
reference (non-spray field) vegetation quadrats. The position of each sample recorded with a hand-held GPS unit. The location of the quadrats are shown in Figure 2.

Within each quadrat the general health of native overstorey and understorey vegetation was noted, and an assessment was made of obviously stressed plants or species (e.g. atypical leaf discolouration, leaf death, limb death or whole plant death) and the presence of weeds or other threats and disturbances. A health score adapted from Casson *et al.* (2009) was then applied to both overstorey and understorey stratum (Table 1).

Table 1: Vegetation health score (Casson *et al.* 2009)

Score	Plant health descriptors
0	Healthy, no signs of stress
1	Some early signs of stress, a few individuals, likely one species
2	Signs of stress in several individuals, one or more species
3	Signs of stress in many individuals, several species
4	Advanced decline and/or death of many individuals and several or most species

3 RESULTS

Native vegetation health within spray field quadrat Q1 was scored at 4 (overstorey) and 2 (understorey), where the death of an overstorey tree and signs of stress in understorey shrubs was recorded.

Native vegetation within the other spray field quadrats (Q2, Q7 and Q8) and the reference vegetation quadrats (Q3, Q4, Q5 and Q6) was scored as 0 or 1. Where quadrats were scored 1 early signs of stress were generally restricted to one or two individual plants.

The vegetation health scores for the spray fields and the reference vegetation are provided in Table 2 and Table 3 respectively.

Table 2: Native vegetation health within spray fields

Quadrat	Notes	Overstorey score	Understorey score
Q1	<ul style="list-style-type: none"> Dead <i>Eucalyptus concinna</i> tree. <i>Scaevola spinescens</i> and <i>Enchylaena tomentosum</i> shrubs in the understorey were showing signs of stress. Weed cover of exceeding 55%. 	4	2
Q2	<ul style="list-style-type: none"> Stress was restricted to one or two individuals of a single species. Weed cover exceeding 35%. 	1	1
Q7	<ul style="list-style-type: none"> Stress was restricted to one or two individuals of a single species. Weed cover exceeding 70%. 	0	1
Q8	<ul style="list-style-type: none"> No stress. Weed cover of exceeding 70%. 	0	0

Table 3: Native vegetation health within reference vegetation

Quadrat	Notes	Overstorey score	Understorey score
Q3	<ul style="list-style-type: none"> Stress was restricted to one or two individuals of a single species. No weeds recorded. 	0	1
Q4	<ul style="list-style-type: none"> Stress was restricted to one or two individuals of a single species. No weeds recorded. 	0	1

Table 3: Native vegetation health within reference vegetation (continued)

Quadrat	Notes	Overstorey score	Understorey score
Q5	<ul style="list-style-type: none"> Stress was restricted to one or two individuals of a single species. No weeds recorded. 	1	1
Q6	<ul style="list-style-type: none"> Stress was restricted to one or two individuals of a single species. No weeds recorded. 	1	0

4 DISCUSSION

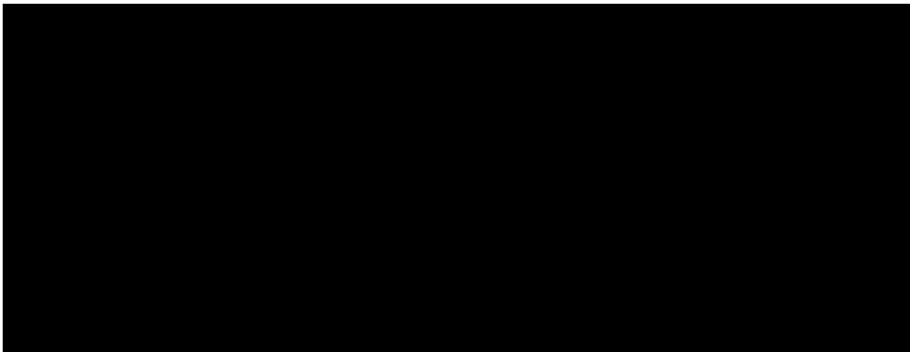
The vegetation score in spray field quadrat Q1 and the higher weed cover observed in all spray field quadrats indicates that the disposal of effluent from the Windarling WWTP is having an effect on the native vegetation in the site. However, as decline or stress was only recorded in Q1, the spray fields do not appear to have had a broad impact on vegetation health.

5 SUMMARY AND CLOSING

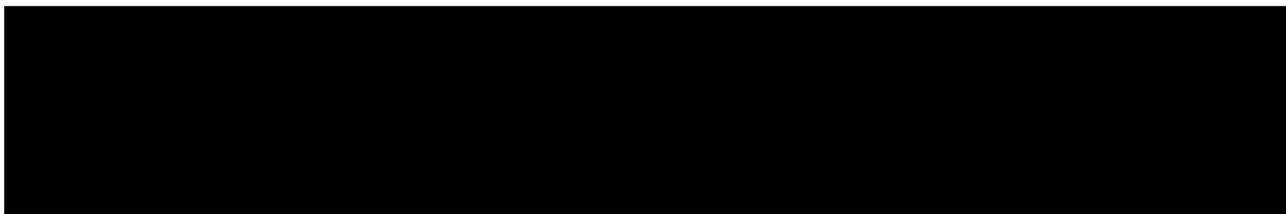
One quadrat within the spray field indicated localised decline and stress of native vegetation, with a dead overstorey tree and stressed understorey shrubs.

Generally, the remainder of vegetation within the spray fields is healthy or exhibits minor stress similar to that observed in the surrounding reference vegetation.

As such, the health of vegetation within the spray fields does not appear to have been broadly impacted by the disposal of effluent from the Windarling WWTP.



Encl: Figure 1: Site Location
Figure 2: Quadrat Locations



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Figures



Figure 1: Site Location

Figure 2: Quadrat Locations

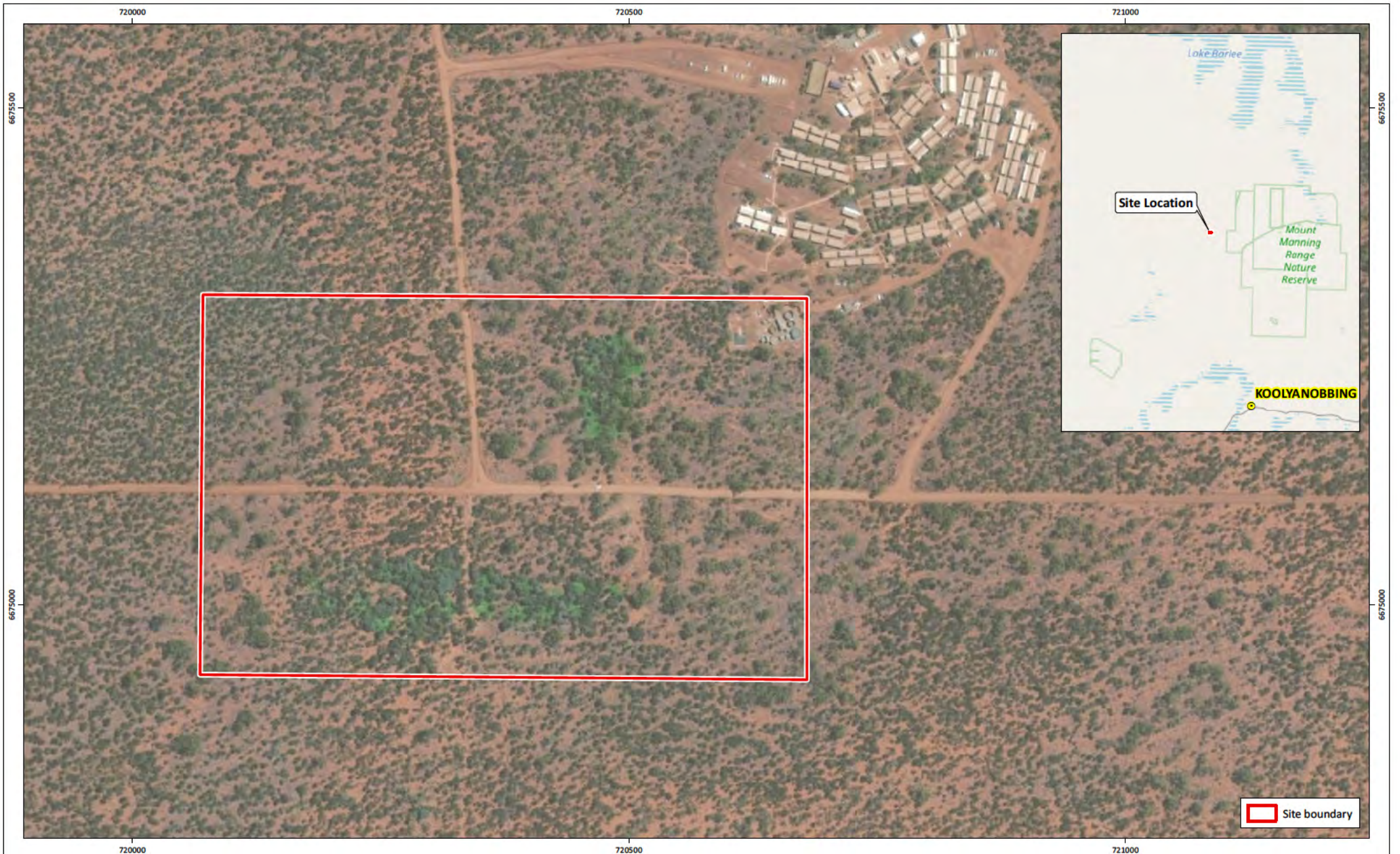


Figure 1: Site Location

Project: Vegetation Health Assessment
Windarling Wastewater Treatment Plant
Client: Mineral Resources Limited

Plan Number:
EP22-058(02)-F21
Drawn: SCM
Date: 28/04/2023
Checked: SCM
Approved: TAA
Date: 24/05/2023



0 50 100 150
Metres
Scale: 1:5,000@A4
GDA 1994 MGA Zone 50



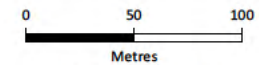


Site boundary
 Quadrat location
■ Reference vegetation
■ Spray field vegetation

Figure 2: Quadrat Locations

Project: Vegetation Health Assessment
 Windarling Wastewater Treatment Plant
Client: Mineral Resources Limited

Plan Number:
 EP22-058(02)-F22
 Drawn: SCM
 Date: 28/04/2023
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Scale: 1:3,500@A4
 GDA 1994 MGA Zone 50



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