

15 February 2023

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Dear Aaron

Alkimos Seawater Desalination Plant Project Pipeline Survey – Species Specific Targeted Flora Survey

1 Background

360 Environmental Pty Ltd (360 Environmental) part of SRL Consulting (SLR) was commissioned by the Water Corporation to undertake a targeted flora survey of the proposed pipeline alignment of approximately 7 km in Nowergup, WA (herein known as the Survey Area) (Figure 1).

Water Corporation is currently in the Environmental Impact Assessment (EIA) process for the Alkimos Seawater Desalination Plant Project. Following the submission of the Environmental Review Document (ERD) to the Environmental Protection Authority (EPA), concerns were raised regarding two Threatened species, *Melaleuca* sp. Wanneroo (G. J. Keighery 16705) and *Eucalyptus argutifolia*. These species have been identified as having the potential to occur in the Survey Area due to the presence of suitable habitat and the close proximity to previous records.

As a result, the EPA responded to the Water Corporation's submission, with the following: *"Additional targeted surveys be undertaken within the Development Envelope to adequately identify threatened and priority flora species, in particular Melaleuca sp. Wanneroo (G. J. Keighery 16705) and Eucalyptus argutifolia."*

360 Environmental has assessed the known distributions of the two Threatened species using the Department of Biodiversity, Conservation and Attractions (DBCA) database, data from previous surveys and advice from DBCA. It was concluded that the assessment of the entirety of the pipeline (30 km) and the footprint of the Alkimos Seawater Desalination Plant (30 ha) was not warranted, due to the restricted distribution and preferred habitat of both species.

Therefore, 360 Environmental proposed that the 7 km of the pipeline alignment that has the potential to intersect the two species habitat, would be required to be surveyed and would meet the EPA’s requirement. The Department of Water and Environmental Regulation (DWER) was contacted regarding the proposed Survey Area length and location with the following feedback received:

“The reduced extent of the survey area, as shown in the shapefile provided, appears reasonable as the targeted study area. This reflects the local extent of known populations and suitable habitat.” (Tonja Boyd, Principal Environmental Officer Infrastructure Assessments, EPA Services - Department of Water and Environmental Regulation [DWER])

1.1 Scope of Work

The purpose of the survey was to search for two Threatened flora species where the specific objectives of the assessment were to:

- Carry out a targeted flora survey for *Melaleuca sp. Wanneroo* (G. J. Keighery 16705) and *Eucalyptus argutifolia* along approximately 7 kms of proposed pipeline as shown in Figure 1
- Prepare a technical letter report of the findings
- Provide all spatial/mapping data collected during the survey.

These works are described in more detail in the following sections.

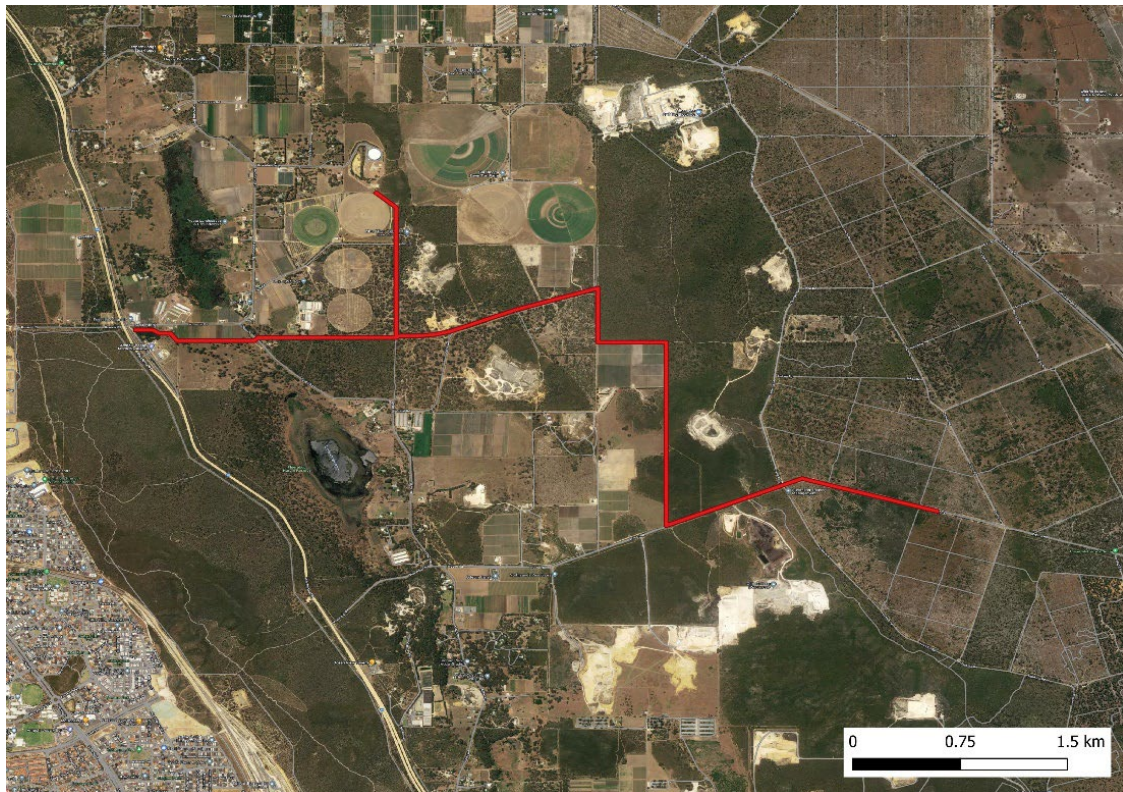


Figure 1: Survey Area

2 Methods

2.1 Flora and Vegetation Survey

The field component of the targeted flora survey incorporated the following:

- Field personnel familiarised themselves with photographs, reference samples and descriptions of the two taxa before conducting the survey.
- Five botanists undertook the survey over one day equating to 50 person hours.
- The survey was undertaken within the flowering season of *Melaleuca* sp. Wanneroo which assisted in differentiating the species from *Melaleuca systena* which it co-exists with. The survey was undertaken on the 30 January 2023.
- The entirety of the Survey Area was traversed on foot. When Threatened flora was encountered in the field a GPS location was taken and a count of individuals recorded, followed by a search in the local vicinity to determine if any other individuals were present nearby.
- Specimens of any potential conservation significant flora were collected for identification and lodgement at the Western Australian Herbarium (WAH).

2.2 Licensing

Table 1 below shows the field team and their relevant licensing.

Table 1: Field team and associated licensing

Staff	Role/Experience	DBCA Licence No.
Narelle Whittington	Principal Botanist/ +20 years	FB62000177-2, TFL 2223-0068
Candice Le Roux	Senior Botanist/ 6 years	FB62000436
Grant Buller	Botanist/ 5 years	FB62000321-2
Megan Young	Botanist/ 2 years	FB62000388
Jack Hardie	Botanist/ 2 years	FB62000389-2

2.3 Taxonomy

Two samples of *Melaleuca* sp. Wanneroo were collected to enable confirmation. The samples were submitted to the WAH and identified by Michael Hislop (accession number ACC/9987/E).

3 Results

3.1 Limitations

Limitations and constraints of the flora, vegetation and fauna survey are detailed below in Table 8.

Table 2: Limitations and Constraints Associated with the Survey

Variable	Degree of Limitation	Potential Constraints on Survey Outcomes
Survey Scope	No	The targeted flora survey was undertaken in accordance with EPA (2016) and upon advice from DBCA and considered appropriate to support approvals applications. Targeted searching for flora of conservation significance was undertaken within the entirety of the Survey Area.
Availability of Data	No	All data required to complete the scope of works including regional and local contextual information was available
Site Access	No	The Survey Area was able to be accessed on foot.
Survey Intensity and Resources	No	The entirety of the area could be traversed, and sufficient time was allocated to the targeted survey. Five botanists undertook the survey over one day equating to 50 person hours.
Experience	No	The flora and vegetation survey was undertaken by Principal Botanist Narelle Whittington, Senior Botanist Candice Le Roux and Botanists Grant Buller, Megan Young and Jack Hardie. Together equating to over 35yrs experience. Narelle has +20 years' experience conducting surveys of similar scope throughout Western Australia and is a specialist in the SCP region. Identification of flora collections was completed by Mike Hislop at the WAH who is a WAH specialist.
Timing, weather, season	No	The survey was undertaken during the recommended survey period for the species which is November to late January due to its flowering period. This allows it to be distinguishable from other melaleuca species.
Mapping Reliability	No	The entirety of the Survey Area was traversed on foot. When Threatened flora was encountered in the field a GPS location was taken and a count of individuals recorded.
Disturbances (fire, flood etc.)	Yes	No disturbances occurred during the surveys. The urban/rural setting of the Survey Area means that portions of the native vegetation has been subject to severe disturbance. Introduced species and historical clearing have had the largest impact.
Completeness	No	The survey was considered complete for a Targeted flora and vegetation survey.

3.2 *Eucalyptus argutifolia* (T)

No specimens of this species were recorded during the survey.

3.3 *Melaleuca* sp. Wanneroo (T)

Melaleuca sp. Wanneroo (T) (G.J. Keighery 16705) is an erect shrub that can grow to 2.5 m in height and 2-3 m in width. Older stems have grey furrowed bark with ‘twiggy’ branchlets that break easily. The species produces numerous terminal inflorescences of yellow flowers (November to late January) with branchlets growing out when flowering is finished (Threatened Species Scientific Committee, 2019). It is known to grow alongside *Melaleuca systema* (flowers August to December); however, their different flowering periods makes them easily distinguishable in the field.

A total of three individuals of *Melaleuca* sp. Wanneroo (T) (Plate 1) were recorded during the survey. All the plants recorded were flowering or nearing the end of flowering at the time of the survey. Two plants were recorded on Wesco Road, Nowergup adjacent to Optimal Lime and one plant was located approximately 150 m east of where Godel Road turns into McLennan Drive (Table 2, Figure 2).



Plate 1: Photos of *Melaleuca* Sp. Wanneroo (G. J. Keighery 16705) (T)

Table 3: *Melaleuca* sp. Wanneroo (G. J. Keighery 16705) (T) geospatial locations (UTM 50J)

Species	Easting	Northing
<i>Melaleuca</i> sp. Wanneroo	-31.63749500	115.76110170
	-31.63727574	115.76172542
	-31.62487842	115.73877610

4 Closing

We trust this meets your requirements. Should you have any questions or require further action please do not hesitate to contact the undersigned on (08) 9388 8360.

For and on behalf of 360 Environmental Pty Ltd



Narelle Whittington – Principal Botanist

Enc:

Figure 2: Locations of Melaleuca sp. Wanneroo

5 References

Threatened Species Scientific Committee. (2019). Conservation Advice for *Melaleuca* sp. Wanneroo (G.J. Keighery 16705)).

Figure