

Environmental Considerations of Proposed Clearing Application at M08/494.

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Additional attachments submitted with this application

REF: 98876 Mine Closure Plan
REF: 98876 Mining Proposal
Letter of Authority in Regard to Clearing Permits
NV FO1 Application Area Clearing Permit
PDF Clearing area M08/494
Polygon
Nature Map Report 18/08/2021
Application payment receipt

Aerial photographs and site photographs of the area proposed to be cleared.
Provided as polygon shape file and figures 1- 4.



Figure 1. Aerial view of proposed clearing area, red line indicates limit of clearing.

. The application is to clear 1.875 hectares of native vegetation within tenement M08/494 for the purpose of limestone extraction (Figure 1)

Vegetation Condition

A desk top survey of Nature Map Species indicates the following five Priority or Rare flora species potentially present within a 20 Km range of the quarry area.

Priority 3 - *Acacia alexandri*.
Corchorus congener.
Priority 2 - *Acanthocarpus rupestris*.
Hamierlia kempeana subsp. *Rhadinophylla*
Triospora esiangkara.

Vegetation is broadly mapped as; Beard Vegetation Association 663; Hummock grasslands, shrub steppe; water wood over soft Spinifex.

Vegetation survey undertaken May 2006 and further assessments undertaken as part of the Environmental Site Management Process with clearing specific survey undertaken March 2011 and June 2021 indicate:

Triodia wiseana is a dominant understory species, with a mixture of *Accacia* species and *Eremophila* species comprising the shrub layer. Some *Chenopod* was also recorded, including *Atriplex codoncarpa*, *A. holocarpa*, *Maireana planifolia* and *Rhagodia eremaea*.

Weed species include Buffel Grass (*Cenchrus ciliaris*) and Birdwood Grass (*Cenchrus setiger*).

Dominant Vegetation Typically the area can be characterised as shrublands of *Acacia arida* and *Acacia bivenosa* over hummock grasslands of *Triodia wiseana*

Shrubs under 1 m = 15%

Grasses Herbs = 80%

Weed cover = 1% Weed species = 2: identified near road edges.

Condition of Proposed Clearing Area

Degraded (1) Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing Keighery, B.J. (1994)

The vegetation condition of the application area was determined from a site inspection conducted 21/06/2021

Nature Map report included as attachment.



Figure 2. Typical vegetation and soil in the undisturbed section of proposed clearing area.

Fauna assessment.

There are 5 conservation significant species of **short-range endemic species** recorded in the area, 4 are threatened species and one is a priority 2 species.

Troglobitic Fauna

Endemic: *Bamazomus subsolanus* (T), and *Petrogale lateralis subsp. Lateralis*(T).

Priority 2 *Diplodactylus* sp "Cape Range (P2).

Stygofauna

Endemic: *Stygiochiropus isolatus* (T), and Endemic *Stygiochiropus peculiaris* (T).

The habitat for troglobitic fauna is blind caves and fissures in the limestone. Stygofauna live in underground water habitats.

Proposed Mitigations and Management Measures

The quarry operations do not interact with or draw water from the underground water supply that is habitat to these species, it is not expected that operations will impact Stygofauna in the area. There is thorough management of all hydrocarbons on site to avoid spills and groundwater contamination.

The Troglobitic fauna is likely to be impacted by quarry operations if a blind cave or Karst system is encountered. To mitigate the likelihood of this occurring the following management is in place:

- Areas identified as potential Karst systems are to be left intact.
- If a blind cave is discovered during operations work will stop and representatives from DPAW, DWER and WA Museum will be consulted for further instructions.

Predicted Outcome

The Short-Range Endemics that occur on the surface of the site are likely to be eradicated during the proposed clearing and mining activities. The surrounding area contains similar habitat that is likely to support these species. Therefore, the proposed mining will not have a significant impact on Short Range Endemics that lie on the surface. Stygofauna is highly unlikely to be affected, however there is a likelihood that Troglobitic fauna habitat may be encountered. Troglobitic fauna is represented at the Threatened Ecological Communities of Cameron's Cave and Bundara Sinkhole in the Exmouth Shire.

- **Site overview** the local area referred to in the assessment of this application is defined as a 10-kilometre radius measured from the centre of the application area.

- **Soil and Landform**

Type : limestone hills and ranges (Beard 1975)

The Range land system occurs primarily on limestone and quaternary sediments of the crests, summits, slopes, and gorges of Cape Range (Payne et al. 1987)

- **Topography:** Limestone outcrop, with pockets of stony soil, traversed by a compacted limestone road and other minor tracks.
- **Hydrology:** Minor tributary at the Northwestern boundary runs in a north easterly direction towards the ephemeral creek at M08/62, this tributary (gully) is excluded from the clearing application.

- **Landforms:** A deeply compacted limestone road traverses the proposed clearing area. The northern boundary adjoins the existing quarry and contains a safety barrier consisting of large limestone boulders, with a topsoil bund behind it .



Figure 3.Topsoil bund, sprouting *Mulla Mulla* sp. after recent rains, limestone safety barrier in the background.

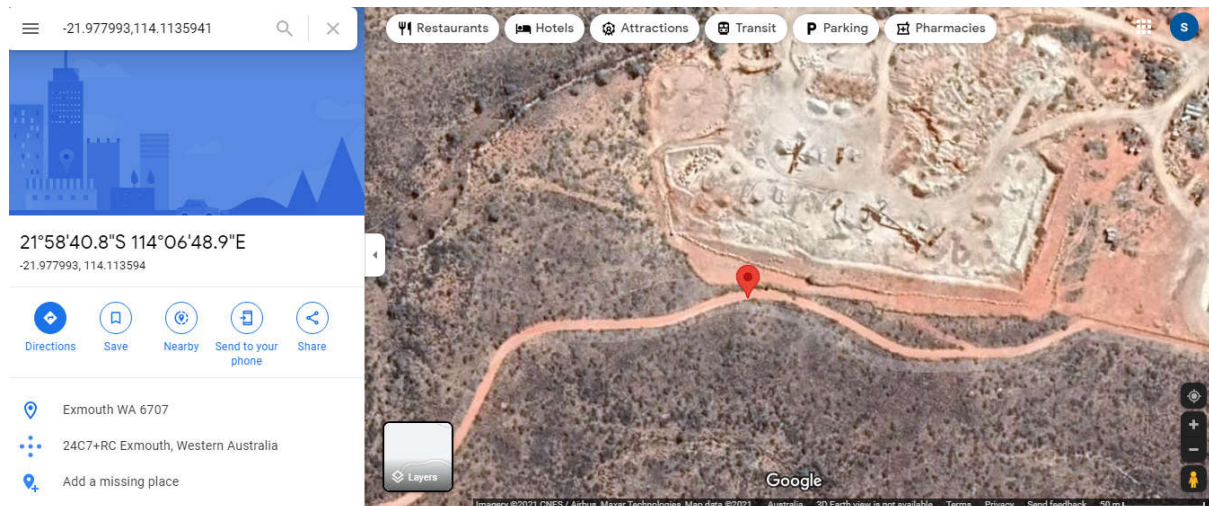


Figure 4. Location of figure 3. Minor tributary (gully) can be seen at the left side of the satellite image.

- **Proposed developments on the site.**

The site is to be cleared for the purpose of expanding the adjoining quarry for the extraction of limestone rock and associated stockpiles. No permanent infrastructure is planned to be built on the site.

- **Hydrological summary**

There are no watercourses or wetlands in the proposed clearing area.

Impact on surface water runoff is minimal, the area is not within a floodwater zone and the porous nature of the limestone absorbs almost all rainfall. The minor gully which feeds into the ephemeral creek located in M08/62 will not be disturbed.

The quarry does not interact with or extract from the groundwater table.

- **Vegetation degradation**

Dieback is not known in this region.

Weeds, including Buffel grass are found in this area, and are common throughout the Northwest Cape, Gascoyne, and Pilbara regions.

A weed eradication program which includes removal of introduced invasive species is active within the Exmouth Quarries Environmental Site group. The proposed clearing area will be treated to remove invasive weeds prior to clearing ensure the seedbank contained within the topsoil is free of weed species.

Soil and vegetation from outside of the Exmouth quarries Environmental site area is not permitted on site to reduce the likelihood of introducing disease and weeds.

(a) clean earth-moving machinery of soil and vegetation prior to entering and the area to be cleared.

b) ensure that no weed-affected soil, mulch, fill, or other material is brought into the area to be cleared; and

(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

- **Land degradation summary**, which includes discussion of the likelihood of land degradation, including waterlogging, acidification, salinization, deep subsoil compaction and erosion.

70% of the proposed clearing area is disturbed by limestone roads, and the presence of a safety barrier and topsoil bund from the existing limestone quarry.

There is the possibility of some water erosion to the main pit face during a major rain event, however the quarry floor is sloped so that any excess water is captured in a silt pit located at M08/62, this avoids waterlogging. .

Operations at the quarry cease in the event of major rain events to prevent deep compaction and wheel ruts.

The quarry operations do not interact with the groundwater table, or extract water. The removal of <1.875Ha of mostly spinifex and small shrubs is highly unlikely to impact the groundwater table or cause an increase in GW salinity.

- **Outline of environmental management measures and rehabilitation practices** that will be undertaken during and subsequent to the completion of the project. Existing Management Plans and Mining Proposals should be submitted if they are relevant to the clearing proposal

REF 98876 Works proposal and Mine Closure Plan for M08/494

- **Copies of any correspondence** with the Department of Biodiversity Conservation and Attractions (DBCA) or other government agencies regarding the proposal.

See Mining Proposal and Mine closure plans for all stakeholder correspondence including DBCA, Exmouth Shire and DWER.

Meetings and conversations with DBCA (Exmouth) and the Shire of Exmouth Environment Manager (June 2021) have revealed that neither agency has

appropriate revegetation strategies. There is not an herbarium or seedbank in the Shire of Exmouth, Exmouth Quarries and Concrete Pty. Ltd are working with both agencies to rectify this omission.

Statement against each of the 10 clearing principles.

- **(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.**

The biodiversity within the proposed clearing area is widely represented throughout the Cape Range, this clearing proposal of less than 1.875 Ha of mostly disturbed land will not compromise this.

- **(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.**

There are no known significant fauna habitats in the proposed clearing area

- **(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.**

Nature Base, and on ground surveys do not identify any rare flora in the proposed clearing area.

- **(d) Native vegetation should not be cleared if it comprises the whole or a part of or is necessary for the maintenance of a threatened ecological community.**

The nearest known threatened ecological community is located at Cameron's Cave 2km North. Clearing of the proposed area will not impact this community. The closest ANCA wetland (Swamp Cape Range Subterranean Waterway) is located 2.5km to the southeast, clearing will not affect this wetland.

- **(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.**

Tenement M08/494 contains 12Ha of native vegetation, it adjoins the extensive native vegetation of Exmouth Groundwater Reserve.

- **(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.**

The proposed clearing area is not in or associated with a wetland or watercourse.

- **(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.**

The proposed clearing area is extremely unlikely to cause appreciable land degradation, approximately 70% of the area is already degraded.

- **(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.**

The nearest conservation area is ANCA wetland (Swamp Cape Range Subterranean Waterway) is located 2.5km to the southeast. This will not be impacted by the proposed clearing.

- **(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.**

The clearing of this area is not likely to cause deterioration of surface or underground water quality.

- **(j) Native vegetation should not be cleared the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.**

The clearing area is not in a flood zone or water way, clearing the remnant vegetation is highly unlikely to cause or increase the intensity of flooding.