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9th March 2020

RE: Targeted search for conservation significant flora/vegetation-Golden Point exploration program

Dear Geoffrey,

Botanica Consulting (BC) was commissioned by Ramelius Resources Limited (Ramelius) to undertake a targeted search for conservation significant flora and vegetation within the Golden Point exploration program area (referred to as the targeted survey area) of exploration tenement E77/2443 and mining tenement M77/124. The targeted survey area is located adjacent to the Edna May Gold Mine within the Westonia Common (R14983) approximately 500m north-east of Westonia, Western Australia. The targeted survey covered an area of approximately 7.8 ha and included surveying approximately 4km of proposed drill lines and 14 proposed drill pads, surveyed to a width of 20m (Figure 1). Vegetation mapping was conducted for the local area surrounding the targeted survey covering an area of 126.7 ha (referred to as 'assessment area'). Each drill line was accessed via existing cleared tracks. All drill lines are located along historically cleared drill lines. The fieldwork was conducted on 26th February 2019 by two BC staff members (Lauren Pick and April Slater). A handheld GPS was used to record the locations of tracks traversed, vegetation units and locations of any conservation significant flora/vegetation (recorded in GDA 94 format). The survey area was traversed on foot (Appendix 1).

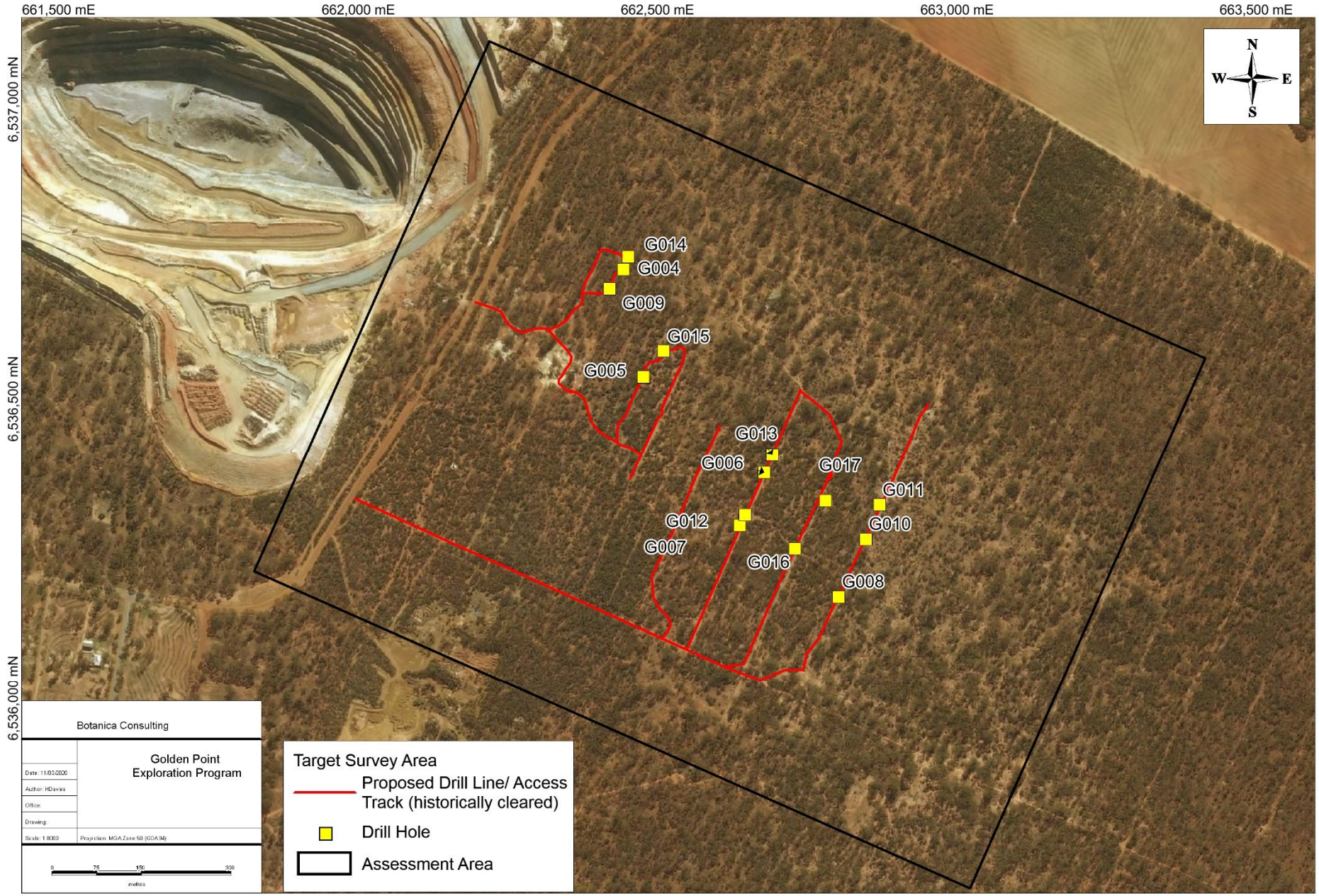


Figure 1: Exploration Program Survey Area

Background Information

Flora surveys, assessments and reviews have been undertaken in nearby areas in the past, though not all are publicly available and could not be referenced. The most significant of those available have been used as the primary reference material for the current assessment (Table 1).

Table 1: Previous Flora surveys within the surrounding area

Author & Year	Vegetation	Threatened/ Priority Flora
Paul Armstrong & Joan Osborne (2003)	Four vegetation units were identified: 1. Mixed Eucalypt Low Forest 2. Gimlet Low Forest 3. Dense thicket with various dominants 4. Open low grass A total of 125 plant species were recorded within the survey area.	*Eremophila resinosa* (T)
Outback Ecology (2007)	N/A. Targeted search for Threatened/Priority Flora	1. *Eremophila resinosa* (T) 2. *Acacia ancistrophylla* var. *perarcuata* (P3)
Belinda Jeanes (2009)	N/A. Targeted search for Threatened/Priority Flora	*Eremophila resinosa* (T)
MWH Australia Pty Ltd (2014)	Six vegetation units were identified: 1. *Melaleuca* and *Acacia* Scrub 2. Gimlet Woodland 3. Morrel Woodland 4. Rough-Fruited Mallee Woodland 5. York Gum Woodland 6. Granite Monolith A total of 193 plant species were recorded within the survey area.	1. *Eremophila resinosa* (T) 2. *Austrostipa blackii* (P3) 3. *Acacia ancistrophylla* var. *perarcuata* (P3)
Phoenix Environmental Sciences Pty Ltd (2016)	Four vegetation units were identified: 1. Mid open *Eucalyptus longicornis* forest 2. Mid *Eucalyptus longicornis* woodland 3. tall *Eucalyptus corrugata* mallee woodland 4. degraded cleared areas predominantly vegetated with chenopod shrublands A total of 51 plant species were recorded within the survey area.	*Eremophila resinosa* (T)
Phoenix Environmental Sciences Pty Ltd (2017)	N/A. Targeted search for Threatened Flora	*Eremophila resinosa* (T)
BC (2018)	Four vegetation types were identified: 1. Mid woodland of *Eucalyptus longicornis* over isolated tall *Melaleuca pauperiflora* subsp. *fastigiata* shrubs and low open chenopod shrubland of *Atriplex* spp. and open low forbland of *Sclerolaena diacantha* on clay-loam plain 2. Mid woodland of *Eucalyptus salubris* over open mid shrubland of *Santalum acuminatum* and open low shrubland of *Acacia hemiteles/Grevillea acuaria* on clay-loam plain 3. Tall mallee woodland of *Eucalyptus corrugata* over sparse shrubland of *Senna artemisioides* and low forbland of *Sclerolaena diacantha* on clay-loam plain 4. Mid woodland/mallee woodland of mixed Eucalypts over open chenopod shrubland of *Atriplex* spp./*Maireana* spp. on clay-loam plain A total of 72 plant species were recorded within the survey area.	*Eremophila resinosa* (T)

The results of the literature review, combined search of the Department of Biodiversity, Conservation and Attractions (DBCA) Flora of Conservation Significance databases, NatureMap search (DBCA, 2019) and Department of Environment and Energy (DotEE) Protected Matters search (DotEE, 2019) recorded 11 Threatened Flora and 12 Priority Flora within a 10km radius of the survey area (Table 2).

Table 2: Threatened/Priority Flora within 10km of the survey area

Taxon	EPBC Act	BC Act	DBCA Priority Rating	Description (WAHERB, 2020)
Acacia lobulata	EN	EN		Erect, open, often spindly shrub, 1-2 m high. Fl. yellow, Jul. Gritty loam or sand. Low granitic breakaways.
Boronia adamsiana	VU	VU		Erect shrub, 0.3-1.0 m high, flowers pink-white between July and October. Yellow sand/loam over laterite on flats and road verges.
Dasymalla axillaris	CR	CR		Shrub. Flowering time July, September, October, November or December
Eremophila resinosa	EN	EN		Spreading shrub, 0.4-0.8 m high, and flowers blue-purple-white in April or October to November. Clay loam gravelly sandy clay on road verges.
Eremophila virens	EN	EN		Erect, slender shrub, 1.5-5 m high. Fl. green, Aug to Oct. Red/brown sand. Granite hillsides.
Eremophila viscida	EN	EN		Shrub with 1.2-4 m high, flowers green-white-yellow between September to November. Granitic soils, sandy loam on stony gullies and sand plains.
Eucalyptus crucis subsp. *crucis*	VU	EN		Mallee 2-8 m high, bark rough, 'minni-ritchi' with white flowers in October, December or January to March. Sand, loam on granite outcrops.
Gastrolobium diabolophyllum	CR	CR		Erect, open robust shrub to 1.5 m high. Orange, yellow, red and pink flowers in September. Yellow –brown sand over laterite on broadly undulating dunes.
Grevillea dryandroides subsp. *hirsuta*	EN	VU		Prostrate, vigorously suckering shrub, 0.05-0.3 m high. Fl. red/pink-red, May or Sep to Nov. White or yellow sand, laterite.
Roycea pycnophylloides	EN	VU		Perennial, herb, forming densely branched, silvery mats to 1 m wide. Fl. Sep. Sandy soils, clay. Saline flats.
Symonanthus bancroftii	EN	CR		Shrub, 0.15-0.25 m high. Fl. white, Sep.
Glossostigma trichodes			P1	Aquatic annual, herb. Pools in granite.
Vittadinia cervicularis var. *oldfieldii*			P1	Annual, herb, 0.1-0.3 m high. Fl. white-purple-blue, Aug to Sep. Alluvium.
Goodenia granitica			P2	Annual herb, 0.05-0.35 m high. Brown sandy clay or loam over granite on bases of outcrops near water sources and valley floors.
Acacia ancistrophylla var. *perarcuata*			P3	Rounded or obconic shrub 0.6-1.6 m high and 6 m wide. Flowers yellow between August and September. Red sand, clay loam, loam on undulating plains.

Taxon	EPBC Act	BC Act	DBCA Priority Rating	Description (WAHERB, 2020)
Acacia crenulata			P3	Bushy shrub or tree, 0.7-3 m high. Yellow flowers. Clay, sandy clay, yellow sand on rocky rises, granite outcrops and breakaways.
Acacia filifolia			P3	Wispy, spindly single-stemmed shrub or tree, 1.2-3 m high. Flowers yellow between May and September. Yellow sand, gravelly lateritic sand on sand plains.
Austrostipa blackii			P3	Tufted perennial, grass-like or herb, 1 m high. Fl. Sep to Nov.
Dicrastylis reticulata			P3	Woolly shrub, (0.15)0.6-1.2(-1.5) m high with white flowers between September and December. Sandy soils, often over granite amongst granite rock, hills and flats.
Verticordia mitodes			P3	Spreading shrub 0.15-0.7 m high with pink-purple flowers between October to December or January in yellow sand on undulating plains.
Banksia shanklandiorum			P4	Upright, lignotuberous shrub 0.4-2.5 m high to 3 m wide. Flowers June to August in white/yellow sand with lateritic gravel.
Eucalyptus caesia			P4	(Mallee), 1.8-14 m high, bark 'minni-ritchi'. Fl. pink-red, May to Sep. Loam. Granite outcrops.
Myriophyllum petraeum			P4	Aquatic annual, herb, stems 0.15-0.3 m long. Fl. white, Aug to Dec. Strictly confined to ephemeral rock pools on granite outcrops.

Results

Flora

No Threatened Flora taxon pursuant to the *Biodiversity Conservation (BC) Act 2016* or the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* were identified within the target survey area. A map showing records of the Threatened Flora taxon, *Eremophila resinosa* in relation to the target survey area/ assessment area is provided in Figure 2. Within a 50m radius of each Threatened Flora plant is protected as an Environmentally Sensitive Area (ESA) as listed under the Western Australian *Environmental Protection (EP) Act 1986*. The target survey area is not located within a 50m radius of any Threatened Flora. No Priority Flora taxa were identified within the target survey area.

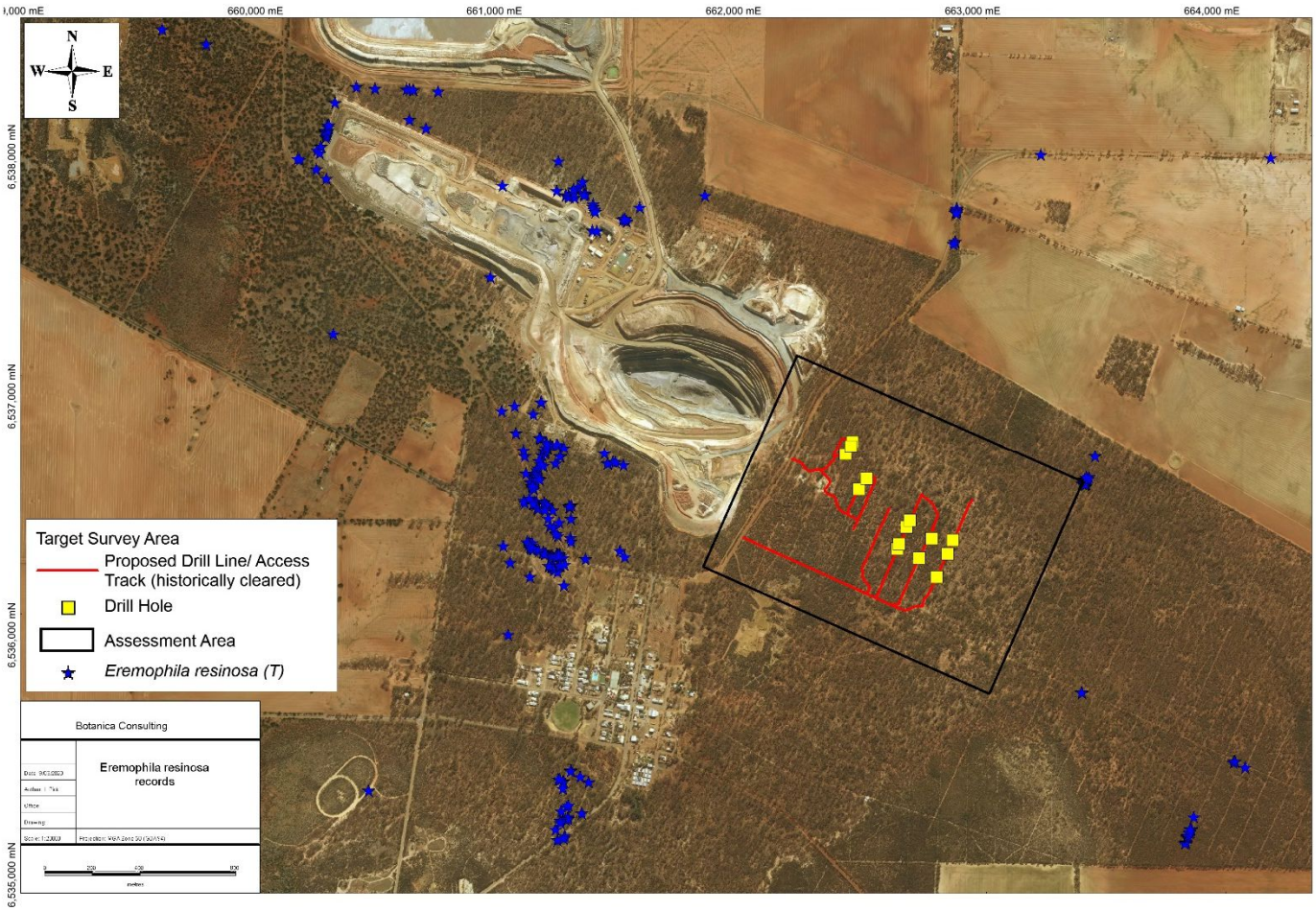


Figure 2: *Eremophila resinosa* records in relation to the survey area

Vegetation

Three vegetation units were recorded within the assessment area as listed in Table 3 and shown in Figure 3. Based on the TEC diagnostic assessment (Table 4), the *E. salubris* woodland vegetation unit was representative of the 'Eucalypt woodlands of the Western Australian Wheatbelt' which is listed as a Threatened Ecological Community under the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* and as Priority 3 Ecological Community (Gimlet Woodlands of the Wheatbelt) by DBCA. The area of a Threatened Ecological Community is protected as an ESA under the EP Act. None of the remaining vegetation units were representative of Threatened or Priority Ecological Communities (Table 4). Photographic records of vegetation at each drill site/ drill line is provided in Appendix 2.

Table 3: Vegetation Units within the survey area

Vegetation Unit	Target Survey Area (ha)	Assessment Area (ha)	Image
E. loxophleba Mallee Woodland	2.5	37.2	
E. salubris Woodland	3.5	75.0	

Vegetation Unit	Target Survey Area (ha)	Assessment Area (ha)	Image
Melaleuca and Acacia Scrub	0.9	4.9	
Cleared Vegetation	0.9	9.6	
Total	**7.8**	**126.7**	

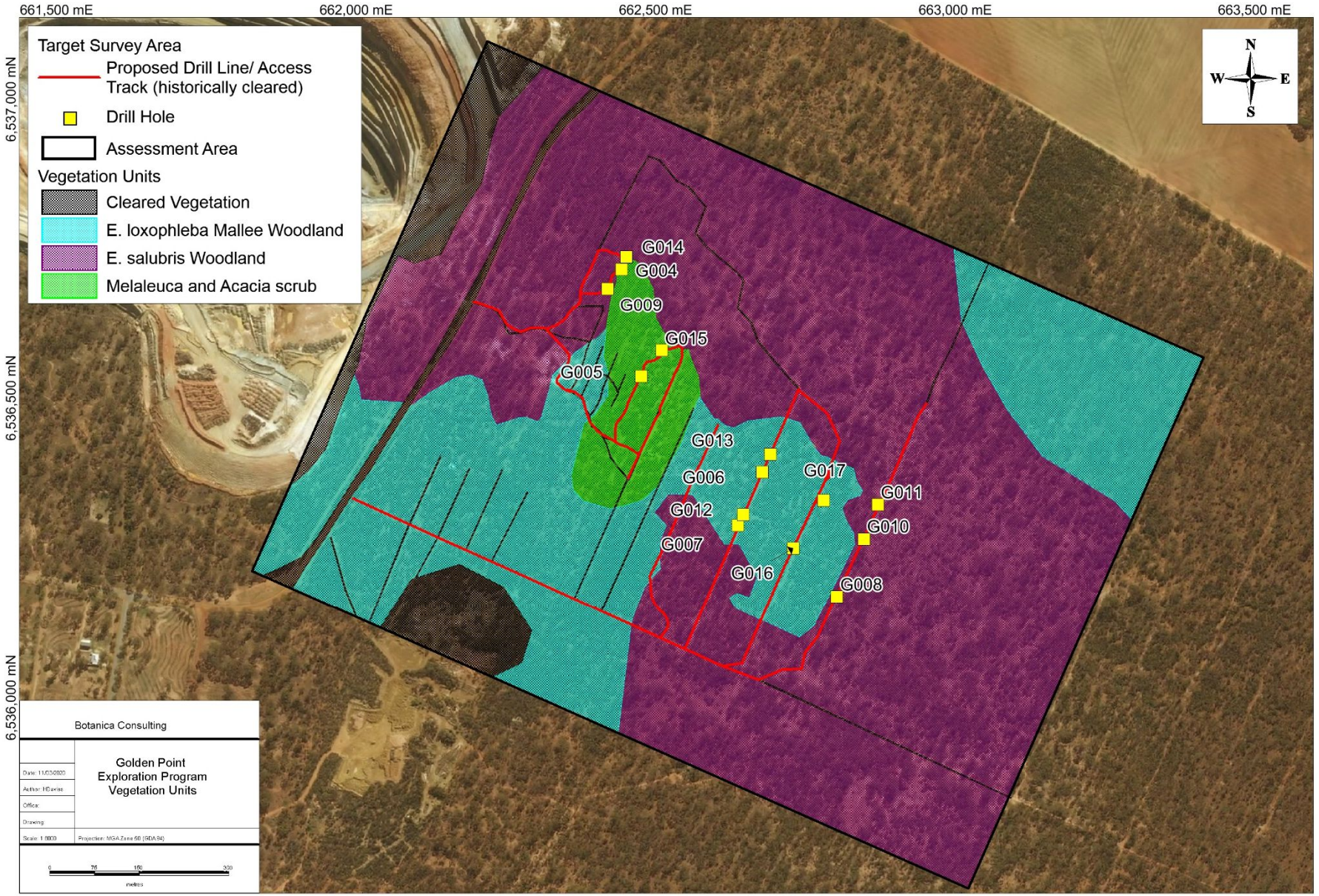


Figure 3: Vegetation Units within the survey area

Table 4: TEC diagnostic assessment

TEC Diagnostic Criteria	Description	Assessment
Diagnostic 1 Location	Survey located within one of the following three regions: 1. Avon Wheatbelt bioregion - subregions AVW01 Merredin and AVW02 Katanning 2. Mallee bioregion - MAL02 Western Mallee only 3. Jarrah Forest bioregion **If within any of the above regions continue to Diagnostic 2**	All vegetation units meet Diagnostic 1.
Diagnostic 2 Minimum crown canopy	1. The structure of the ecological community is a woodland in which the minimum crown cover of the tree canopy in a mature eucalypt woodland is 10% 2. Crown cover of trees less than 10% but area recently disturbed (e.g. fire), presence of seedlings and/or saplings. **If vegetation meets any one of the structure description above continue to Diagnostic 3** Crown cover of trees less than 10%, no evidence of recent disturbance, no presence of seedlings or saplings-**NOT TEC**	*Eucalyptus salubris* vegetation unit meets Diagnostic 2. Remaining vegetation units do not meet Diagnostic 2 (not woodland). *E. loxophleba* Mallee Woodland **NOT TEC** Melaleuca and Acacia Scrub **NOT TEC**
Diagnostic 3 Dominant *Eucalyptus* tree canopy	1. One or more of the key tree species in Table 1 are dominant or co-dominant, the trees are predominantly single trunked, not mallee (multi-stemmed). 2. Other species are present in the tree canopy (e.g. species in Table 2 or other taxa) but these collectively do not occur as dominants in the tree canopy. 3. Dominant woodlands with a mallee subcanopy (lower tree layer of mallee or non-eucalypt tree species). Upper eucalypt tree canopy must be present dominated by key woodland species in Table 2 and have cover of 10% or more. **If dominant vegetation meets any one of the descriptions above continue to Diagnostic 4** Other species are present in the tree canopy (e.g. species in Table 2 or other taxa) and these collectively do occur as dominants in the tree canopy-**NOT TEC**	*Eucalyptus salubris* vegetation unit meets Diagnostic 3 (*Eucalyptus salubris* dominant).
Diagnostic 4 Native understorey	1. A native understorey is present but is of variable composition, being a combination of grasses, other herbs and shrubs. A list of key species is summarised in Table 3. Any one of the structural understorey categories may or may not be present. Bare to sparse understorey (e.g. under some mallet woodlands). 2. Herbaceous understorey – a ground layer of forbs and/or graminoids though a few, scattered shrubs may be present. 3. Scrub or heath understorey – comprises a mixture of diverse shrubs of variable height and cover. A ground layer of herbs and grasses is present to variable extent. 4. Chenopod-dominated understorey – a subset of the scrub category in which the prominent species present are saltbushes, bluebushes and related taxa (e.g. Atriplex, Enchylaena, Maireana, Rhagodia and Sclerolaena). 5. Thickets of taller shrub species understorey (e.g. Melaleuca pauperiflora, M. acuminata, M. uncinata, M. lanceolata, M. sheathiana, M. adnata, M. cucullata and/or M. lateriflora, Allocasuarina campestris with Melaleuca hamata or M. scalena). A range of other shrub and ground layer species may occur among or below the thickets. 6. Salt tolerant species understorey (e.g. samphire, Tecticornia spp.). **If native understorey meets any one of the descriptions above continue to Diagnostic 5** Shrublands or herblands in which the tree canopy layer is very sparse to absent, either naturally or maintained so through long-term disturbance. Native vegetation where a tree canopy was formerly present is often referred to as	*Eucalyptus salubris* vegetation unit meets Diagnostic 4 (*Acacia merrallii/ Santalum acuminatum* dominant understorey).

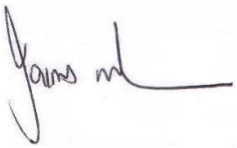
<table>
<tr><th>TEC Diagnostic Criteria</th><th>Description</th><th>Assessment</th></tr>
<tr><td></td><td>'derived' or 'secondary' vegetation. These sites would fall below the 10 per cent minimum canopy cover threshold for a woodland-NOT TEC</td><td></td></tr>
<tr><td>Diagnostic 5 Vegetation condition</td><td>
<table>
<tr><th>Cover of exotic plants (weeds) AND</th><th>Mature trees[1] AND</th><th>Minimum patch size (non-roadside patches)[2] OR</th><th>Minimum patch width (roadsides only)[3]</th></tr>
<tr><td colspan="4">Category A: Patches likely to correspond to a condition of Pristine / Excellent / Very good (Keighery, 1994) or a High RCV (RCC, 2014).</td></tr>
<tr><td>Exotic plant species account for 0 to 30% of total vegetation cover in the understorey layers (i.e. below the tree canopy).</td><td>Mature trees may be present or absent.</td><td>2 hectares or more</td><td>5 metres or more</td></tr>
<tr><td colspan="4">Category B: Patches likely to correspond to a condition of Good (Keighery, 1994) or a Medium-High RCV (RCC, 2014), AND retains important habitat features.</td></tr>
<tr><td>Exotic plant species account for more than 30, to 50% of total vegetation cover in the understorey layers (i.e. below the tree canopy)</td><td>Mature trees are present with at least 5 trees per 0.5 ha.</td><td>2 hectares or more</td><td>5 metres or more</td></tr>
<tr><td colspan="4">Category C: Patches likely to correspond to a condition of Good (Keighery, 1994) or a Medium-High RCV (RCC, 2014).</td></tr>
<tr><td>Exotic plant species account for more than 30, to 50% of total vegetation cover in the understorey layers (i.e. below the tree canopy).</td><td>Mature trees either absent or <u>less than</u> 5 trees per 0.5 ha are present.</td><td>5 hectares or more</td><td>5 metres or more</td></tr>
<tr><td colspan="4">Category D: Patches likely to correspond to a condition of Degraded to Good (Keighery, 1994) or a Medium-Low to Medium-High RCV (RCC, 2014) BUT retains important habitat features.</td></tr>
<tr><td>Exotic plant species account for more than 50 to 70% of total vegetation cover in the understorey layers (i.e. below the tree canopy).</td><td>Mature trees are present with at least 5 trees per 0.5 ha.</td><td>5 hectares or more</td><td>5 metres or more</td></tr>
</table>
</td><td>Eucalyptus salubris vegetation unit meets Diagnostic 5 (Category A).</td></tr>
</table>

TEC Diagnostic Criteria	Description	Assessment
	[1] Mature trees have a diameter at breast height (dbh) of 30 cm or above. Trunk diameter varies among eucalypt species, for instance gimlet and mallets tend to have slender trunks (Gosper et al., 2013b).The dbh for mature trees aligns with the EPBC referral guidelines for the breeding habitat of threatened black cockatoo species (DSEWPaC, 2012). These note that, for salmon gum and wandoo trees, suitable nest hollows can develop in trees with a dbh of 30 cm or more. Note that larger trees may be killed by factors such as intense fire or flood but the patch may still be in reasonable condition if there are immature trees regenerating. [2] The minimum patch size thresholds apply to native vegetation remnants that do not occur along roadsides. [3] Minimum patch width applies only to vegetation remnants along roadsides and tend to be long but narrow. This criterion recognises the importance of native vegetation remnants along road verges, e.g their value as wildlife corridors particularly if linking to other non-roadside remnants, habitat for threatened species and other reasons as detailed by Jackson (2002) and RCC (2015). The width here is based on the native understorey component rather than width of the tree canopy. Some allowance must be made for small breaks or variations in native species cover along linear patches. Given the generally open nature of the tree canopy and some understorey structures, a break in the continuity of native vegetation cover of 50 metres or more, is likely to indicate that separate patches are present. An exception is for main, often bitumen-covered, roads that bisect otherwise continuous vegetation; most local government roads in the wheatbelt have a road reserve of 20 metres. In these cases, native vegetation along either side of the road is considered to be a separate patch.	

As the proposed drill lines are located on existing cleared tracks/ historic drill lines no clearing of large Eucalypts is required. Only three of the proposed drill holes (G008, G010 and G011) are located within *Eucalyptus salubris* woodland which is representative of the Eucalypts Woodlands of the WA Wheatbelt and is protected under both Commonwealth and Stage legislation. Any clearing within the Eucalypt Woodlands will require an application for a clearing permit under the EP Act.

Should you have any questions, please do not hesitate to contact me.

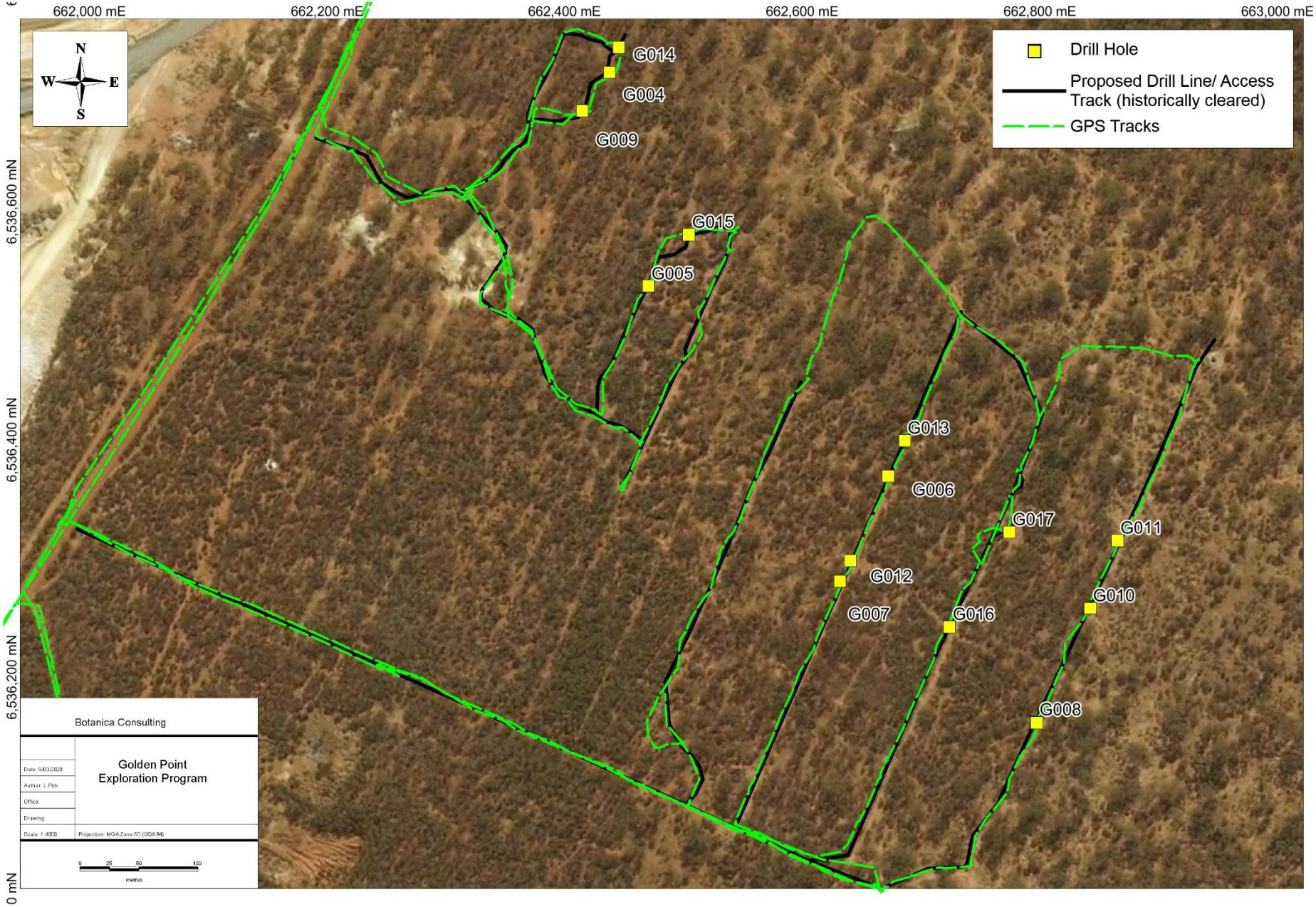
Regards,



Jim Williams

Director

Appendix 1: Map of GPS Tracks



Appendix 2: Photographic Records of exploration program

Drill Site ID	Image (Facing West)	Image (Facing East)
G004		
G005		
G006		

Drill Site ID	Image (Facing West)	Image (Facing East)
G007		
G008		
G009		
G010		

Drill Site ID	Image (Facing West)	Image (Facing East)
G011		
G012		
G013		
G014		

Drill Site ID	Image (Facing West)	Image (Facing East)
G015		
G016		
G017		

Drill Line ID	Image
Drill Line G008-G010	
Drill Line G016-G017	

Drill Line ID	Image
Drill Line G006-G007 G012-G013	
Drill Line G005-G015	

Drill Line ID	Image
Drill Line G004, G009, G014