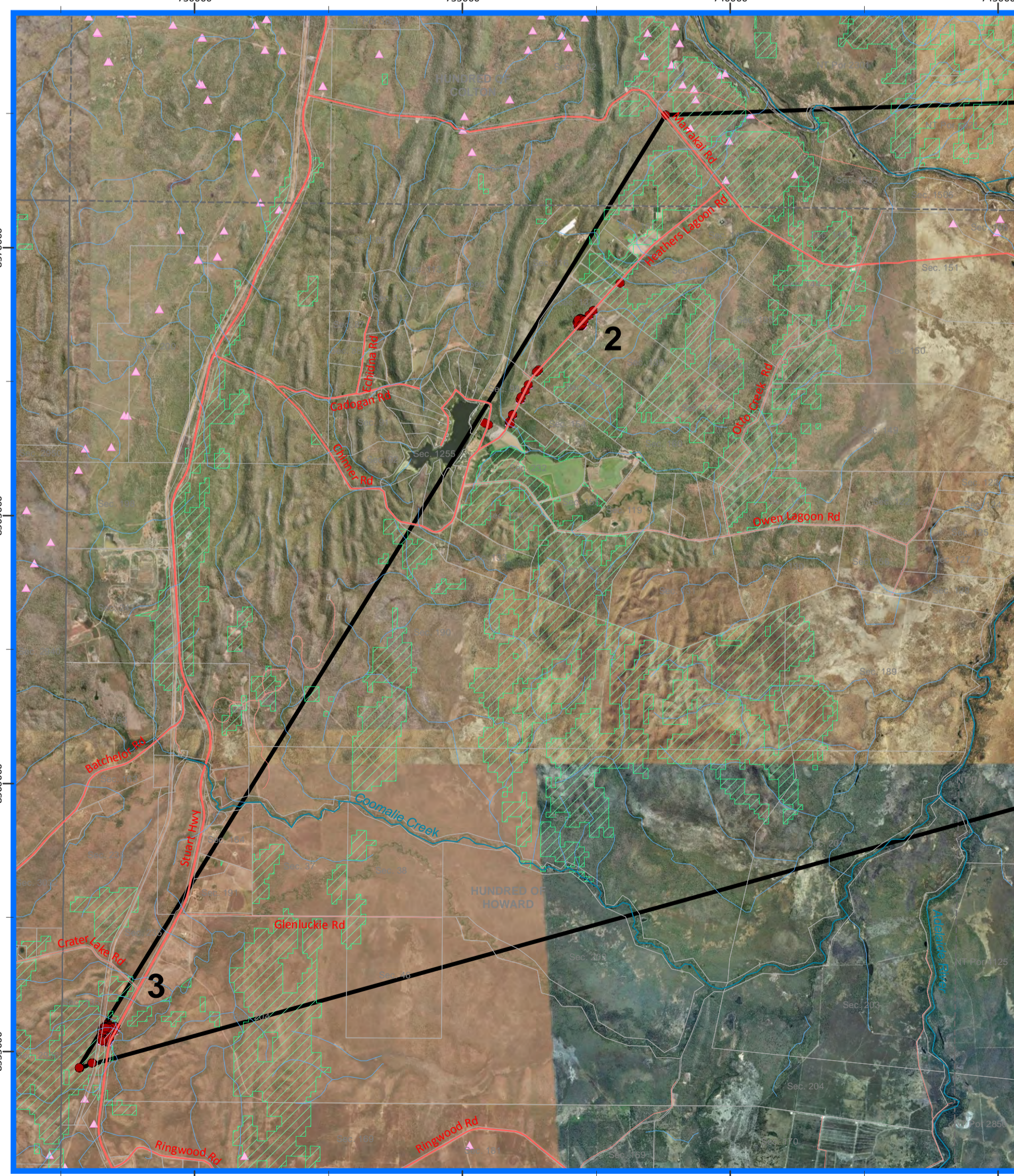
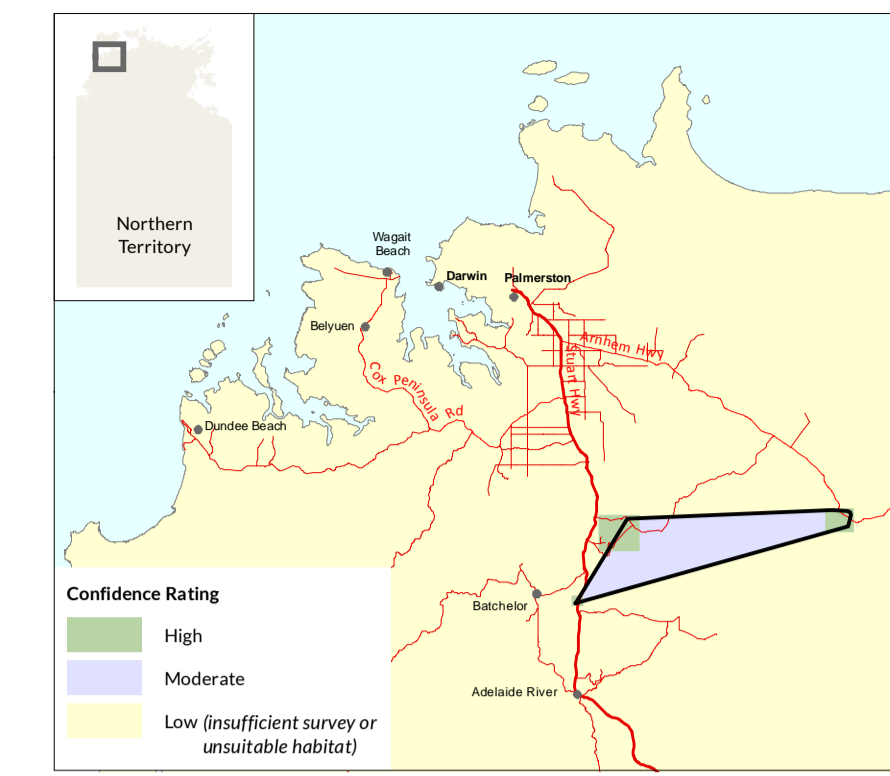
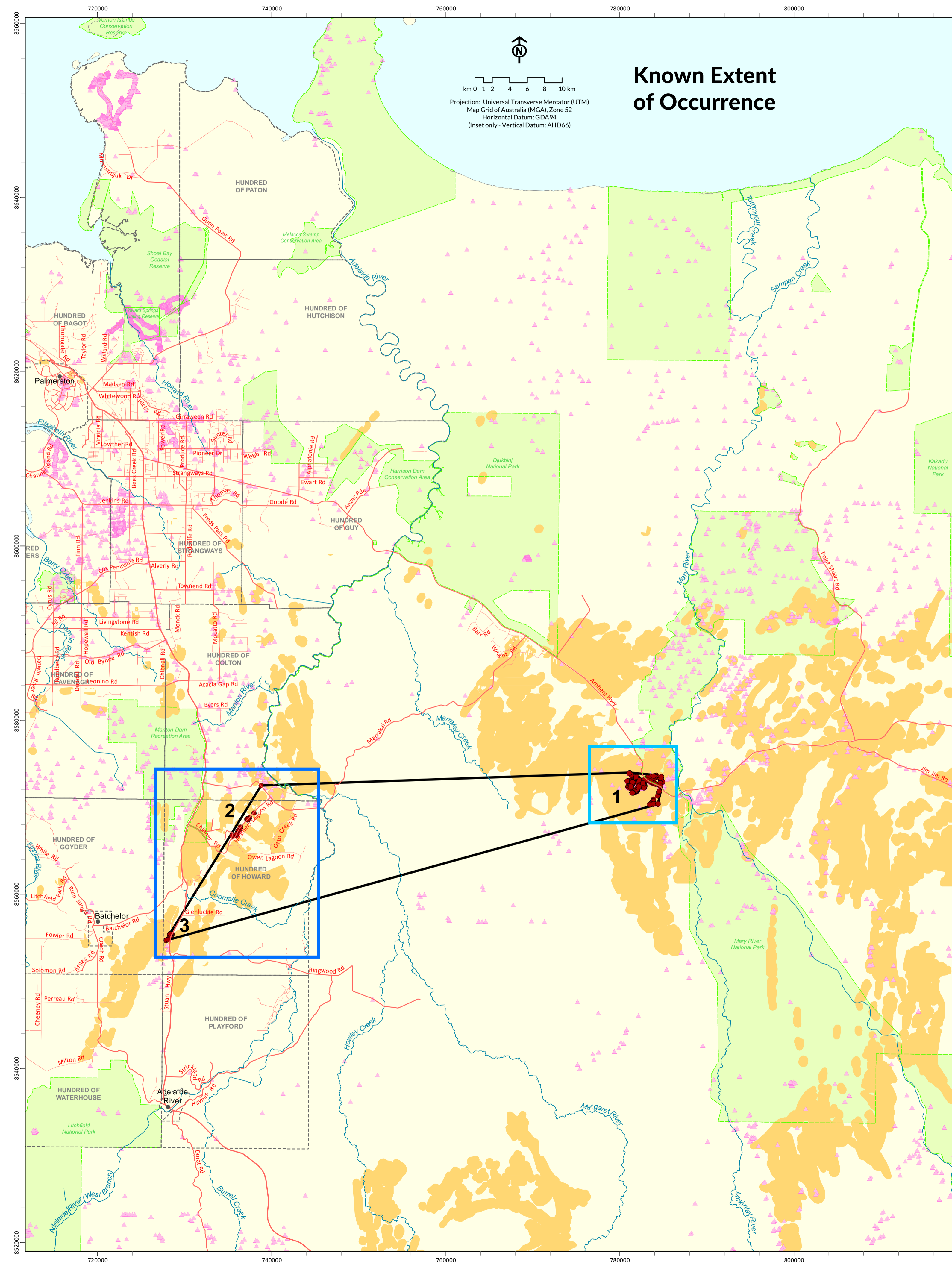


Inset - Intensive Survey Area: Mt Bunday



Inset - Intensive Survey Area: Marrakai to Glenluckie Creek



Broad Mapping Reliability

- LEGEND**
- 1 Recorded species location point
 - Subpopulation location reference number *
 - Confirmed Absence
 - Extent of Occurrence (EOO) Minimum Convex Polygon
 - Potential Habitat
 - Highest Likelihood of Occurrence **
 - NT Park/Reserve
 - Cadastre (hundreds)
 - Cadastre (parcels) Main map: land parcels >1km², Inset: all land parcels shown
 - Contours (Inset) scale 1:25 000
 - Index (25m intervals) only Index contours displayed
 - Intermediate (5m intervals)
- * Subpopulation location reference number
Details about species population density are described in the table, Population Status of *Helicteres macrothrix*, July 2016, in the attached Guidelines for Map Use.
- ** Highest Likelihood of Occurrence
Represent the most suitable areas for *Helicteres macrothrix* based on current collection data and ecological knowledge. These areas have been determined based on expert interpretation of published 1:250 000 Geological Mapping and airborne geophysics data (radiometric count of Uranium) provided by the TERN Soil Grid of Australia.
- The areas were delineated using a 300 m buffer from edges of land identified as having suitable lithology and radiometric characteristics to account for the coarse to moderate resolution of the input data. Unsuitable Land Use types were erased to create the final dataset.

Data Source

Flora Data and Surveys:
- Flora and Fauna Division, Department of Land Resource Management

Suitable Areas:
- Northern Territory Geological Survey (scale 1:250 000)

Major, Minor Streams: (scale 1:250 000)
- © Commonwealth of Australia (Bureau of Meteorology) 2012

NT Parks and Reserves:
- Parks and Wildlife Commission of the Northern Territory

Cadastre/Roads/Placenames/Contours/Imagery:
- Department of Lands, Planning and Environment
- Aerial Photography - NT LIS WMS Image Server, DLPE

CONTENTS

Page 1 of this document contains an Interactive PDF Map. Use Adobe Reader and open the left panel to review individual map layers. Users are encouraged to hide/show layers to find out more about this species distribution, particularly in the inset maps, where some layers may mask layers underneath. Scroll to Page 2 to read the Guidelines for Map Use.

USE OF MAP

Maps of Threatened Species Distributions in the Greater Darwin Area should be interpreted with the attached Guidelines for Map Use. Scroll to page 2. This map provides the most up to date available information regarding the known distribution and extent of the species at the time of publication. Refer to the [NT GOV website](http://nt.gov.au) to view Threatened Species Information Sheets. Refer to <http://siflora.nt.gov.au> our online resource for Northern Territory's flora.

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Map compiled: 6/07/2016
Caroline Green and Nicholas Cuff, Department of Land Resource Management



NORTHERN TERRITORY GOVERNMENT

For further information, please contact:
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Threatened Species Distribution in the Greater Darwin Region

Helicteres macrothrix

Department of Land Resource Management

[Flora and Fauna Division](#)

July 2016, Version 1.0

Threatened Species of the Greater Darwin Region – *Helicteres macrothrix*

Guidelines for Map Use

Data used to compile this map product is current at the date of publication. Users are encouraged to check the project [Metadata record](#) for more recent versions of this map product.

1. **Potential habitat mapping** is a compilation of data from published geological survey information at 1:250, 000 scale and buffered by 300 m. This buffer has been applied to account for inherent imprecision associated with map linework produced at this scale and to incorporate the transitional edges at the margins of these lithologies where the species is known to occur. Consequently, these inherent inaccuracies in the mapping data may result in known locations of *Helicteres macrothrix* falling outside of the potential and most suitable habitat areas. Site based assessment at an appropriate intensity should accompany use of this map data for all areas.

More detail: Current understanding of the landscape level ecology of *Helicteres macrothrix* and the distribution of known records suggests a strong association with a number of lithological units identified on regional geology maps including the Wildman Siltstone, Gerowie Tuff, Mt Bunday Granite as well as the Golden Dyke and Mt Bonnie Formations. Rock types are of various origin and include sedimentary, igneous and volcanic lithologies. These particular lithological units have been used as a first level criterion for the identification of potential habitat. It should be noted that the potential habitat mapping has an inherent level of spatial inaccuracy associated with the scale and methods of production used to derive the mapping. Geological survey information was collected at a broad scale using a range of methods and technologies since the 1960's and the accuracy of this data at fine scales may be limited by the resolution of the original data. These spatial inaccuracies are principally a function of the age of the surveys and the technology available at the time to produce the original maps, the mapping base (topographic or cadastral) on which the original hard-copy mapping was produced and the process of transferring these products to digital media at a later date. The scale of the original mapping was 1:250, 000 and enlarging the mapping beyond this scale does not provide further detail.

2. **The extent of potential habitat displayed on the map** is current at the publication date of the latest available land use data for the region.

More detail: Areas of remaining potential habitat were identified by intersecting the most up-to-date land-use information to exclude areas of intensive land-use and/or cleared areas now unlikely to support viable potential habitat for the species. Data on the extent of remaining potential habitat is current to 2008 and it is likely that the area of remaining intact viable habitat is less than that indicated on the map.

3. **The map should be used as a guide to identifying the probability that the species is present** in any particular area and not a definitive assessment of distribution. The map can be used to assess the risk associated with a particular activity at a location and the

likelihood that the activity may result in a significant impact upon a population of a threatened species.

More detail: The land identified as potential habitat on the map represents that most likely to support populations of *Helicteres macrothrix* based on current ecological knowledge at the date of publication. They do not identify all areas where the species may occur and conversely *H. macrothrix* is highly unlikely to occur in all the areas identified on the map as potential habitat. The map should be used as a guide to identifying the probability that the species is present in any particular area and not a definitive assessment of distribution. The map can be used to assess the risk associated with a particular activity at a location and the likelihood that the activity may result in a significant impact upon a population of a threatened species.

- Highest likelihood of potential occurrence** for *Helicteres macrothrix* are located within the more broadly identified lithologies associated with lower slopes of hilly terrain and in areas of relatively higher uranium concentration as measured by airborne geophysical surveys. Areas within the broadly identified potential habitat with this combination of characteristics are displayed on the map as a hatched overlay to indicate the areas in which it would be most likely that *H. macrothrix* could be encountered in the field.

More detail: At a finer spatial resolution, current understanding of the site level distribution of *H. macrothrix* indicates that the occupancy envelope for the taxon appears to be centred on the transitional margins of the potential habitat in areas of relatively higher Uranium concentration as measured by radiometric methods. This may reflect both the chemistry of the parent materials on which *H. macrothrix* occurs and landscape scale processes such as erosion and aggradation which result in the concentration of particular regolith fractions and elements at lower positions in the landscape.

The 300 m buffer applied to the boundaries of the potential habitat polygons not only accounts for linework imprecision associated with the original geology mapping but for colluvial (and alluvial) influences altering the physical and chemical characteristics of the regolith in close proximity to the mapped lithological boundary. Consequently, occurrences of *H. macrothrix*, may fall outside the mapped areas considered most likely to support the species as a result of the scale of the data used to derive the conceptual model of species occupancy and/or error associated with the positional accuracy of the species record. As with any natural resource spatial product, it is recommended that this information be used as a guide to the most likely areas in which *H. macrothrix* may be encountered and should be accompanied by appropriately timed field survey to clarify the presence or absence of the species from a particular location more definitively.

- Confirmed absence locations** represent detailed floristic survey sites sampled at an appropriate time of year where *Helicteres macrothrix* was not recorded.

More detail: Confirmed absence locations are full-floristic sites sampled within the greater Darwin region over a number of decades as part of separate survey and mapping projects. These sites represent locations sampled at an appropriate time of year where *H. macrothrix* was not recorded. Surveyed sites were largely sampled using a standardised methodology (Brocklehurst et al. 2007) by experienced NTG botanical staff and represent the best available information on the known distribution of the taxon within the Darwin Region. This does not definitively imply that the species was not present at the location, given the seasonal conditions at the time of sampling. However, these sites can be considered to represent the maximum-likelihood that the species would have been detected if it was present at the time of sampling.

- Occurrence locations (point data)** of *Helicteres macrothrix* represent vouchered individual specimens or discrete locations at which the species has been recorded in the field.

7. **Mapping reliability (Confidence Rating)** has been assigned to areas in which varying intensities of field assessment have been undertaken or are considered to represent suitable habitat for the species. These generically range from ‘High’ being high-intensity, targeted, species specific surveys or areas in which confirmed sub-populations are known to occur through to ‘Low’ where reconnaissance level or incidental surveys have been undertaken or habitat is considered unsuitable.

More detail: In the broader regional context, represented by the location map, areas within the Extent of Occurrence (EoO) where appropriately timed general surveys have not encountered the species are considered a moderately reliable indication of species presence/absence based on the intensity of field data collection.

At the finer scale within the Extent of Occurrence (EoO – represented by the inset maps), the confidence levels have been combined with the potentially suitable areas (i.e. highest likelihood of occurrence) to give an indication of the confidence in not only the level of survey undertaken (and therefore, the presence/absence of the species) but also the presence of habitat suitable for the species. Areas where targeted surveys have been undertaken are considered highly reliable, whereas areas of low reliability within the EoO are indicative of unsuitable habitat (e.g. wetlands or built up areas).

References

Name	More Information
Mapped Distribution for Threatened Species of the Greater Darwin Region Project description, metadata record	<ul style="list-style-type: none"> • Metadata
Cowie I. et al (2012) Notes about <i>Helicteres macrothrix</i> (sourced from Flora NT website)	<ul style="list-style-type: none"> • Web Details • Factsheet
Brocklehurst, P., Lewis, D., Napier, D. and Lynch, D. (2007) <i>Northern Territory Guidelines and Field Methodology for Vegetation Survey and Mapping</i> . Technical Report No. 02/2007D, Department of Natural Resources, Environment and the Arts, Palmerston Northern Territory.	<ul style="list-style-type: none"> • Report (NT Library)
1:250, 000 Geological Maps and Explanatory Notes Northern Territory Geological Survey (NTGS) via the Product Catalogue.	<ul style="list-style-type: none"> • Website

Population status of *Helicteres macrothrix* (July 2016)

Sub-population Reference no	Status	Size	Trend	Pressures	Uncertainties	Current Knowledge State
1 Mt Bunday	Extant	> 50 000 individuals	Decline /Stable?	Ongoing extractive industry Management Weed incursion	It is uncertain what the extent of any population decline has been as a result of impacts from extractive industry and mining. Longer-term security and viability of sub-population with only a small proportion of the global population located on Crown land or within existing reserves.	Largest subpopulation currently known. Population status and ecology relatively well understood. Numbers known to have declined over the short term as a result of impacts from extractive industry. Significant proportion of the sub-population within Mary River National Park. Appears to respond well after fire (resprouting species) with flowering and fruiting shortly after fire in build-up/early wet season.
2 Lake Bennett and Marrakai	Extant	>500 individuals	Stable?	Potential development and subdivision Management Weed incursion	Ongoing uncertainty remains regarding the management and conservation of the sub-population in the longer term. Uncertainty over the overall trend in population numbers within the known population due to land-use intensification in the area since the most recent field assessment of the population. Identity of the taxon – western subpopulations may be a distinct entity to the Mt Bunday subpopulation.	Appears to respond well after fire (resprouting species) with flowering and fruiting shortly after fire in build-up/early wet season.
3 Glenluckie Creek	Extant	>500 individuals	Stable?	Potential development and subdivision Management Weed incursion	Some potential for impact associated with road development or realignment. Identity of the taxon – western subpopulations may be a distinct entity to the Mt Bunday subpopulation.	Numbers appear to be stable over duration of short term field survey within the known population. Appears to respond well after fire (resprouting species) with flowering and fruiting shortly after fire in build-up/early wet season.

Extent of Occurrence ¹ (excluding ocean)

- **503 km²** Currently known total EoO;
- **127 km²** Conservatively estimated potential habitat within currently known extent; &
- **80 km²** Potential habitat with highest likelihood of occurrence within the currently known extent.

Area of Occupancy: 12 Number of 2 km² cells within which mapped records occur

Estimated Area of Occupancy at Reference Scale: 48 km²

Estimated Area of occupancy at Ecological Scale (50m Grid): 0.5 km²

¹ International Union for Conservation of Nature (IUCN) Standards and Petitions Subcommittee. (2014). *Guidelines for using the IUCN Red List categories and criteria*. Version 11. Prepared by the Standards and Petitions Subcommittee. <http://www.iucnredlist.org/documents/RedListGuidelines.pdf>