

Varanus Island Fill Project

Apache Energy



CLIENT:

Apache Energy Limited

LOCATION:

Varanus Island, Pilbara coastline

SERVICES:

- Level 2 short-range endemic invertebrate survey
- Subterranean fauna desktop assessment
- Vertebrate fauna desktop assessment
- Recommendations for impact mitigation and management for sensitive species

KEY ACHIEVEMENTS:

- Collection of baseline data for terrestrial invertebrates
- Increased knowledge of regional context for both SRE and non-SRE invertebrates
- Species previously considered Barrow Island endemics (*Karaops burbidgei*, *Aname* 'MYG079', *Barrowdillo pseudopyrgoniscus*) now also known from Varanus Island

Phoenix Environmental Sciences conducted a comprehensive fauna assessment for the Varanus Island Fill Project including a Level 2 short-range endemic (SRE) invertebrate survey and desktop reviews for vertebrate and subterranean fauna.

Desktop reviews conducted prior to fieldwork identified a number of regional SRE taxa, both terrestrial and subterranean in neighbouring archipelagos, mainly on Barrow Island. A considerable number of species were presumed to be endemic to Barrow Island and suggested Varanus Island as primary candidate to harbour satellite populations of these due to similar geological history.

The SRE invertebrate fieldwork comprised of a single-phase survey using hand collection methods to target SRE invertebrates in three different broad habitat types identified on the island (limestone plain, mid-island basin and sand dune). The island is home to very fragile ecosystems and extreme care needed to be taken not to unreasonably disturb this ecologically sensitive area.

Live transport of specimens back to the laboratory allowed optimal preservation of tissue to be suitable for COI barcoding, i.e. the identification of specimens based on molecular analyses of DNA. This was crucial as many specimens collected belonged to life stages, for example juveniles and females, which could not be identified based on morphology alone. The forethought paid further dividends when genetic data indicated that two species of spiders (*Karaops burbidgei*, *Aname* 'MYG079') and an isopod (*Barrowdillo pseudopyrgoniscus*), all previously considered Barrow Island endemics, also occur on Varanus Island. The survey also increased the known range of two camaenid land snails that are only known from the Barrow/Lowendal/Montebello archipelagos.

The comprehensive fauna assessments provided excellent baseline data on the Varanus Island invertebrate and vertebrate fauna and facilitated the environmental approval of the proposed project in a timely and efficient manner.



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