RAVENSTHORPE GOLD PROJECT

Hillsborough:

Threatened Ecological Community Survey

A report prepared for

Medallion Metals Ltd

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DISCLAIMER

In undertaking this work, the author has made every effort to ensure the accuracy of the information used. Any conclusions drawn or recommendations made in the report and maps are done in good faith and the consultant takes no responsibility for how this information is used subsequently by others.

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1. Introduction

The Ravensthorpe Gold Project (RGP) is a proposal by Medallion Metals Ltd to mine for gold and copper in the vicinity of Kundip which lies on the Hopetoun-Ravensthorpe Road, 17 km south east of Ravensthorpe and 31 km north of the coastal town of Hopetoun. Exploration drilling has been carried out in the prospect known as 'Hillsborough'.

The proponent requested verification of the vegetation boundary which had been identified by Animal Plant Mineral Pty Ltd (APM 2018) as being part of the 'Proteaceae Dominated Kwongkan Shrublands of the southeast coastal province of Western Australia' that is listed as an 'endangered' Threatened Ecological Community (TEC) under the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). Figure 1 shows the areas over the Ravensthorpe Gold Project mapped as TEC by APM (2018) with the current survey area for the Hillsborough prospect.

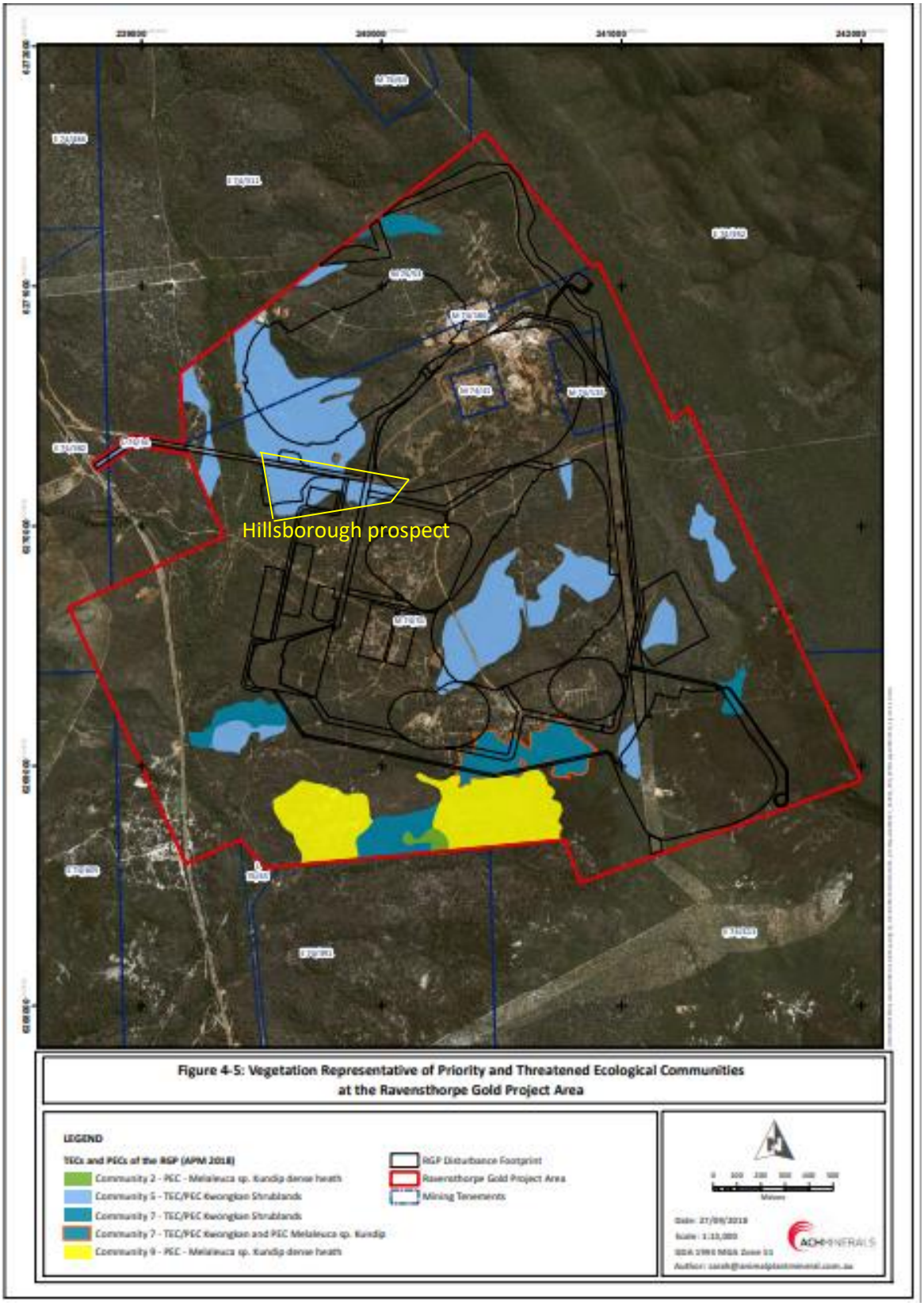

Figure 1 – Ravensthorpe Gold Project showing location of current survey area (yellow) using TEC/PEC base map prepared by Animal Plant Mineral (2018)

2. Methods

2.1 Field Survey

The survey was carried out according to the Environmental Protection Authority's technical guide (EPA 2016) on the 23 November 2021. The day was overcast and warm (max 23°C) with minimal wind.

Nine transects, 100 m long x 1 m wide and approximately 75 m apart, recorded the projected foliage cover of proteaceous species. The end points of the transects and locations of proteaceous plants were marked as waypoints with a hand-held GPS (Garmin II) using the Geocentric Datum Australia 1994 (GDA94) with ± 4-6 m accuracy. QGIS mapping software was used to prepare shapefiles and maps.

The boundary between the *Eucalyptus pleurocarpa/ Banksia media* (Eple/Bmed) and Mallee/*Melaleuca* spp. (Mallee/Mspp) vegetation units was ground-truthed, using the presence of *Banksia media* as a key indicator for the former community. Talis Consultants prepared the final shapefiles for the vegetation units with data provided by the author.

2.2 Survey limitations

The limitations to the survey are outlined in Table 1.

Table 1 – Limitations of survey

Possible Limitations	Constraints (Yes/No): Significant, Moderate Or Negligible	Comment
Competency/experience of the team carrying out the survey, including experience in the bioregion surveyed	No	Dr Gillian Craig is a Senior Botanist who has carried out vegetation and flora surveys in the Shire of Ravensthorpe, including the Kundip area, over the past 30 years.
Availability of contextual information at a regional and local scale	No	Published reports are available on the vegetation, geology and soil-landscape in the Shire.
Proportion of flora recorded and/or collected, any identification issues	No	All species were known to the botanist and could be identified with confidence.
Completeness (was the appropriate area fully surveyed - effort and extent)	No	The required areas for survey were traversed on foot.
Remoteness and/or access problems	No	All sections of the study area were accessible.
Survey timing, weather, season of survey	No	The survey was carried out in November 2022.
Disturbance that may have affected the results of survey such as fire, flood or clearing.	No	All vegetation, except on old access tracks, was in pristine condition.

3. Results

3.1 Vegetation Units

Figure 3 shows the location of proteaceous species that were marked along the nine transects across the survey area. *Banksia media* was used as a key indicator species for delineating the Eple/Bmed vegetation unit. Five vegetation units were present, which have previously been described in full by Craig et al (2008):

1. **Eple/Bmed** - *Eucalyptus pleurocarpa/Banksia media* covered the north and north-west sector, and included ten proteaceous species (Table 2), the most abundant being *Banksia media* and *Hakea laurina;*
2. **Mallee/Mssp –** Mallee/*Melaleuca* species covered the mid- and lower slopes. A diverse myrtaceous community including *Eucalyptus leptocalyx, E. flocktoniae, E. incrassata, Melaleuca hamata, M. lateriflora, M. undulata* and *Tetrapora verrucosa.* Note that this unit corresponds with APM's (2018) community *'*no.5 *Eucalyptus leptocalyx- Tetrapora verrucosa';*
3. **Eflo/Mcuc –** *Eucalyptus flocktoniae/ Melaleuca cucullata* occurs on the lower slope and included *E. pileata;*
4. **Eocc –** *Eucalyptus occcidentalis* grows in the drainage lines along the southern and western edges of the survey area;
5. **Efal/Eple –** *Eucalyptus ecostata/ E. pleurocarpa* occurs as a narrow strip in the north-east sector growing on shallow soils over laterite and includes a significant proportion of *Banksia lemmaniana.*

3.2 Threatened Ecological Community

Figure 4 shows the *Eucalyptus pleurocarpa/Banksia media* (Eple/Bmed) unit which was confirmed as a TEC. Four transects had greater than 30% proteaceous cover (Table 2), i.e. a key diagnostic feature for the 'Proteaceae Dominated Kwongkan Shrublands of the southeast coastal province of Western Australia' TEC.

In addition, the vegetation was in excellent condition, which fulfilled the second key diagnostic feature for the TEC. Throughout this vegetation unit occasional deaths of large, old *Banksia media* plants were observed with the greatest number recorded near the western end of the survey area (transect #9) (Table 2).

Table 2 - Projected foliage cover (%) of proteaceous species along 100 m transects.

		Projected Foliage Cover (%)								
LIVE	**TRANSECT**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Banksia media		5	5	5	14	22	54	37	8	14
Grevillea fastigiata								6		
Grevillea nudiflora					1		1			
Grevillea oligantha					2	1			3	3
Hakea corymbosa			1	4						
Hakea laurina				1	7	13	2	7	3	11
Hakea lissocarpha					2					
Hakea pandanicarpa ssp. *crassifolia*						5	2			
Isopogon polycephalus										2.5
Petrophile fastigiata										15
TOTAL ALIVE		**5**	**6**	**10**	**26**	**41**	**59**	**50**	**14**	**28**
DEAD	**TRANSECT**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Banksia media				3			9	7		24
Hakea laurina							3			
Hakea pandanicarpa ssp. *crassifolia*						4				
TOTAL DEAD		**0**	**0**	**3**	**0**	**4**	**12**	**7**	**0**	**24**
TOTAL ALIVE + DEAD		**5**	**6**	**13**	**26**	**45**	**71**	**57**	**14**	**52**

4. Discussion

Within the Hillsborough prospect area, APM (2018) amalgamated at least three vegetation units—Eflo/Espp, Eple/Bmed, Mallee/Mspp — that had previously been separately mapped by Craig et al (2008) into one community 'no. 5 *Eucalyptus leptocalyx - Tetrapora verrucosa'*. As a result, two vegetation units that are dominated by myrtaceous species, i.e. Eflo/Espp and Mallee/Mspp were included as part of the TEC vegetation mapping by APM (2018).

The original *Eucalyptus pleurocarpa/Banksia media* (Eple/Bmed) vegetation unit mapped by Craig et al (2008) was confirmed as a TEC during the current survey and the boundary modified from ground-truthing.

It should be noted that the Eple/Bmed vegetation unit in the survey area only has been confirmed as the 'Proteaceae Dominated Kwongkan Shrublands of the southeast coastal province of Western Australia' TEC. The area to the north and north-east which has been mapped as the 'Efal/Eple' vegetation unit (Fig 4) by Craig et al (2008) and community 'no.6 *Taxandria spathulata - Melaleuca rigidifolia'* (APM 2018) would need ground-truthing to confirm its status at this particular location.

Acknowledgments

David Groombridge, Exploration Manager for Medallion Metals Ltd, facilitated the project.

References

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EPA 2016 *Technical Guidance – Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment* (eds. K Freeman, G Stack, S Thomas and N Woolfrey). Environmental Protection Authority and Department of Parks and Wildlife, Perth, Western Australia.

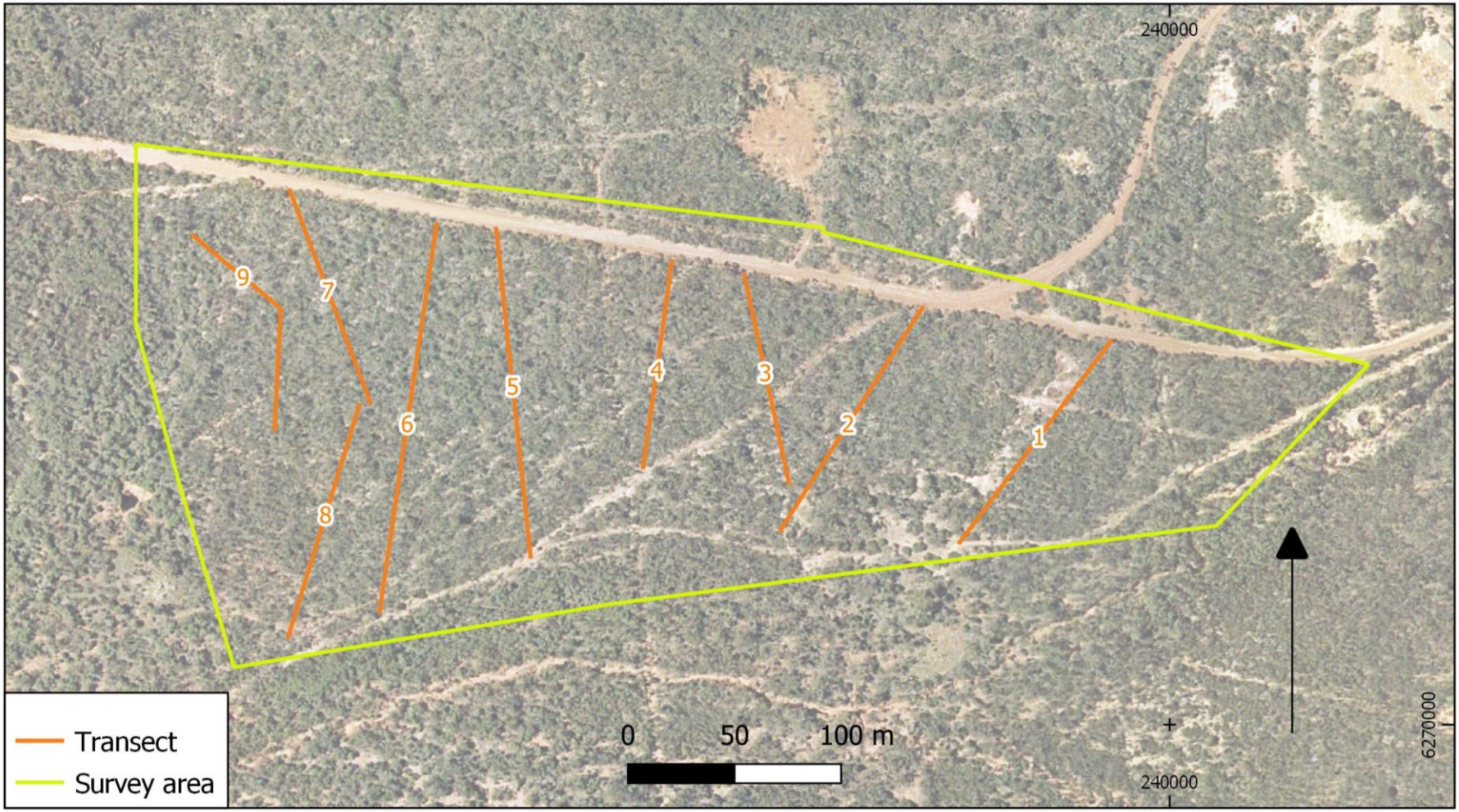

Figure 2 – Location of transects at the Hillsborough prospect

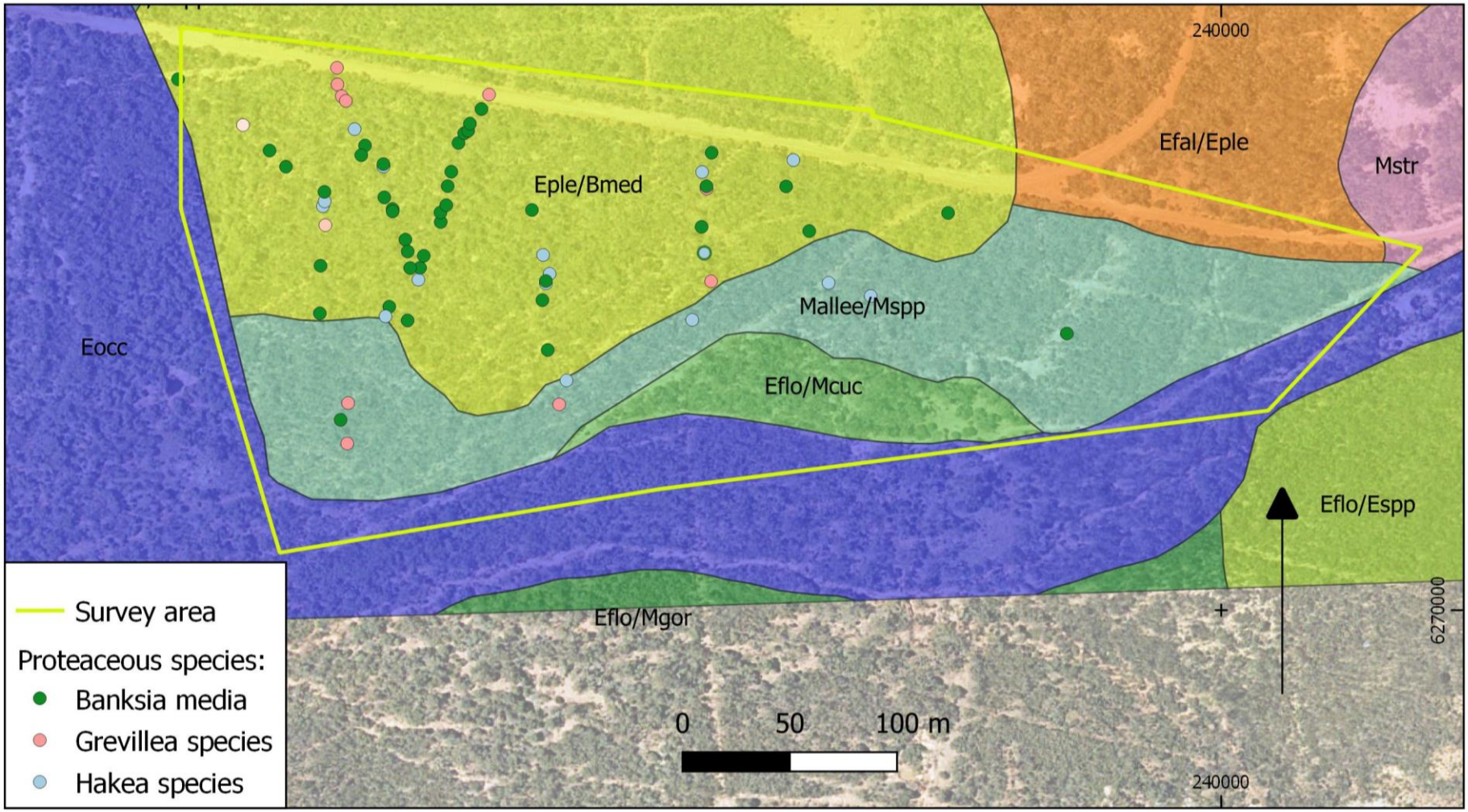

Figure 3 – Revised vegetation unit boundaries within the survey area at the Hillsborough prospect

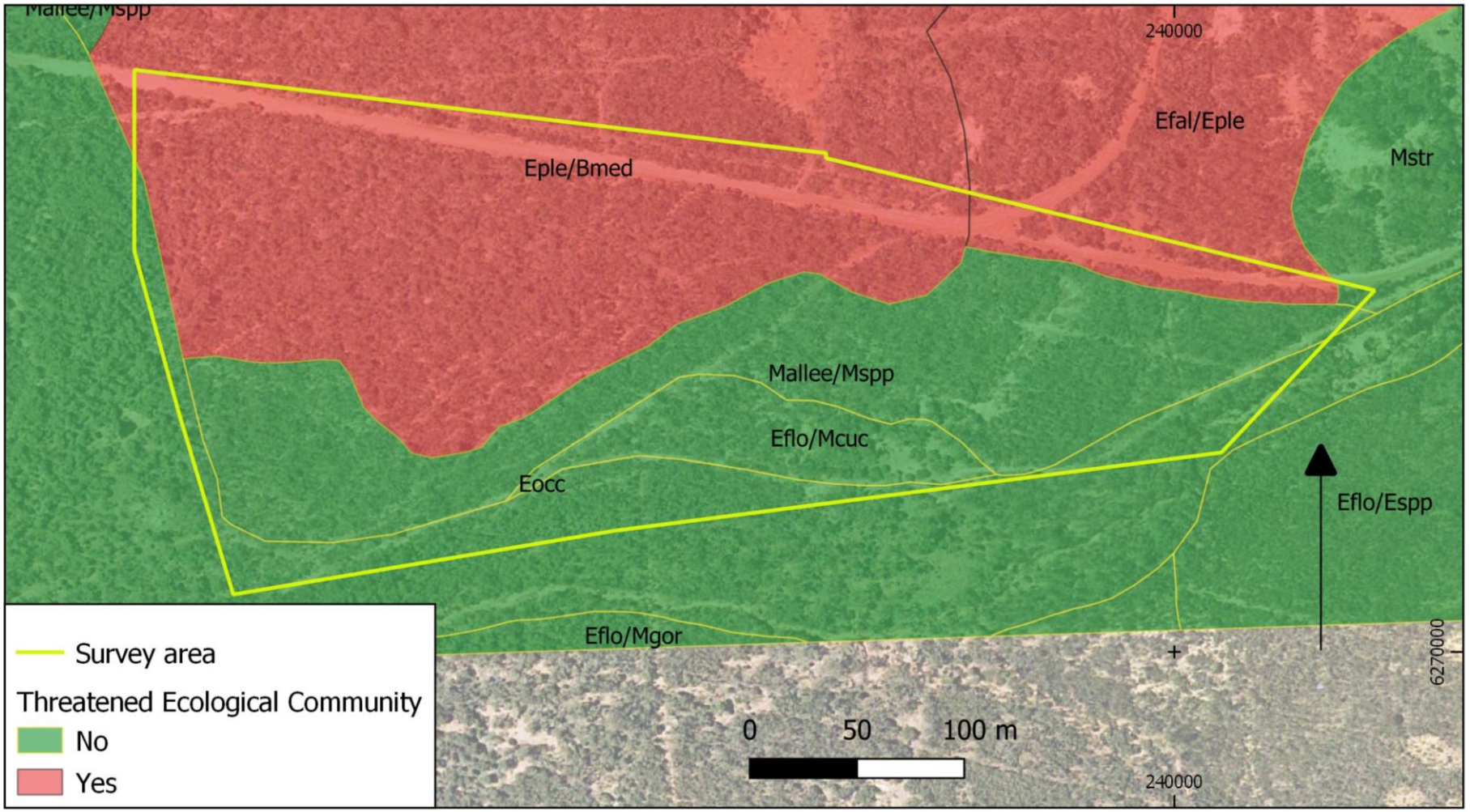

Figure 4 - Location of the Threatened Ecological Community within the survey area at the Hillsborough prospect