	Ground covered in <i>Agonis</i> litter Veg A
cm203	344847	6273919	12 plants	35x10 to 230 x 75	100% alive	Veg A
cm204	344814	6273912	2 carpets	175 x 55; 225 x 310	100% alive	Lot of <i>Agonis</i> litter Veg A
cm205	344783	6273916	3 plants	175x110; 210 x 250; 2.75 x 210	One plant had 15% dead	Lot of <i>Agonis</i> litter Veg A
LOT 301 BUSSELTON BYPASS WESTERN BLOCK						
cm206	345498	6273007	2 plants, 1 carpet	150x75; 75x40; 225x175	100% alive	Veg A
cm207	345499	6273011	1 carpet	400x300	100% alive	Veg A
cm208	345494	6273010	1 plant, 1 carpet	75x25; 250x95	100% alive	Veg A
cm209	345491	6273004	3 plants	55x35; 60x25; 155x145	100% alive	Veg A
cm210	345481	6272990	1 carpet	225x275	100% alive	Veg A
cm211	345477	6272994	1 plant, 1 carpet	175x120; 275x300	45% of smaller plant dead	Veg F
cm212	345434	6273004	1 plant, 1 carpet	175x200; 250x500	100% alive	Veg F
cm213	345390	6272996	3 plants	10x10; 25x15; 30x10	100% alive	Veg F
cm214	345382	6272999	1 plant	120 x 75	100% alive	Veg A
cm215	345376	6273007	2 carpets	225x150; 195x120	100% alive	Second plant with scale Veg A
cm216	345338	6272990	1 plant	195x125	100% alive	Veg A

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm217	345347	6273005	1 plant?	225 x 125	100% alive	Veg A
cm218	345349	6273009	1 plant 2 carpets	95x95; 175x210; 220 x 250	100% alive	Veg A
cm219	345313	6272998	1 carpet	175x175	100% alive	<i>Agonis flexuosa</i> and <i>Banksia littoralis</i> cover 40% Veg E
cm220	345311	6273002	1 carpet	390x290	100% alive	Veg E
cm221	345285	6273011	1 carpet	195 x 175	100% alive	Veg D
cm222	345693	6272863	1 plant	210x210	5% dead	On edge of wetland . Veg H
cm223	345691	6272860	1 carpet	275x150	100% alive	Veg B.
cm224	345690	6272857	1 carpet	300x400	5% dead	Veg I.
cm225	345687	6272860	2 carpets	200x130; 300ox130	100% alive	Veg I
cm226	345687	6272863	1 carpet	800x600	20% dead	100% alive. Veg I
cm227	345683	6272863	3 plants	95x75; 185x165; 195x150	100% alive	Veg I
cm228	345680	6272863	3 carpets	700x250; 275c210; 320x175	5% dead	Veg I.
cm229	345665	6272867	9 carpets	75x95 up to 500x400	100% alive	Veg I
cm230	345664	6272866	1 carpet	450x250	100% alive	Veg I
cm231	345669	6272867	1carpet	800x500	100% alive	Veg I.
cm232	345672	6272872	2 carpets	150x95; 210x75	100% alive	Veg I
cm233	345657	6272891	1 plant	120x120	100% alive	Veg I
cm234	345655	6272890	1 carpet	600x300	100% alive	Veg I
cm235	345606	6272841	3 plants, 3 carpets	50x15up to 400x200	100% alive	Veg I
cm236	345616	6272832	2 plants 2 carpets	20x20 up to 400x300	100% alive	Veg A
cm237	345616	6272842	1 carpet	350x450	100% alive	Veg A
cm238	345622	6272888	2 plants 2 carpets	45x35; 95x45; 125x95; 475x275	100% alive	Veg A
cm239	345633	6272867	1 carpet	350x275	100% alive	Inflorescences starting to turn up Veg A
cm240	345639	6272854	2 carpets	410x250; 500x290	100% alive	Veg I
cm241	345643	6272846	dense carpet	450x450	100% alive	Veg I
cm242	345645	6272839	1 plant	75x10	100% alive	Veg I
cm243	345667	6272798	1 carpet	350x275	5% dead	Veg I
cm244	345671	6272794	dense carpet	500x400	100% alive	Veg I
cm245	345674	6272794	dense carpet	550x450	100% alive	Veg I

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm246	345676	6272795	2 carpets	300x75; 200x75	100% alive	Veg I
cm247	345688	6272794	dense carpet	600x450	100% alive	Veg I
cm248	345675	6272792	dense carpet	300x400	100% alive	Veg I
cm249	345674	6272792	dense carpet	250x300	100% alive	Veg I
cm250	345675	6272791	dense carpet	350x350	100% alive	Veg I
cm251	345671	6272775	1 carpet	320x170	20% dead	Veg I
cm252	345671	6272778	1 carpet	200x200	20% dead	Veg I
cm253	345672	6272781	dense carpet	275x250	100% alive	Veg I
cm254	345678	6272777	dense carpet	400x400	100% alive	Veg I
cm255	345693	6272775	dense carpet	200x100	100% alive	Veg I
cm256	345697	6272776	2 plants	75x55; 45x60	100% alive	Veg I
cm257	345701	6272773	dense carpet	200x3900	20% dead	Veg I
cm258	345702	6272774	dense carpet	75x55; 200x175	100% alive	Veg I
cm259	345703	6272776	2 carpets	250x270; 250x300	100% alive	Veg I
cm260	345705	6272777	1 carpet	350x450	100% alive	Amongst a lot of dead <i>Kunzea</i> branches Veg I
cm261	345705	6272779	scattered plants	300x300	100% alive	Lot of <i>Kunzea</i> branches on ground Veg I.
cm262	345704	6272781	1 carpet	200x200	100% alive	Lot of <i>Kunzea</i> litter Veg I
cm263	345704	6272786	1 carpet	200x150	100% alive	Dense branch and leaf litter Veg I
cm264	345698	6272809	1 carpet	250x400	100% alive	Veg I.
cm265	345701	6272820	dense carpet	250x310	100% alive	Veg I.
cm266	345704	6272804	1 carpet	250x250	100% alive	Large amount of litter Veg I.
cm267	345702	6272784	dense carpet	300x300	100% alive	Veg I
cm268	345707	6272754	1 carpet	250x250	100% alive	Veg I.
cm269	345707	6272748	2 carpets	200x100; 250x250	100% alive	Few leaves with scale Veg I
cm270	345709	6272745	1 carpet	250x300	100% alive	Veg I.
cm271	345727	6272737	1 carpet	400x100	100% alive	Veg I.
cm272	345737	6272736	dense carpet	400x500	100% alive	Veg I.
cm273	345752	6272730	2 plants	120x175; 110x65	100% alive	Veg I.
cm274	345758	6272729	1 carpet	400x500	100% alive	Veg I.

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm275	345762	6272725	2 carpets	250x100; 300x300	100% alive	Veg I.
cm276	345766	6272722	2 plants	175x120; 150x170	100% alive	Veg I.
cm277	345694	6272726	3 plants 1 carpet	60x50; 110x95; 175x150; 250x350	100% alive	Veg I.
cm278	345696	6272711	1 carpet	600x400	100% alive	Veg I.
cm279	345697	6272710	2 carpets	300x200; 500x500	100% alive	Veg I.
cm280	345706	6272715	1 carpet	350x350	100% alive	Veg I.
cm281	345709	6272723	1 carpet	250x350	100% alive	Veg I.
cm282	345710	6272722	2 plants 1 carpet	50x30; 95x40; 350x400	100% alive	Veg I.
cm283	345704	6272722	3 carpets	300x100; 150x150; 250x300	100% alive	Veg I.
cm284	345705	6272722	1 plant	125x60	100% alive	Veg A
cm285	345706	6272720	1 carpet	300x200	100% alive	Veg A
cm286	345706	6272717	1 carpet	350x200	100% alive	Veg A
cm287	345716	6272703	1 carpet	200x200	100% alive	Growing in an open area Veg A.
cm288	345713	6272703	1 plant 1 carpet	110x75; 250x300	100% alive	Veg A
cm289	345714	6272699	dense carpet	400x300	100% alive	Veg A
cm290	345712	6272690	5 carpets	500x500	100% alive	5 distinct groups cover area. Veg I
cm291	345705	6272687	1 carpet	250x300	100% alive	Growing under dead branches. VegI
cm292	345709	6272697	1 carpet	200x200	100% alive	Veg I
cm293	345708	6272699	1 carpet	200x75	100% alive	VegI
cm294	345690	6272702	dense carpet	400x300	100% alive	Veg I
cm295	345688	6272701	1 carpet	500x200	100% alive	Consisting of 5 distinct groups
cm296	345687	6272701	1 carpet	500x200	20% dead	Veg I
cm297	345686	6272701	1 carpet	300x400	100% alive	Veg I
cm298	345686	6272699	1 carpet	300x200	100% alive	Lot of <i>Kunzea</i> litter 1 carpet Veg I
cm299	345685	6272698	1 plant	175x95	100% alive	Veg A
cm300	345684	6272697	1 plant	125x150	100% alive	Veg A
cm301	345683	6272696	1 carpet	500x500	100% alive	Veg A
cm302	345682	6272695	1 plant	125x75	100% alive	Veg A
cm303	345682	6272695	1 plant	150x150	100% alive	Veg A

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm304	345678	6272694	dense carpet	500x500	100% alive	Veg A
cm305	345671	6272679	dense carpet	400x300	100% alive	Veg A
cm306	345670	6272676	1 carpet	250x300	100% alive	Veg A
cm307	345670	6272676	Plant	101x75	100% alive	Veg A
cm308	345665	6272673	2 carpets	250x250; 400x350	100% alive	Veg I
cm309	345658	6272667	1 carpet	350x350	100% alive	Veg I
cm310	345657	6272668	1 carpet	250x350	100% alive	Veg I
cm311	345653	6272669	1 carpet	500x300	100% alive	Veg I
cm312	345654	6272672	1 carpet	500x500	100% alive	Veg I
cm313	345647	6272678	1 carpet	3200x100	100% alive	Veg I
cm314	345650	6272686	1 carpet	250x200	100% alive	Scrambling through dead branches on ground Veg I
cm315	345653	6272686	1 carpet	400x200	100% alive	Veg I
cm316	345654	6272688	1 carpet	200x75	100% alive	Veg I
cm317	345655	6272688	1 carpet	500x300	100% alive	Veg I
cm318	345658	6272687	1 carpet	500x500	100% alive	Veg I
cm319	345659	6272688	Sparse carpet	450x500	100% alive	Veg I
cm320	345660	6272687	1 carpet	600x400	100% alive	Veg I
cm321	345659	6272685	1 carpet	500x400	100% alive	Veg I
cm322	345658	6272674	1 plant	125x125	100% alive	Veg I
cm323	345646	6272674	1 carpet	250x150	100% alive	Veg I
cm324	345651	6272673	1 carpet	500x500	100% alive	Veg I
cm325	345646	6272673	1 carpet	300x300	100% alive	Veg I
cm326	345641	6272672	1 carpet	200x300	100% alive	Veg I
cm327	345635	6272667	1 carpet	250x250	100% alive	In amongst dense trees
cm328	345631	6272670	1 plant	95x50	100% alive	Veg I
cm329	345639	6272671	1 plant	110x50	100% alive	Veg I
cm330	345632	6272658	1 carpet	250x200	100% alive	Veg I
cm331	345629	6272654	1 carpet	320x225	100% alive	Veg I
cm332	345627	6272649	1 carpet	450x400	100% alive	Veg I

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm333	345625	6272646	1 carpet	350x150	100% alive	Veg I
cm334	345608	6272629	1 plant	135 x 110	100% alive	Veg I
cm335	345604	6272614	1 carpet	210x55	100% alive	Veg I
cm336	345599	6272633	1 carpet	420x75	100% alive	Veg I
cm337	345620	6272633	1 carpet	275x50	100% alive	Veg I
cm338	345617	6272642	1 carpet	200x200	100% alive	Veg I
cm339	345617	6272645	1 carpet	225x110	100% alive	Veg I
cm340	345620	6272663	1 carpet	200x100	100% alive	Veg A
cm341	345618	6272671	1 carpet	500x 00	100% alive	Veg A
cm342	345620	6272677	1 carpet	350x350	100% alive	Veg A
cm343	345614	6272687	1 carpet	150x150	100% alive	Veg A
cm344	345618	6272691	1 carpet	400x400	100% alive	Veg A
cm345	345612	6272696	1 carpet	230x95	100% alive	Veg A
cm346	345606	6272705	1 carpet	440 x 210	100% alive	Veg A
cm347	345602	6272711	1 carpet	275x250	100% alive	Veg A
cm348	345609	6272713	1 carpet	275x55	100% alive	Veg A
cm349	345612	6272721	1 plant	75x50	100% alive	Veg A
cm350	345584	6272739	1 plant	175x75	100% alive	Edge of inner circle Veg A
cm351	345577	6272732	1 carpet	105 x 255	100% alive	Veg A
cm352	345574	6272730	1 carpet	125x125	100% alive	Veg A
cm353	345567	6272705	1 plant	125x50	100% alive	Veg A
cm354	345554	6272701	1 plant	105 x 55	100% alive	Veg A
cm355	345537	6272695	1 carpet	250x150	100% alive	Veg A
cm356	345527	6272697	1 carpet	350x150	100% alive	Veg A
cm357	345502	6272684	1 plant	120x50	100% alive	Veg A
cm358	345501	6272684	1 plant	110x65	100% alive	Veg A
cm359	345480	6272681	1 plant	95x95	100% alive	Veg A
cm360	345469	6272676	1 carpet	300x200	100% alive	Veg A
cm361	345465	6272666	1 carpet	150x150	100% alive	Veg A

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm362	345461	6272658	1 carpet	150x100	100% alive	Veg A
cm363	345460	6272652	1 plant	95x50	100% alive	Veg A
cm364	345457	6272637	1 plant	75x75	100% alive	Veg A
cm365	345454	6272620	2 plants	45x55; 105x45	100% alive	Veg A
cm366	345454	6272617	1 plant	95x50	100% alive	Veg A
cm367	345452	6272611	1 plant	105x45	100% alive	Veg A
cm368	345438	6272611	1 carpet	175x120	100% alive	Veg A
cm369	345432	6272614	2 plants	95 x 95; 140 x 100	100% alive	Veg A
cm370	345421	6272614	1 plant	130x35	100% alive	Veg I
cm371	345462	6272637	1 carpet	200x100	100% alive	Veg I
cm372	345462	6272637	1 plant	75x45	100% alive	Veg I
cm373	345462	6272637	1 carpet	250x150	100% alive	Veg I
cm374	345456	6272631	1 plant	110x65	100% alive	Veg I
cm375	345456	6272631	1 plant	65x90	100% alive	Veg I
cm376	345456	6272631	1 plant	95x65	100% alive	Veg I
cm377	345456	6272631	1 plant	120x65	100% alive	Outer circle edge Veg A
cm378	345456	6272631	1 carpet	210x75	100% alive	Veg A
cm379	345337	6272644	1 plant	100x75	100% alive	Veg A
cm380	345342	6272669	1 plant	120x80	100% alive	Veg A
cm381	345346	6272683	1 carpet	200x175	100% alive	Veg A
cm382	345352	6272703	2 plants	45x65; 90x60	100% alive	Veg A
cm383	345381	6272703	1 carpet	250x150	100% alive	Veg A
cm384	345400	6272703	1 plant	75x85	100% alive	Veg A
cm385	345431	6272712	1 carpet	300x150	100% alive	Veg A
cm386	345435	6272712	1 carpet	400x200	100% alive	Veg A
cm387	345480	6272712	2 plants	120x75; 50x50	100% alive	Veg A
cm388	345492	6272728	1 plant	95x65	100% alive	Veg A
cm389	345505	6272740	2 plants	90x40; 130x100	100% alive	Veg A
cm390	345525	6272751	1 plant	75x95	100% alive	Veg A

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm391	345614	6272787	1 plant	140x55	100% alive	Veg A
cm392	345612	6272797	1 plant	80x90	100% alive	Veg A
cm393	345601	6272812	1 plant	95x55	100% alive	Veg A
cm384	345606	6272820	1 plant	75x95	100% alive	Veg A
cm395	345595	6272832	1 plant	70x85	100% alive	Veg A
cm396	345604	6272841	1 plant	65x65	100% alive	Veg A
cm397	345613	6272856	3 plants	30x30; 96x50; 90x40	100% alive	Veg A
cm398	345624	6272874	1 plant	50x75	100% alive	Near end of extent of plants Veg A
cm399	345645	6272874	1 plant	50x50	100% alive	Veg A
WATER CORPORATION LAND EAST OF PENNYWORTH PLACE FENCE						
cm400	345740	6273577	2 plants 1 carpet	75x50; 125x100; 300x200	100% alive	Veg A
cm401	345739	6273585	8 plants	10 x10 up to 110x85	One plant with scale	Scale on few plants
cm402	345740	6273581	1 plant	70x30	100% alive	Veg A
cm403	345738	6273583	3 carpets	250x150; 250x250; 275x200	100% alive	Few scale affected Veg A
cm404	345735	6273584	1 carpet	220x310	100% alive	Veg A
cm405	345735	6273591	1 carpet	400x450	100% alive	Flowering stems growing upright
cm406	345739	6273599	1 carpet	200x250	100% alive	Beside boundary fence
cm407	345739	6273601	2 plants	55x35; 175x120	100% alive	Beside N boundary fence
cm408	345719	6273606	2 carpets	250x175; 225x210	100% alive	Veg A
cm409	345720	6273609	2 carpets	200x275; 210x275	100% alive	Veg A
cm410	345713	6273603	8 plants, 1 carpet	15x10 up to 95x40; 250x150	100% alive	Veg A
cm411	345711	6273598	1 plant	25x35	100% alive	Veg A
cm412	345746	6273573	6 plants 1 carpet	15x15 up to 105x75; 320x350	100% alive	Veg A
cm413	345752	6273575	10 plants	10x15 up to 105x19	100% alive	Veg A
cm414	345752	6273577	1 carpet	250 x 310	100% alive	Veg A
cm415	345753	6273578	2 plants	75x95; 95x95	100% alive	Veg A
cm416	345755	6273577	dense carpet	800x600	100% alive	Amongst <i>Baumea vaginalis</i> Veg B
cm417	345755	6273575	dense carpet	250x275	100% alive	Amongst <i>Baumea vaginalis</i> VegB
cm418	345756	6273574	1 carpet	275x300	100% alive	Veg E

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm419	345758	6273572	1 plant	150x110	100% alive	Veg A
cm420	345759	6273572	1 plant	110x95	100% alive	Beside N fence Veg A
cm421	345760	6273572	1 carpet	750x200	100% alive	Lot of litter Veg A
cm422	345762	6273573	2 plants	95x75; 110x95	100% alive	Beside N fence Veg A
cm423	345763	6273561	1 carpet	320x250	100% alive	Veg A
cm424	345767	6273556	1 plant	75x75	100% alive	Veg A
cm425	345771	6273556	1 plant	135x145	100% alive	Spreads across fence Veg A
cm426	345773	6273556	3 plants	55x75; 45x35; 95x95	100% alive	Near road fence Veg A
cm427	345776	6273556	1 plant	170x130	100% alive	Veg A
cm428	345778	6273558	2 plants	95x50; 75x60	100% alive	Along N fence Veg A
cm429	345780	6273560	1 carpet	700x200	100% alive	Spreads along edge of fence Veg A
cm430	345783	6273560	1 plant, 1 carpet	120x210; 600x210	100% alive	Carpet extends through road fence Veg A
cm431	345784	6273557	2 plants	435x25; 25x10	100% alive	Veg A
cm432	345800	6273527	3 plants	110x95; 110x100; 85x15	100% alive	Veg A
cm433	345802	6273533	13 plants	35x35 up to 175x75	100% alive	Extends for 10m along a small drain Veg A
cm434	345807	6273542	2 plants	110x75; 150x75	100% alive	Veg A
cm435	345807	6273544	1 carpet	300x250	100% alive	Veg A
cm436	345807	6273546	1 carpet	320x230	100% alive	Veg A
cm437	345801	6273555	2 carpets	170x210; 250x250	100% alive	Veg A
cm438	345805	6273545	2 carpets	125x110; 250x275;	100% alive	Veg A
cm439	345807	6273545	2 carpets	210x150; 210x290	100% alive	Veg A
cm440	345804	6273541	1 plant	75x45	100% alive	Veg A
cm441	345806	6273540	1 plant	45x20	100% alive	Veg A
cm442	345809	6273540	1 carpet	1000x210	100% alive	10m length on road side of drain. Veg A
BUSSLETON BYPASS VERGE						
cm443	346018	6273039	1 carpet	350x300	100% alive	Veg A
cm444	345882	6273035	1 carpet	200x200	100% alive	With <i>Lepidosperma pubisquameum</i> . Veg A
cm445	345865	6273033	6 plants	25x20, 85x45 up to 150x100	100% alive	Veg A
cm446	345514	6273037	1 carpet	450x350	100% alive	Veg A

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm447	345494	6273029	1 carpet	250x175	100% alive	Veg A
cm448	345496	6273029	4 plants	20x50; 75x30; 150x75; 150x100	100% alive	Veg A
cm449	345494	6273030	dense carpet	500x500	100% alive	Vigorous. Veg A
cm450	345492	6273032	1 carpet	300x300	100% alive	Veg A
cm451	345491	6273035	1 carpet	250x75	100% alive	Around base of marri. Veg A
cm452	345491	6273037	1 carpet	230x320	100% alive	Veg A
cm453	345489	6273038	1 plant	150x95	100% alive	In dense sedge Veg B
cm454	345488	6273039	1 plant	150x95	100% alive	Veg A
cm455	345460	6273044	1 carpet	195x140	100% alive	Veg A
cm456	345459	6273045	1 carpet	275x210	100% alive	Veg A
cm457	345458	6273044	1 plant 1 carpet	175x95; 280x275	100% alive	Veg A
cm458	345457	6273041	1 plant 1 carpet	75x70; 125x150	100% alive	Veg A
cm459	345455	6273037	1 carpet	175x175	100% alive	Many leaves with scale.
cm460	345452	6273033	Plant	95x45	100% alive	Veg A
cm461	345450	6273032	1 carpet	250x175	33% dead	Covered in scale. Veg A
cm462	345432	6273031	1 carpet	205x175	100% alive	In dense sedge Veg B
cm463	345423	6273034	1 carpet	250x150	100% alive	Veg A
cm464	345395	6273024	1 carpet	250x175	50% dead	On edge of access track. Veg A
cm465	345394	6273035	1 plant	175x95	100% alive	Veg A
cm466	345395	6273037	1 carpet	200x175	100% alive	Veg A
cm467	345382	6273028	7 small plants	<65x30	100% alive	Veg A
cm468	345377	6273036	1 carpet	500x200	100% alive	Veg A
cm469	345371	6273032	2 plants	20x15; 30x25	100% alive	Veg A
cm470	345356	6273028	5 plants; 1 carpet	<80x70; 200x125	100% alive	Veg A
cm471	345350	6273025	1 carpet	200x200	100% alive	Veg A
cm472	345349	6273025	1 carpet	250x100	25% dead	50% covered in scale. Veg a
cm473	345350	6273031	1 carpet	200x100	100% alive	Veg A
cm474	345344	6273028	dense carpet	400x300	100% alive	Veg A
cm475	345341	6273029	1 carpet	400x275	50% dead	Covered with scale. Veg A

SITE	EASTING	NORTHING	COUNT	SIZE (cm)	CONDITION	COMMENTS
cm476	345325	6273003	1 carpet	400x275	15% dead	Plant covered in scale. Veg A
cm477	345325	6273003	29 small plants	Varying from 5x5 up to 75x5	Plant 75x5 is 75% dead	Veg A
cm478	345325	6273000	1 carpet	200x250	100% alive	Veg A
cm479	345333	6273027	dense carpet	500x300	100% alive	Veg A
cm480	345331	6273026	1 plant	125x125	100% alive	Veg A
cm481	345330	6273026	8 plants	10x10 up to 95x60	100% alive	2 plants with scale. Veg A
cm482	345330	6273025	25 juvenile plants	Varying from 10x10 up to 50x50	100% alive	Area with slightly older juvenile plant Veg A
cm483	345330	6273025	3 plants 1 carpet	5x5; 15x15; 20x20; 250x175	100% alive	Veg A
cm484	345326	6273025	1 carpet	500x300	100% alive	40% affected by scale. Veg A
cm485	345323	6273026	2 plants	20x20; 25x325	100% alive	Veg A
cm486	345316	6273031	1 plant	45x45	100% alive	Veg A
cm487	345312	6273028	dense plant	175x100	100% alive	Veg A
cm488	345308	6273029	1 carpet	220x185	100% alive	Growing through <i>Baumea vaginalis</i> . Veg B
cm489	345306	6273030	1 plant	250x75	100% alive	Trailing around <i>Agonis flexuosa</i> Veg A