RED HILL SAND QUARRY - M47/1495

CLEARING PERMIT (PURPOSE PERMIT) APPLICATION 2025

1. PREVIOUS CLEARING PERMIT

North West Quarries Pty Ltd previously held Clearing Permit (Purpose Permit) 8647/1 for the Red Hill Sand Quarry site from 19 October 2019 to 18 October 2024.

Clearing Permit 8647/1 comprised a sand dune footprint, portion of the East Peawah River footprint, a road linking the two areas and two nominated top-soil stockpile areas. The total area of the permit was 52.51 hectares. The total area cleared since the commencement of operations at the Red Hill Sand Quarry is 12 ha.

This Clearing Permit application (2025) is for the extension of Clearing Permit 8647/1 for a further 5 years. This new application is for the same areas as the above permit.

The previous CPS 8647/1 documentation is provided as an attachment, as follows:

- Clearing Permit Approval Covering Letter, Dated 26 September 2019.
- Clearing Permit 8647/1, dated 19 October 2019

The mining tenement M47/1495 and this clearing permit application are within the Mundabullangana Pastoral Lease 3114/517 (44) and North West Quarries have access approval for the site from the Station Owner/ Manager. North West Quarries has occupied the site with the Station's approval since it first became a mining lease under permit holder Quarrytech Consulting Pty Ltd, with the mining tenement officially transferring to North West Quarries Pty Ltd on 31st October 2014. The previous consent letter, dated 31st August 2014, is provided in the attachments and extends to North West Quarries per the transfer of terms.

North West Quarries holds DWER Environmental Licence L8822/2014/1 for the site.

2. CLEARING PERMIT APPLICATION 2019

North West Quarries have completed and attached the NV-FO1 application for a purpose permit for the same areas as CPS 8647/1.

North West Quarries have completed and attached the receipt for payment of the prescribed fee.

3. MAPPING INFORMATION

North West Quarries have attached digital spatial data for the clearing permit application areas in the required ESRI Shapefile format (GCS GDA coordinate system and GDA 1994 datum). The attached clearing permit 8647/1 plan and site plans contained within the Mining Proposal (Version 2, dated October 2014) and Appendix 2 of the Mine Closure Plan (Revision 4) illustrate these areas.

4. DESCRIPTION OF CLEARING AREAS

North West Quarries provides a summary of the clearing areas associated with the sand mining within M47/1495 of total 86.10 hectares below. A comprehensive description is provided in the Mining Proposal and Mine Closure Plan.

The sand mining is undertaken on a campaign basis throughout the dry season only. The sand products supply local construction, civil and concrete projects within the Pilbara Region.

To date, clearing of total 12 hectares has been realised at the site over various areas as reported in the CPS 8647/1 annual clearing permit report, submitted on 10 July 2024. This clearing progress has been slower than anticipated due to the market down turn and slowed demand for sand products in recent years.

North West Quarries have applied for the same areas as CPS 8647/1 in our current application to keep it consistent with the original clearing permit for the site, the Mining Proposal, the Mine Closure Plan and in anticipation of increased demand for sand materials in the future. Clearing is undertaken progressively, and no footprints are cleared until necessary for immediate sand mining.

- ***Sand Dune (38.39 ha LOM)***

  The southern linear aeolian sand dune shown on the site plans will be excavated to approximately the natural surface level at life of mine (LOM), 43mAHD. No dewatering is required to reach the working floor. The dune high walls are battered down to approximately 10◦ between campaigns or an earth safety bund is constructed to prevent sand face engulfment hazards, to ensure the site is safe for fauna and stock and to satisfy regulatory requirements. Any sections of the sand dune that are found to contain non-saleable product will be battered down to a safe angle and left insitu or removed behind the mining operation for later use in rehabilitation works.

- ***East Peawah River (8.69 ha LOM)***

  Channel deposits are mined within a portion of the East Peawah River as indicated on the site plans. Excavation areas in the stream bed are ramped to allow fauna egress and are established with a buffer distance of at least 3 metres from the drip line of any significant riparian vegetation. Excavation works are not undertaken within 2 metres of the river bank to avoid erosion that may undermine the bank. Riverine excavation is limited to 2 metres below the riverbed surface level and always above the perched water table in the sediments which fluctuates from year to year. In the stream environment, fresh sand is brought in by annual intermittent flooding.

- ***Support Facilities (5.43 ha LOM)***

  Various areas for support facilities, roads and topsoil stockpiles comprise the remainder 5.43 hectares.

  Where possible, North West Quarries have utilised existing access roads at the site to minimise ground disturbance. This includes the shared use of the existing pastoral access from the highway into the site, existing tracks from pastoralist and cattle movements within the site and an existing track to the river bed.

5. STANDARD INFORMATION REQUIRED

Aerial and Site Photographs

Aerial and site photographs, prior to clearing activities commencing under the site's original clearing permit CPS 4633/1, are contained within the Mining Proposal and Flora and Fauna Survey Report. North West Quarries additionally have original/ pre-clearing site photographs stored on the company's cloud-based electronic document and records management system.

North West Quarries utilise Google Earth imagery to assist in reporting on annual clearing at the site. The clearing status is overlaid onto the imagery, as shown in the CPS 8647/1 annual clearing permit report, submitted on 25th July 2019. North West Quarries do not have any current fly-over aerial photographs of the site.

Flora, Vegetation and Fauna Survey

North West Quarries engaged MMWC Environmental to undertake a flora, vegetation and fauna survey of the site in October 2013. The survey was consistent with the EPA requirements for environmental surveying and reporting for flora, vegetation and fauna in Western Australia.

The area surveyed was larger than the mining lease area, with the surveyed area comprising 1,318.8 hectares and the mining tenement area being 639.93 hectares. Further details are provided in the Mining Proposal.

Flora and Vegetation Overview

A total of 112 taxa (including species, subspecies, varieties and forms) from 71 genera and 31 families were recorded in the survey area. The commonly occurring families were; Fabaceae (21 taxa), Poaceae (16 taxa) and Malvaceae (15 taxa). The most frequently recorded genera were; *Acacia* (9 taxa) and *Euphorbia*, *Sida* and *Ptilotus* (4 taxa each). An average of 17 species were recorded in each quadrat.

No Threatened flora was recorded in the survey area. One Priority species was recorded in the survey area: *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (Priority 1). The occurrence of this species was restricted to the 2 sand dunes surveyed and eventually mining will likely remove the dune population in the southern dune. Many dune species are opportunistic colonisers and strategies will be developed to review relocation options, collect seed and attempt to re-establish the species as part of progressive rehabilitation during the mining programme.

Six species of introduced or alien flora were recorded from the survey area, as follows:

- **Aerva javanica* (Kapok Bush)
- **Cucumis melo subsp. Agrestis* (Ulcardo Melon)
- **Malvastrum americanum* (Spiked Malvastrum)
- **Cenchrus ciliaris* (Buffel Grass)
- **Cenchrus setiger* (Birdwood Grass)
- **Vachellia farnesiana* (Mimosa Bush)

None of these species are registered as Weeds of National Significance (WONS, Commonwealth of Australia 2013). None of these species are listed as Declared Plants under the Biosecurity and Agriculture Management Act 2013 (BAM Act). Five of the six species are listed as environmental weeds, as defined by the Environmental Weed Strategy for Western Australia (CALM 1999).

Eight vegetation associations were identified across the study area. None of the eight vegetation associations described for the study area were analogous to any known Threatened Ecological Communities (TECs), Priority Ecological Communities (PECs) or Environmentally Sensitive Areas (ESAs). The closest record of a TEC or PEC to the study area is the Priority 3 Ecological Community Horseflat Land System of the Roebourne Plains. The closest point of the buffer zone around this PEC is 24.5 km west of the study area.

Three of eight described vegetation associations are dominant in the proposed disturbance areas in the proposed mine lease, as follows:

- Sand dune – High shrubland of *Acacia sabulosa* over low open shrubland of *Acacia stellaticeps* over hummock grassland of *Triodia epactia* over very open tussock grassland of *Eragrostis eriopoda.*
- Riverine – Low open woodland of *Eucalyptus camaldulensis* subsp. *refulgens* over high open shrubland of *Melaleuca glomerate, Melaleuca linophylla* and *Acacia trachycarpa* over very open hummock grassland of *Triodia epactia* over open tussock grassland of **Cenchrus ciliaris* and **Cenchrus setiger.*
- Sand plain – Scattered low shrubs of *Acacia sclerosperma* subsp. *sclerosperma, Acacia trachycarpa* and *Acacia stellaticeps* over open hummock grassland of *Triodia epactia.*

Fauna Overview

Six habitat types were defined within the survey area during the field survey, as follows:

- Sand dune
- Riverine
- Sand Plain with Hummock Grassland
- Clay Plain with Tussock Grassland
- Clay Plain with *Acacia* Shrubland
- Open Woodland

Five of the six habitats are widespread throughout the region. The Sand Dune habitat is less common in the region than the other habitat types although nine similar dunes are present in the immediate vicinity of the project. The clearing of the southern dune may impact the regional representation of this habitat and the fauna it supports. The clearing of the remaining habitats in the project area is small scale and are unlikely to impact significantly on the regional representation of these habitats.

Two conservation significant species of fauna were recorded during the field survey: several individuals of Rainbow Bee-eaters *(Merops ornatus)* and an Australian Bustard *(Ardeotis australis).* The Rainbow Bee-eater is listed as Migratory and the Australian Bustard is listed as Priority 4. Due to the mobility of the bird species, the project is not likely to have a significant impact on their populations and no specific closure actions are identified for the species.

It is also considered that the survey area may contain suitable habitat for three of the 12 EPBC Act listed species, and as such they all have a low likelihood of occurring in the project area. They include the Northern Marsupial Mole, Greater Bilby and Pilbara Olive Python. The Northern Marsupial Mole is known to live underground, primarily in sand dunes and sandy soils along river flats where suitable burrowing conditions occur (DSEWPaC 2013d). The Greater Bilby is known from a wide range of soil and vegetation types including open woodland and hummock grasslands where burrowing terrain is suitable (DSEWPaC 2013e). Olive Python is known from rocky areas (gorges) near permanent water that attract suitable sized prey species (DSEWPaC 2013f). Optimum habitat for all three taxa is not recorded for the project area and there is a low risk that they are present.

Site Overview

A comprehensive overview of the site is contained within the attached Mining Proposal and Mine Closure Plan. In summary, pastoral disturbance at the site dates to 1867, with Mundabullangana Station being the first pastoral lease taken up by European settlers and one of the largest and most successful enterprises of its kind in the 19th century. The land still carries the scars of supporting up to 90,000 sheep in its hay days. The station moved from sheep to cattle in 1986 which has seen the native vegetation improve from year to year. The mining lease is within an active part of the pastoral station, and this will be the final land use for the site.

Topography, Landforms and Hydrology Overview

The mining lease is primarily situated on sandplains with a prominent sand dune aligned east to west, 2 kilometers in length and 100-200m in width. The adjoining area is a flat sand plain with the East Peawah River running along the western boundary and south west corner of the mining lease. The river flows north towards the ocean and there are scattered areas of granite outcropping throughout the area. Regionally, there are 9 other sand dunes.

The mining of the East Peawah River is not anticipated to alter the landform significantly. The river is ephemeral in nature, meaning it only exists or flows for a short period during heavy rainfall events, typically in the wet season. For the rest of the year the river's channel surface remains dry. During heavy rainfall events the river flows north towards the ocean. In the process, the sand deposits within the river bed are recharged annually. It is these sand deposits or sediments which North West Quarries are mining. North West Quarries will batter these excavations to 10◦, however it is expected that subsequent deposits from annual heavy rains will alter this and recharge the river bed over time back towards the pre-mining natural surface level.

The mining of the linear east west aeolian sand dune, however, will significantly alter the existing landform. At life of mine (LOM), the sand dune will be excavated to working floor level 43m AHD. The extents of the sand dune and any areas containing unsuitable materials will be battered to 10◦. The resulting LOM landform will be flat and contoured into the surrounding areas.

Geology and Soils Overview

The geology of the site, based on mapping by Geological Survey of Western Australia (2006) presented at a scale of 1:250,000 is as follows:

- Qs – Fine to medium-grained aeolian sand
- Qao – Floodplain deposits of alluvial sand, silt and clay
- Qaoc – Alluvial floodplains containing abundant small claypan deposits.
- AgPam – Alkali granite, medium-grained, pyroxene-bearing; foliated to massive
- Crzk – Residual calcrete, massive, nodular, and cavernous limestone mainly silicified.

The site is situated in the Fortescue Province, within the De Grey Lowlands Zone. Soils are described by Tille (2006) and consist of alluvial plains and sandplains (some floodplains and stony plains) on alluvial and marine deposits over rocks of the northern Pilbara Craton. Red deep sandy duplexes with red loamy earths and some red/ brown non-cracking clays, cracking clays, red sandy earths and red deep loamy duplexes. Spinifex grasslands with kanji and tussock grasslands. Located in the northern Pilbara between Karratha and the De Grey River.

The mining tenement is in an active pastoral grazing area and as such the soils are partly degraded.

Proposed Developments

In addition to the dunal and riverine mining footprints summarised earlier in Section 4, the site proposed numerous support facilities and transport corridors. An update on those developments is provided below. In summary, these areas have not been fully realised at the site due to the down turn in the construction industry and decreased demand for sand products. However, it is envisaged that as the market improves and production increases at the site that these areas will progress as originally planned.

Support Facilities

The original mining proposal for the site envisaged that the site would contain mining infrastructure and support facilities including a workshop, crib room and ablutions block, to be situated on the southern edge of the laydown area between the sand dune and the East Peawah River. However, due to the market downturn these facilities have not been established at the site yet.

In lieu of these facilities a mobile site office with self-contained accommodation and ablution has been previously utilised. This unit contains a self-bunded diesel generator. During cyclone preparations, the mobile unit is removed from site. Further all plant servicing and maintenance has been conducted off site to date. As a result, the ground disturbance anticipated to establish this support infrastructure and associated facilities has not been fully realised.

It was anticipated that the sand quarry operations would require approximately 600 L of diesel fuel a day and about 6 L of top up oil and grease to supply the loader, dump truck, screening plant, light vehicles and equipment. However, due to the anticipated 50,000+ tonne production not being realised to date, the fueling requirements have been a fraction of the above. Fuel is brought to site via a mobile fuel trailer and as such licensable fuel and hydrocarbon volumes are not stored on site.

The site currently provides 1 domestic waste bin, to be increased when production increases. Minimal to no industrial waste is created at the site. All domestic and industrial waste is removed from site for appropriate disposal. All waste water/ effluent generated on site within the mobile unit is removed offsite for appropriate disposal.

Due to the servicing being undertaken in Port Hedland, there is no hydrocarbon waste generated at the site. Bunded pods house any hydrocarbons or chemical utilised on site and a spill kit is located adjacent to the working front and where any chemicals or hydrocarbons are being handled. All storage and handling of hydrocarbons and chemicals is undertaken in compliance with the Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007 and the Code of Practice for the Storage and Handling of Dangerous Goods.

Transportation Corridors

In addition to the above support facilities, the mining proposal also envisaged the establishment of haul and access roads including haul roads between the laydown and the river, the sand dune Working Floor and the highway, and a light vehicle access road to connect from the laydown to the existing pastoral access road.

Where possible, NWQ have utilised existing access roads at the site to date to minimise ground disturbance. This includes shared use of the existing pastoral access from the highway into the site, existing tracks from pastoralist and cattle movements within the site and an existing track to the river bed. In addition, NWQ have commenced establishing a separate heavy vehicle haul road directly from the highway onto the sand dune. This access point is under construction and presently on hold. The access is gated and locked and not permitted for use until completion, inspection and approval by Main Roads WA.

The haul road between the sand dune/ lower laydown and the river will be established as production increases at the site. The haul roads within the sand dune footprint have also been established to connect the sand dune mining slot to the laydown and the new entry haul road.

Hydrological Summary

Clearing and excavation within the dunal footprint, excavation within the river bed and clearing for the associated support facilities and transport corridors is not anticipated to have a significant impact on the site. Further details are provided in the Mining Proposal and Mine Closure Plan.

Surface Water

The site is within the Port Hedland Coast River Basin which contains six major rivers: Maitland, Harding, George, Sherlock, Yule and Turner. There are also numerous smaller rivers and creeks such as the Nickol and Peawah Rivers. The site is primarily situated on sand plains. Several prominent sand dunes aligned east west and parallel to each other are situated north of the North West Coastal Highway. The remainder of the site consists of flat sand plains. The ephemeral East Peawah River runs along the south west corner of the site and drains north west towards the ocean. Scattered areas of granite outcropping also exist throughout the project area.

In the dunal environment erosion control structures will be established to divert surface waters away from infrastructure areas. Once final closure landforms are fully identified within the next decade, erosion control requirements will be developed as part of the completion criteria and implemented in conjunction with progressive rehabilitation. Surface flow vector analyses did not identify any areas which may require special attention from erosion at closure.

Flooding is not expected to have any impact on the project as operations will only occur during the dry season or Winter months (May to November). All site infrastructure will be situated approximately 230 m away from the river flood line. The current riverine mining strategy is to only remove a limited depth of sand (2 metres) per year from the current bed load surface, and this will not impact on any perched water table. It is anticipated that annual wet season flooding will naturally replenish the sand into the shallow mining voids and no specific rehabilitation beyond battering will be necessary at closure. This aspect will be monitored during the initial years of riverine mining.

Ground Water

The Department of Water (DoW) Water Information Database (WIN) shows that there are 12 groundwater bores and one surface water monitoring station within a 30 km radius of the site. However, it is uncertain whether they still exist. None of the bores provided any monitoring data to establish any recent or long-term trends in ground water levels. One stock bore (Granite Well) is located within the project area, however with all project water being transported from Port Hedland, and no storage of significant volumes of hydrocarbons or equipment maintenance on site, it is not anticipated that any impacts to local ground water will occur that could require closure consideration. Future monitoring of water quality in Granite Well will be discussed with the pastoralist.

Vegetation Degradation

Cattle from the active Mundabullangana Pastoral Station is present at the site and contributes to an increase in grazing pressure on native vegetation and degradation of fauna habitats. Significant patterns of cattle movements can be seen in Google Earth imagery, particularly where cattle cross the northern end of the sand dune. This pressure is likely to increase in areas of fragmented vegetation, such as that caused by the proposed haul road from the sand dune/ lower laydown to the river (yet to be constructed). A thorough risk assessment that includes the mitigation of risks associated with fragmented vegetation has been undertaken and the haul road will not remain post mine closure.

Aside from cattle grazing, the next two frequently observed impacts on native vegetation likely contributed to by pastoral activities at the site are scattered weed species and unsealed tracks.

North West Quarries clearing permit areas involve adequate clearing, top-soil stripping, stockpiling and stockpile management to ensure that viable seed storage is retained for later rehabilitation works. There is no Dieback risk and weed control (introduction and spread) is an ongoing issue that is being managed at the site. The annual CPS 8647/1 clearing permit report details the weed issues at the site, predominantly due to the:

- Proximity of the site to the North West Coastal Highway.
- Historic and ongoing disturbance by cattle grazing adjacent and throughout the site.
- Shared use of the existing pastoral access point and road.
- Historic pastoral tracks.

North West Quarries weed control processes for the site are described in the CPS annual report, however weeds will be an ongoing issue for the site, requiring close monitoring and management. North West Quarries did achieve some success in the re-introduction of spinifex grasses to areas previously void of native vegetation. This provided less opportunity for weed populations to develop and spread into these areas, due to the competition. It is North West Quarries aim to see this spinifex trend continue, to crowd out weed populations at the site.

Land Degradation

The site is partly degraded from pastoral disturbance dating back to 1867. Post mining land use, the site will continue as pastoral use.

At life of mine (LOM) the original dunal landform will be permanently altered via excavation to natural surface level. Disturbed areas including the quarry floor, non-saleable screened materials or stockpiles will be recontoured to batter slopes of less than 10◦ into the surrounding landscape and then ripped, topsoiled (and seeded if required) to promote natural regeneration of native vegetation communities. Fauna habitats such as logs, rocks, boulders collected during the initial clearing process will be strategically placed within rehabilitated areas to encourage re-establishment of faunal communities at the post mining stage.

At life of mine (LOM) the riverine landform is not expected to be significantly altered. The loss of riparian vegetation can result in accelerated erosion of bank material. A significant management effort will be applied to limit the direct and indirect impacts to riparian vegetation and groundwater. It is planned that no Eucalyptus trees will be impacted within the river zone and that sand extraction will be conducted around the trees, with a buffer to the root zone, whilst leaving them intact.

Surface water drainage patterns will be reinstated to reduce the risk of unacceptable water ponding and/ or erosion issues. The potential for waterlogging, acidification, salinisation, deep subsoil compaction and erosion are considered low. The surface flow vector analyses did not identify any areas which may require special attention from erosion at closure.

Further details on the key environmental issues and mitigation measures for the site are in the Mine Closure Plan, inclusive of; top-soil and subsoil management, erosion and sediment management, remediation of contaminated sites, revegetation and fauna habitat re-establishment, weed management and dust management.

Environmental Management

North West Quarries undertake environmental management at the site in accordance with the approved Mining Proposal and Mine Closure Plan, the Company's Environmental Management Policy, the site Environmental Management Plan and the numerous Company Environmental Management Procedures. The Mining Proposal and Mine Closure Plan are included as an attachment.

In summary, the clearing in development areas and stockpiling of topsoil is managed on site to ensure viable seed storage for rehabilitation works. Rehabilitation will be undertaken progressively at the site as operations progress. As the site is still in its infancy, rehabilitation has yet to occur.

Correspondence

A copy of the previous Clearing Permit CPS 4633/1 documentation is attached.

Clearing Principals

Statements against the 10 principles for clearing of native vegetation under Schedule 5 of the EP Act are detailed below. Native vegetation should not be cleared if:

A. It comprises a high level of biological diversity.

The survey of the study area identified 112 species of flora from 81 genera and 37 families. Of these 112 species, one represented a conservation significant taxon: *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (Priority 1). Two species of conservation significant fauna were recorded within the study area: Rainbow Bee-eater (*Merops ornatus*) and Australian Bustard (*Ardeotis australis*). Numerous weed species and unsealed tracks occur throughout the lease. Large areas surrounding the lease are considered to comprise a similar level of biological diversity to the study area.

Therefore, the proposed clearing for the mining development is not likely to be at variance with this principle.

B. It comprises the whole or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

The fauna habitats within the lease are mostly well represented elsewhere within the local area. However, the sand dune habitat (defined as the Gregory land system) is restricted and, as such, may represent significant habitat. There are other similar sand dunes surrounding the lease (9 total in the district); however, they are not considered to be particularly common in the landscape.

Therefore, the proposed clearing may be at variance with this principle.

C. It includes, or is necessary for the continued existence of, rare flora.

One species of Priority flora was recorded during the survey: *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (Priority 1). It is an erect, spindly shrub to 2 metres in height. It is known to occur in a range of habitats including sandplains, sand dunes, coastal estuaries and road verges, over a range of approximately 800 kilometres. At the Red Hill Sand Quarry site, it was primarily recorded along the western end of two main sand dunes, in vegetation type AsaAstTeEe, the locations of which are presented in Appendix 1 and Figure 6 of the Survey Report. The taxa are known to occur on at least one of the other 9 potential dune habitats in the district.

As the sand dune mining operations progress, this taxa in the southern sand dune will be impacted by mining advance. However, due to the location of the population within the sand dune (western end) in relation to the current mining slot (eastern end) and the long mine life of the campaign operations, impacts are not imminent. This provides opportunities to mitigate impacts of disturbance in advance of mining entering the western end of the sand dune. Opportunities for mitigation may include confirming its presence on the other 7 similar sand dunes in the district, selective relocation and replanting in mine disturbed areas as a

part of progressive rehabilitation, or the collection of seed for site rehabilitation and plot trials. These strategies will be further explored in advance of entering the western end of the sand dune. It is believed that further research will reveal that the taxa is a 'disturbance opportunist'.

No Threatened flora was recorded in the lease, and no species of Threatened flora are considered likely to occur within the lease due to a lack of suitable habitat.

Therefore, the proposed clearing for the mining development is not likely to be at variance with this principle.

D. It comprises the whole or a part of or is necessary for the maintenance of a threatened ecological community.

North West Quarries have reviewed the Threatened Ecological Community (TEC) list, as published by DPaW, and no records of a TEC occur within a 50 km radius of the lease, and none of the vegetation associations within the study area are considered to represent a TEC.

Therefore, the proposed clearing permit areas are not likely to be at variance with this principle.

E. It is significant as a remnant of native vegetation in an area that has been extensively cleared.

Much of the native vegetation surrounding the lease remains un-cleared and in a relatively natural, although partially degraded, state. The area comprises station leases with cattle and only basic associated infrastructure, such as tracks, roads, tanks, troughs and occasional holding and loading yards.

Therefore, the proposed clearing permit areas are not likely to be at variance with this principle.

F. It is growing in, or in association with, an environment associated with a watercourse or wetland.

The east branch of the Peawah River extends through the length of the lease and comprises approximately 5 kilometres of river line within the surveyed area. The river line is proposed to be impacted in the future as sand is to be excavated from the river bed. To date, only test pits have been excavated within the river bed.

Therefore, the proposed clearing permit areas are likely to be at variance with this principle.

However, excavations within the stream bed have a buffer distance of at least 3 metres from the drip line of any significant riparian vegetation. Excavations are also not undertaken within 2 metres of the river bank to avoid erosion that may undermine the bank. Riverine excavation is limited to 2 metres below the riverbed surface level and always above the perched water table in the sediments that fluctuate from year to year. River sediment is a renewable resource and will be replenished in the extraction area after each annual wet season via intermittent flooding.

G. The clearing of the vegetation is likely to cause appreciable land degradation.

The impacts of the clearing permit areas have the potential to affect soil surfaces resulting in a level of land degradation. However, with appropriate management actions, impacts are minor. The surveyed area occurs across three land systems; Uaroo, Mallina and Gregory (van Vreeswyk *et al.* 2004). The Mallina land system has some records of erosion over 13% of the land system. The Uaroo land system has records of slight erosion of over 1% of the land system. The Gregory land system has no record of erosion throughout its extent.

There are records of weed species throughout site, predominantly associated with the river line where cattle disturbance to the vegetation is noticeable and adjacent the highway. The

spread of weeds further within the lease has been prevented through the Weed Management Procedures for the site and through additional precautions.

Therefore, the proposed clearing permit areas are not likely to be at variance with this principle.

H. The clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

The site is not located within or adjacent to any conservation reserves. The closest DPaW-managed conservation estate is Mungaroona Range Nature Reserve, which is approximately 50 kilometres south of the study area. Millstream-Chichester National Park is situated approximately 65 kilometres south west of the surveyed area.

Therefore, the proposed clearing permit areas are not likely to be at variance with this principle.

I. The clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

The site is not situated within a Public Drinking Water Source Area (DWER-033 2019).

Clearing of native vegetation may temporarily cause runoff and sedimentation. However, with appropriate management actions, impacts on hydrology and drainage are low. Existing vegetation within the site is sparse and the average annual rainfall for the area is 327.9mm (BoM 2019).

Therefore, the proposed clearing permit areas are not likely to be at variance with this principle.

J. The clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

The east branch of the East Peawah River running along the length of the surveyed area carries an annual water flow, predominantly flooding during summer months with high rainfall. There are no perennial pools along the length of the river within the lease.

The Port Hedland airport receives an average annual rainfall of 317.7 mm, with an annual evapotranspiration rate of between 300-400mm (BoM 2019). With appropriate drainage control and water management it is unlikely that the clearing permit areas will cause or exacerbate the incidence or intensity of flooding.

Therefore, the proposed clearing permit areas are not likely to be at variance with this principle.

7. INDEX OF DOCUMENTS IN SUBMISSION

The following is an index of the documents that are provided electronically with this submission. The files are numbered as follows:

1. 2019 CPS Application with Index (this document)
2. Previous Clearing Permit Approval Covering Letter, dated 23rd October 2014
3. Previous Clearing Permit 8647/1, dated 23rd October 2014
4. Previous Clearing Permit 8647/1 Plan, dated 23rd October 2014
5. Mundabullangana Station Access Approval, dated 31st August 2014
6. Form C2 – Application for Purpose Permit 2019
7. Form C3 – Payment of the Prescribed Fee
8. IBSA Data Package:
    i. Metadata and Licensing Statement (pdf format)
    ii. Red Hill Flora, Veg & Fauna Report (.pdf format)
    iii. Red Hill Flora, Veg & Fauna Report (.txt format)
    iv. Electronic Data Files (zip folder)
9. Digital Spatial Data – ESRI Shapefiles (folder)
10. Mining Proposal, Version 2, dated October 2014
11. Mine Closure Plan, Revision 4, dated 19th October 2014 (folder)
12. Letter of Legal Authority to Sign on behalf of North West Quarries Pty Ltd and ASIC Extract

8. SUBMISSION OF DOCUMENTS

The Red Hill Sand Quarry CPS 2019 submission (<45MB size) is made to DMIRS via email address nvab@dmirs.wa.gov.au.