



Rhodes Ridge Native Vegetation Clearing Permit

Statement addressing the 10 clearing principles

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Anthea Jones, Botanist, Biological Assessments

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The Rhodes Ridge application area is 42,823.7 hectares (ha) and is located approximately 30 km north-west of Newman. Hamersley Resources Limited (Hamersley Resources) is a member of the Rio Tinto Group (Rio Tinto) and seeks this application in its capacity as manager of the Joint Venture to disturb 1,500 ha of vegetation within the application area, with disturbance of vegetation representing approximately 3.5 per cent of the application area.

Exploration and associated works are conducted in accordance with *Rio Tinto's Iron Ore (WA) Mineral Evaluation and Drilling Environmental Management Plan* (EMP, Attachment 1). This EMP includes commitments with respect to minimising clearing, avoiding high conservation value flora, fauna, vegetation and habitats and progressive rehabilitation. Exploration works are managed under Rio Tinto's Approvals Request Co-ordination System (ARCS). Significant biological and environmental features are spatially identified in ARCS with appropriate buffers. Any works that may impact on those identified significant values are avoided or referred to a subject matter expert who may authorise works with appropriate conditions, if the relevant regulatory environmental approvals are otherwise met.

Clearing will be undertaken with a dozer, using a raised blade clearing technique where possible. Blade down clearing may be required in areas of steep or rough terrain in order to provide a safe working environment. Clearing is required for exploration and resource definition drilling (up to and including 50 m x 50 m drill pattern designs), hydrogeological and geotechnical investigations, camp and associated activities. Maximum width of track disturbance, including windrows, is 6 m. This is to account for the width of the loader bucket (4.5 m) and potential windrows either side. Total disturbance for drill pads and sumps can range from approximately 400 m² for standard reverse circulation drilling to 2,400 m² for water resource production bores. All tracks are to be constructed and maintained to ensure minimal impact on natural surface drainage patterns and progressively rehabilitated as soon as practicable.

Numerous clearing permits have been issued previously over the application area. Clearing permits issued previously often applied to smaller differing areas within the current application area. Some permits extended beyond the current application area and some permits overlapped with each other. Consequently, cumulative clearing within the current application area is difficult to calculate accurately using Rio Tinto's internal reporting system. A project is underway that will digitally capture disturbance and rehabilitation, enabling more accurate determination of cumulative impacts within the application area. Results are expected in the second quarter of 2022.

Five clearing permits are live and actively being used by Hamersley Resources Limited to facilitate exploration and associated works (Table 1).

Table 1 Live clearing permits within the application area that are being actively used by Rio Tinto

CPS	Ha*	Live date	No clearing after date	Expiry	Clearing assigned	Clearing to date (ha)**	Rehab to date (ha)	Status
3169/3	22	22/08/2009	31/07/2019	31/07/2024	36.5	41.20	7.1	Live
8245/1	200	23/02/2019	23/02/2029	23/02/2034	193.3	35.8	4.6	Live
2283/6	355	23/05/2008	31/12/2022	31/12/2027	206.22	74.39	21.3	Live
8270/1	600	20/07/2019	31/12/2028	31/12/2035	527.8	295.66	47.3	Live
8771/1	805	21/03/2020	31/12/2025	31/12/2030	254.1	84.88	0	Live

*Approved hectares within and outside of the proposed application area.

The proposal to clear vegetation within the Rhodes Ridge NVCP survey area is considered below in terms of the Department of Water and Environment Regulation's (previously the Department of Environment Regulation) 10 Clearing Principles under Schedule 5 of the *Environmental Protection Act 1986* and Hamersley Resources commitments to avoid, minimise and/or manage impacts on significant biological and environmental values.

Hamersley Resources commits to avoiding impacts on the significant biological values and associated buffers, shown as proposed protection areas and detailed in Figures 1 – 4. Some biological and environmental values cannot feasibly be protected by avoidance at the scale of the application area, for example all Priority 3 listed flora or all mulga vegetation units. Hamersley Resources commits to minimise and manage impacts on such biological and environmental values through implementation of its Exploration EMP and through ARCS, whereby biological and environmental features are spatially identified and impacts assessed at a finer scale in relation to specific works. In such cases, identified features are either avoided or referred to a subject matter expert who may authorise works with appropriate conditions, if the relevant regulatory environmental approvals are otherwise met.

1. **Comprises high level of biological diversity**

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

The application area lies within the Hamersley subregion of the Pilbara IBRA bioregion of Western Australia (Kendrick 2001). A detailed flora, vegetation and fauna assessment of the application area has been conducted by Astron between 2019 and 2021. Seasonal conditions for surveying the east Pilbara were below average in 2019 and average in 2020. However, survey was constrained by COVID-19 restrictions in 2020. Seasonal conditions during the 2021 survey period were considered above average due to relatively widespread above average rainfall and there was good representation of annual and ephemeral flora and good conditions for fauna generally in 2021. Overall, timing is considered a minor limitation to the flora and fauna survey. The application area has been adequately surveyed in accordance with the *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (Environmental Protection Authority 2016) and *Technical Guidance - Terrestrial Fauna Surveys* (Environmental Protection Authority 2020).

Vegetation

Thirty-seven vegetation units were identified within the application area, none of which represent a Commonwealth or State listed Threatened Ecological Community (TEC). Vegetation that may represent two Priority Ecological Communities (PECs) was recorded.

Vegetation unit D12 has affinity to the 'Coolibah - Lignum Flats: sub type 1' priority 3 PEC and occurs in three discrete patches covering 11.9 ha (0.03% of application area) in the central part of the application area. Vegetation unit D12 is described as *Eucalyptus victrix* open woodland over *Acacia aptaneura* scattered tall shrubs to tall open shrubland over *Duma florulenta* (and *Rhagodia eremaea*) open shrubland to shrubland over *Chrysopogon fallax*, *Eriachne flaccida*, *Eulalia aurea* and/or other species very open tussock grassland with *Urochloa occidentalis* var. *ciliata*, *Digitaria ctenantha* and *Enneapogon polyphyllus* annual grassland on broad drainage depressions within crabhole clay plains. It was recorded on the Wannamunna land system associated with sandy clay loam plains, crabhole plains or broad drainage depressions and creeks over calcrete and ironstone.

Vegetation unit P15 has affinity to the 'West Angelas Cracking-Clays' priority 1 PEC and was recorded in 323 patches covering 76.1 ha (0.2% of application area) in the central and western parts of the application area. Vegetation was described as: *Astrelba elymoides* (*Astrelba pectinata*, *Aristida latifolia* and *Chrysopogon fallax*) open tussock grassland to tussock grassland over *Dichanthium sericeum* subsp. *humilius*, *Iseilema vaginiflorum*, *Urochloa occidentalis* var. *occidentalis* and other species very open annual grassland with *Ipomoea lonchophylla*, *Euphorbia coghlanii* and *Vigna* sp. Hamersley Clay (A.A. Mitchell PRP 113) scattered herbs to open herbland on crabhole clay plains. It was recorded from Wannamunna, Spearhole, Rocklea and Newman land systems on clay loam or cracking clay plains.

Vegetation unit D19 may be of elevated significance as it is uncommon with a limited distribution. The D19 vegetation unit occurs in a drainage line and is characterised by *Eremophila galeata*, which is at the northern extent of its distribution in the survey area. It also supports all known occurrences of the recently described Priority 1 taxon *Paranotis* sp. Pilbara (H. Ajduk HAOP04a) for which specimens were recently lodged with the WA Herbarium.

No new exploration or associated works will be conducted within the potentially conservation significant vegetation units D12, P15 and D19, as identified in Astron (2022). An additional 50 m buffer will be applied to these vegetation units in ARCS to further reduce the risk of potential indirect and inadvertent impacts to these vegetation units with affinities to PECs. However, areas of existing disturbance, such as existing tracks and service corridors, will continue to be accessed and maintained where necessary. Unless significant indirect impacts are occurring, the environmental impact of maintaining an existing track through a significant vegetation unit is usually lower than the impact of clearing a new track through intact vegetation around a significant vegetation unit.

Vegetation unit P1 (4,625.1ha, 10.8 % of the application area) shows banded patterning and therefore may represent the 'grove/inter-grove mulga, eastern Hamersley Range' community which is listed as an 'Ecosystem at Risk' (Department of Conservation and Land Management 2002). This vegetation is threatened by pastoral grazing of cattle, as well as invasive weeds and water shadows from linear infrastructure which change the particular hydrology this vegetation type is formed by (Department of Conservation and Land Management 2002).

Vegetation units P8 (2,406.9 ha, 5.6%), P9 (2,963.5 ha, 6.9%) and the P8/P9 Mosaic (3, 199.6 ha, 7.5%) represent a hard pan mulga community and have a complex relationship with sheet flow hydrology. Banded and hand pan mulga communities may affect water and therefore nutrient flows as well as transport of sediments to other landforms and vegetation types within a landscape. Changes in sheet flow communities can also affect downstream vegetation types, and thus play an important part of the landscape.

The P1, P8, P9 and P8/9 mosaic mulga vegetation units represent greater than 30 per cent of the application area and occur widely in the Pilbara bioregion. Direct clearing of vegetation is unlikely to significantly impact on the mulga vegetation units, as proportional direct impacts from exploration are likely to be low. Alteration of sheet flow hydrology has the potential to have indirect impacts on the mulga vegetation units. Minimisation of direct impacts from clearing and management of indirect impacts from alteration to surface water flows will be achieved through accordance with Rio Tinto's EMP. The EMP requires that clearing be minimised (e.g. by using existing tracks) and that all tracks to be constructed and maintained to ensure minimal impact on natural surface drainage patterns and to ensure surface run-off does not impact surrounding lands.

Commitment 1: No new exploration or associated works will be conducted within vegetation units D12, P15 and D19, as identified in Astron (2022). An additional 50 m exclusion area will be applied to

these vegetation units in ARCS to avoid potential indirect and inadvertent impacts to these vegetation units (Figure 2). Existing cleared areas may be accessed and maintained, as necessary.

Commitment 2: In accordance with the EMP, minimise clearing and construct and maintain tracks to ensure minimal impact on natural surface drainage patterns, with particular regard for the P1, P8, P9 and P8/9 mosaic mulga vegetation units.

Flora

A total of 580 confirmed vascular flora taxa, representing 196 genera from 60 families, were recorded within the application area. The floristic diversity was considered representative for the region. The diversity of ephemeral and annual flora is considered good due to an optimal wet season in 2020-2021. No Commonwealth or State listed threatened flora species were recorded during the survey and based on the results of the desktop assessment, none are expected to occur.

Twenty-one State listed priority flora species were identified within the application area during the current survey; *Eragrostis* sp. Mt Robinson (S. van Leeuwen 4109) P1, *Paranotis* sp. Pilbara (H. Ajduk HAOP04a) P1, *Aristida lazardis* P2, *Euphorbia inappendiculata* var. *inappendiculata* P2, *Hibiscus* sp. Gurinbiddy Range (M.E. Trudgen MET 15708) P2, *Ipomoea racemigera* P2, *Isotropis parviflora* P2, *Oxalis* sp. Pilbara (M.E. Trudgen 12725) P2, *Acacia subtiliformis* P3, *Aristida jerichoensis* var. *subspinulifera* P3, *Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479) P3, *Euphorbia australis* var. *glabra* P3, *Glycine falcata* P3, *Goodenia* sp. East Pilbara (A.A. Mitchell PRP 727) P3, *Indigofera gilesii* P3, *Rhagodia* sp. Hamersley (M. Trudgen 17794) P3, *Streptoglossa* sp. Cracking clays (S. van Leeuwen et al. PBS 7353) P3, *Swainsona thompsoniana* P3, *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) P3, *Themeda triandra*/sp. Hamersley Station (M.E. Trudgen 11431) (potential P3), *Triodia* sp. Mt Ella (M.E. Trudgen 12739) P3 and *Goodenia nuda* P4.

A further six priority flora species (*Vittadinia* sp. Coondewanna Flats (S. van Leeuwen 4684) P1, *Teucrium pilbaranum* P2, *Rostellularia adscendens* var. *latifolia* P3, *Xerochrysum boreale* P3, *Acacia bromilowiana* P4 and *Lepidium catapycnon* P4) have been recorded within the application area previously however were not encountered during the current survey (Department of Biodiversity, Conservation and Attractions 2021g, 2021c, Rio Tinto 2021b).

Five priority taxa recorded within the survey area are considered range extensions to the current known populations; *Eragrostis* sp. Mt Robinson (S. van Leeuwen 4109) P1, *Teucrium pilbaranum* P2, *Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479) P3, *Euphorbia australis* var. *glabra* P3 and *Glycine falcata* P3.

All known populations of Priority 1 and 2 listed flora taxa within the application area will be avoided. A 30 m buffer will be applied to Priority 1 and 2 flora in ARCS to further reduce the risk of potential indirect and inadvertent impacts from new exploration works on these Priority 1 and 2 flora taxa. Priority flora is often recorded alongside roads or tracks due to increased visibility in these areas. Altering existing tracks to provide buffers in such cases would result in additional clearing and higher environmental impacts. Areas of existing disturbance within the buffers, such as existing tracks and service corridors, will continue to be accessed and maintained where necessary.

With regard to the range extensions, the Priority 1 and 2 flora taxa with populations that are considered range extensions will be protected, as described above. All Priority 3 listed taxa for which range extensions were recorded had occurrences in the P15 vegetation unit. The protection of the P15 vegetation unit and associated buffer will provide total or partial protection for these Priority 3 taxa with recorded range extensions. All recorded populations of *Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479) P3 will be protected through exclusion of the P15 vegetation unit. Additionally, 14

populations (334 individuals) of *Euphorbia australis* var. *glabra* P3 and 9 populations (57 individuals) of *Glycine falcata* P3 will be protected, largely within the P15 vegetation unit, but also within other areas demarcated for protection of other significant biological values. There is potential for impacts on *E. australis* var. *glabra* and *G. falcata* populations at the south-eastern extent of their known ranges, extending approximately 1 km and 13 km east from populations within protected areas, respectively. However, both *E. australis* var. *glabra* and *G. falcata* have east-west ranges of over 300 km within the Pilbara. Given the fragmented nature of impacts from exploration and small extension of range the potentially impacted populations represent relative to the broad known regional extent of these taxa, any potential impacts to *E. australis* var. *glabra* and *G. falcata* are highly unlikely to be significant to the conservation of these taxa in the Pilbara.

The majority of the Priority 3 and 4 flora taxa recorded within the application area have broad local, regional and/or National distributions. The proportion of known individuals that occur within the application area relative to the regional population is low in most cases. However, for a small number of Priority 3 and 4 taxa, more than 30 per cent of the number of individuals recorded regionally occur within the application area. *Aristida jerichoensis* var. *subspinulifera* P3, *Indigofera gilesii* P3, *Rhagodia* sp. Hamersley (M. Trudgen 17794) P3 and *Goodenia nuda* P4 have more than 30% of the number of individuals known regionally within the application area. These Priority taxa were recorded in high numbers across numerous vegetation units with broad distributions across the application area. The high proportion of individuals recorded within the application area relative to the regional population is likely to be a consequence of the high survey effort within the application area relative to the broader regional extent. Furthermore, although a high proportion of the known regional population occurs within the application area for these Priority taxa, impacts from exploration and associated works will be limited to 3.5 per cent of the application area, fragmented and temporary. Impacts from exploration and associated works are unlikely to be significant to the conservation of these taxa at either the local or regional scale.

Other Priority 3 and 4 taxa with high proportions of the number of individuals recorded regionally within the application area will be protected through avoidance of habitat. All populations of *Streptoglossa* sp. Cracking clays (S. van Leeuwen et al. PBS 7353) will be protected by avoiding the P15 vegetation unit. As noted above, a significant proportion of *E. australis* var. *glabra* P3 (45 per cent of the number of individuals and populations) will be protected through protection of the D13 and P15 vegetation units and within other areas demarcated for protection of significant biological values. Other Priority 3 taxa restricted to calcretes, such as *Acacia subtiliformis* P3 and *Goodenia* sp. East Pilbara (A.A. Mitchell PRP 727) P3, are unlikely to occur in resource areas and therefore unlikely to be significantly impacted.

Rhagodia sp. Hamersley (M. Trudgen 17794) P3, *Acacia subtiliformis* P3 and *Goodenia nuda* P4 have all been recorded in areas mapped by Rio Tinto as rehabilitation areas and within areas mapped by Astron (2022) as being in "Completely degraded" or "Poor" condition. *Aristida lazaridis* P2 and *Aristida jerichoensis* var. *subspinulifera* P3 were both recorded in areas mapped as being in completely degraded condition. *A. lazaridis* has also been recorded in rehabilitation at BHP Yandi and in areas of soil disturbance (PERTH 09215808, PERTH 08674604, PERTH 08399344, PERTH 08399352). This is indicative of the resilience of many of these Priority taxa and their ability to re-establish after disturbance.

Commitment 3: All known populations of Priority 1 and 2 listed flora taxa will be avoided. A 30 m exclusion area will be applied to Priority 1 and 2 flora ARCS to further reduce the risk of potential indirect and inadvertent impacts from new exploration works on these Priority 1 and 2 flora taxa (Figure 3). Existing cleared areas may be accessed and maintained, as necessary.

Fauna

Eight broad fauna habitat types were recorded in the application area: Low Hills and Slopes, Clay Plain, Stony Plain, Rocky Hill, Minor Drainage Line, Mulga Woodland, Gorge/Gully and Breakaway. These habitat types extend beyond the application area, are common throughout the Pilbara region and are therefore unlikely to support a greater localised level of faunal diversity than that of the surrounding areas.

Database search results identified 344 vertebrate fauna species previously recorded within 50 km of the application area, including seven amphibian species, 120 reptile species, 167 bird species (including one introduced bird species) and 50 mammal species (including 10 introduced mammal species). One-hundred and eighty-three fauna species, comprising four amphibians, 70 reptiles, 80 birds and 29 mammals were recorded within the application area during the current survey. The expected fauna assemblage identified from the desktop assessment and those identified during survey of the application area are commonly recorded taxa in Pilbara biological surveys.

The MNES fauna species Ghost Bat (VU; VU) was recorded within the application area during the current survey in natural caves. A total of six Ghost Bat roost caves have been recorded within the application area through surveys to date, comprising of one Category 3 roost cave with occasional occupancy, and five Category 4 nocturnal roost caves with opportunistic usage. None of these caves are considered individually significant to the long-term persistence of the species. Impacts to caves will be avoided with a minimum 25 m exclusion area to be applied to Category 4 caves in ARCS to reduce the risk of potential indirect and inadvertent impacts to these habitats. The Category 3 roost cave will have a 75 m exclusion area applied.

The Ghost Bat has also been recorded historically within the application area in abandoned mine adits roosting in low numbers. The Pilbara Leaf-nosed Bat (VU; VU) has also been previously recorded visiting adits within the application area in low numbers. However, no known permanent roosts for PLNB have been recorded in the survey area. Impacts to adits will be avoided with a minimum 150 m exclusion area to be applied in ARCS to reduce the risk of potential indirect and inadvertent impacts to adit habitats. Subject to appropriate planning and continuing environmental controls, the conservation status of these species is unlikely to be affected by the proposal.

A further two MNES species, the Pilbara Olive Python (VU; VU) and Northern Quoll (EN; EN), have been recently recorded in close proximity to the application area and would be expected to utilise the area mainly as foraging and dispersal habitat. The application area lacks extensive Gorge/Gully and Breakaway habitats and permanent/semi-permanent water sources associated with core habitat features for these MNES species. As such, the application area is likely to be utilised mainly as foraging and dispersal habitat by these species, and the conservation status of these species is unlikely to be affected by the proposal. The single semi-permanent pool recorded in application area will be protected by applying a 50 m exclusion area in ARCS to avoid any impacts to this habitat. An existing track occurs on the edge of the buffer approximately 45 m from the pool and this track will be accessed and maintained, as necessary.

One priority fauna species was recorded during the current survey from the application area: the Western Pebble-mound Mouse (P4) from active and inactive mounds. The Low Hill and Slopes, Rocky Hill, Stony Plain and Mulga Woodland habitats of the application area are likely to support this species. These habitats are widespread and common within the vicinity of the application area and the wider Pilbara region. Mounds have been identified through multiple surveys across the Rhodes Ridge area and these are identified as restriction areas with a 25 m buffer in ARCS. Activities that may impact on these restriction areas would be identified and referred to a specialist zoologist for advice. Potential impacts to active mounds will be managed in accordance with Rio Tinto's EMP. The EMP states that such features of elevated conservation significance will be avoided (where practicable). In cases

where avoidance is not practicable, fauna management advice is included on the internal approval by the specialist zoologist.

Eight other significant species, the Pilbara Barking Gecko (P2), *Anilios ganei* (P1), Letter-winged Kite (P4), Oriental Plover (Mi; Mi), Grey Falcon (VU), Peregrine Falcon (OS), Fork-tailed Swift (Mi; Mi) and *Lerista macropisthopus remota* (P2) were considered highly likely to occur in the application area, within the habitats present. However, none of these species are considered likely to be dependent on the habitats present in the application area and most of the bird species are only likely to use the application area as part of a larger foraging area. None of these species are likely to be impacted by the Proposal.

Commitment 4: *All six known Category 3 and 4 caves and adits will be avoided. A minimum 25 m exclusion area will be applied to these known caves and a 150 m exclusion area applied to adits ARCS to avoid potential indirect and inadvertent impacts from exploration works on Ghost Bat and Pilbara Leaf-nosed Bat (Figure 4). Existing cleared areas may be accessed and maintained, as necessary, where the activity type would not cause any significant disturbance to Ghost Bat and Pilbara Leaf-nosed Bat.*

Commitment 5: *The semi-permanent pool habitat will be avoided by applying a minimum 50 m exclusion area in ARCS to avoid impacts to this potential habitat for State and Federally listed Threatened fauna (Figure 4c). Existing cleared areas will be accessed and maintained, as necessary, where the activity type would not cause significant disturbance to fauna.*

Commitment 6: *Western Pebble-mound Mouse (P4) mounds will be identified as a minimum 25 m restriction area in ARCS and mounds will be avoided where practicable. Where avoidance is not practicable, activities will be referred to a specialist zoologist for internal advice and approval with appropriate management conditions. Existing cleared areas may be accessed and maintained, as necessary.*

Based on Rio Tinto's commitments to avoid, minimise and manage impacts on Threatened fauna, Priority listed flora and fauna, Priority Ecological Communities and vegetation units of conservation significance, the proposed exploration and associated works are unlikely to impact the biological diversity within the application area and unlikely to be at variance to this Principle.

2. Potential impact to any significant habitat for fauna indigenous to Western Australia

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

Eight fauna habitat types were recorded in the application area: Low Hills and Slopes, Clay Plain, Stony Plain, Rocky Hill, Minor Drainage Line, Mulga Woodland, Gorge/Gully and Breakaway. These habitat types extend beyond the application area, are common throughout the Pilbara region and are therefore unlikely to support a greater localised level of faunal diversity than the surrounding areas. The application area lacks extensive Gorge/Gully and Breakaway habitats, including deep/humid caves and permanent/semi-permanent water sources that are considered core habitat features for MNES species such as the Northern Quoll, Pilbara Olive Python, Ghost Bat and Pilbara Leaf-nosed Bat. Rio Tinto has committed to ensuring the protection of potentially significant habitats within the application area, being significant caves, adits and the semi-permanent pool, as detailed above.

Thirty-three pebble-mounds (26 active, seven inactive) of the Western Pebble-mound Mouse (P4) were recorded within the application area. Most records (27) were from Low Hills and Slopes habitat, four records were from Rocky Hill habitat, and two records were from Stony Plain habitat. This species may be locally impacted by the proposed clearing as they are less mobile and unable to move away from disturbance, however, the conservation status of this species is unlikely to be impacted given its wide distribution in the Pilbara region, its presumed large population, and its occurrence in a number of protected areas, such as Karijini National Park, Karlamilyi National Park, Millstream-Chichester National Park, and Collier Range National Park (Burbidge 2016). Mounds have been identified as restriction areas with a 25 m buffer in ARCS. As noted above, activities that may impact on these restriction areas would be identified and referred to a specialist zoologist for advice. Potential impacts to active mounds will be managed in accordance with Rio Tinto's EMP.

The application area is not within a conservation estate, is not part of a critical fauna habitat corridor and does not contain fauna habitat that is limited locally or within the Pilbara region. Rio Tinto has committed to ensure the protection of potentially significant habitats within the application area, being the known Category 3 and 4 caves, adits and the semi-permanent pool, as detailed above. Western Pebble-mound Mouse (P4) mounds will be avoided where practicable and, where avoidance is not practicable, fauna management advice is included on the internal approval by the specialist zoologist. As such, the proposed clearing is not likely to be at variance to this Principle.

3. Potential impact to any rare flora

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

No threatened flora listed under the EPBC Act or BC Act were recorded within the application area and, based on the results of the desktop assessment, none are considered likely to occur. Database search results did not return any threatened flora species within 50 km of the application area (Department of Biodiversity, Conservation and Attractions 2021g, 2021c, 2021e, Rio Tinto 2021b). One EPBC Act and BC Act listed threatened flora species *Pityrodia augustensis* (VU) was returned from the MNES database search results (Department of Agriculture, Water and the Environment 2021a). All collections of this species lodged at the WA Herbarium are from the Mount Augustus National Park in the Gascoyne bioregion over 200 km south-west of the application area. It is considered highly unlikely to occur.

Seringia exastia was recorded in 31 locations within the application area. In June 2020 a revision of *Seringia* taxa in north-west Australia was published and the commonly occurring species *S. elliptica* was subsumed into the older named, but rare and threatened species, *S. exastia* (Binks *et al.* 2020). While the taxon names have been updated in Florabase (Western Australian Herbarium 2021), the conservation listing of the species has not yet been revised. *S. exastia* is listed as Critically Endangered under the Western Australian Government's BC Act and Critically Endangered under the Australian Government's EPBC Act. An Authorisation under s40 of the BC Act authorises the taking of this species within Rio Tinto's Iron Ore tenements, live agreement areas and pastoral stations in the Pilbara Bioregion for the purposes of mining, exploration and maintenance of infrastructure in accordance with native vegetation clearing approvals or exemptions (Attachment 2 and 3).

Given the comprehensive level of survey within the application area and that no threatened flora has been previously recorded within or in close proximity to the application area, the proposed clearing is not likely to be at variance to this Principle.

4. Presence of any threatened ecological communities

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

No TECs listed under the EPBC Act or BC Act have been located within or adjacent to the application area. The vegetation units recorded during the survey are not considered analogous with the listed TECs of the Pilbara region. The closest TEC to the application area is the Ethel Gorge aquifer stygobiont community, the buffer of which is located approximately 32 km south-east of the application area (Department of Biodiversity, Conservation and Attractions 2021a).

Given that no TECs occur within or in close proximity to the application area, the proposed clearing is not likely to be at variance to this Principle.

5. Significance as a remnant of native vegetation in the area that has been extensively cleared

Native vegetation should not be cleared if it is significant as remnant vegetation in an area that has been extensively cleared.

The application area occurs within the Hamersley subregion of the Pilbara bioregion, the Shire of East Pilbara and within the pre-European vegetation associations 18, 29, 82 and 175 (Shepherd et al. 2002). Each of these vegetation associations has greater than 98% of their pre-European extent remaining at the bioregion, subregion and local government authority level (Table 2) (Government of Western Australia 2019).

Table 2 Extent of pre-European vegetation associations remaining within the Pilbara bioregion, Hamersley subregion and Shire of East Pilbara (Government of Western Australia 2019).

Vegetation association	Pre-European extent (ha)	Current extent (ha)	Percent remaining(%)	Proportion of current extent in DBCA managed land (%)
Pilbara bioregion				
18	676,557	671,843	99.302	25.35
29	1,133,220	1,131,712	99.87	9.39
82	2,563,583	2,550,888	99.50	11.58
175	507,860	507,467	99.92	7.94
Hamersley subregion				
18	581,246	576,542	99.19	29.54
29	172,083	170,748	99.22	12.98
82	2,177,574	2,165,224	99.43	13.57
175	93,040	92,751	99.69	7.77
Shire of East Pilbara				
18	359,372	355,446	98.91	1.49
29	906,243	905,848	99.96	7.74
82	927,710	919,072	99.07	0.50
175	127,486	127,461	99.98	0.00

Based on the pre-European vegetation associations, the vegetation described and mapped within the Rhodes Ridge application area is considered to be remnant and not within an extensively cleared landscape (Shepherd et al. 2002).

The application area is not within a highly cleared landscape and is not a critical corridor for fauna dispersal. Based on the above, the proposed clearing is not likely to be at variance to this Principle.

6. Impact on any watercourse and / or wetlands

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

There are no nationally significant wetlands within, or in close proximity, of the application area (Department of the Environment and Energy 2017a, 2017b). The nearest nationally important wetland is Fortescue Marshes, located approximately 40 km north of the survey area. No major watercourses intersect the application area, however, a number of minor ephemeral creeks and drainage lines are present, including tributaries of the Fortescue River.

One vegetation unit, D13, may represent a GDE as it is dominated by the facultative phreatophyte *Eucalyptus victrix* (Mensforth et al. 1994, Pfautsch et al. 2014) and occurs on a soak/ drainage depression habitat. No exploration or associated works will be conducted within the D13 vegetation unit, as identified in Astron (2022). An additional 50 m exclusion area will be applied to this vegetation unit in ARCS to further reduce the risk of potential indirect and inadvertent impacts.

No other habitats represent riparian habitat or have permanent water.

Commitment 7: No new exploration or associated works will be conducted within vegetation unit D13, as identified in Astron (2022). A 50 m exclusion area will be applied to this vegetation unit in ARCS to avoid potential indirect and inadvertent impacts.

Based on Rio Tinto's commitment to avoid the D13 vegetation unit, a potential GDE, the proposed clearing is unlikely to be at variance to this Principle.

7. Potential to cause appreciable land degradation

Native vegetation should not be cleared if the clearing of vegetation is likely to cause appreciable land degradation.

Nine weed species: **Bidens bipinnata* (bipinnate beggartick), **Cenchrus ciliaris* (buffel grass), **Cenchrus setiger* (birdwood grass), **Chloris virgata* (feathertop Rhodes grass), **Flaveria trinervia* (speedy weed), **Malvastrum americanum* (spiked malvastrum), **Setaria verticillata* (whorled pigeon grass), **Tribulus terrestris* (caltrop) and **Vachellia farnesiana* (mimosa bush) were identified within the application area. The application area is considered to have a relatively low weed diversity and distribution. However, weed distribution, abundance and diversity at the time of the survey was likely to be underrepresented due to two sub-optimal seasons of survey. With ongoing weed management practices, it is not likely that clearing would exacerbate the impact of weeds within the area.

The Newman land system, which accounts for 31% of the application area, comprises rugged jaspilite plateaux, ridges and mountains with hard spinifex and has low susceptibility to erosion (van Vreeswyk et al. 2004).

The Wannamunna land system, which accounts for a further 29% of the application area, has a low susceptibility to erosion, however, inappropriate positioning of infrastructure such as roads is known to disturb overland flow process in this land system which may have adverse effects on vegetation

(van Vreeswyk et al. 2004). Exploration tracks exist across the application area and in some areas of cracking clay soils there is some obvious rutting within the tracks caused by vehicles use. No obvious evidence of erosion or land degradation was noted beyond the existing tracks.

The remaining 40% of the application area occurs within five other land systems; Spearhole, Boolgeeda, Rocklea, Platform and Egerton, none of which have high susceptibility to degradation or erosion (van Vreeswyk et al. 2004).

Based on the above (and subject to appropriate planning, environmental controls, and progressive rehabilitation), the proposed clearing is not likely to be at variance to this Principle.

8. Potential to impact on the environmental values of adjacent or nearby conservation areas

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 application area is not located within or adjacent to any conservation reserves. The nearest conservation reserve is Karijini National Park which is located approximately 56 km to the west of the application area. Given this distance, it is unlikely that the proposed clearing will have an impact on the environmental values of this conservation reserve.

The proposed clearing is therefore not likely to be at variance to this Principle.

9. Potential deterioration in the quality of surface or underground water

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 application area is not located within a Public Drinking Water Source Area (PDWSA) (Department of Water 2008). The nearest PDWSA is the Newman Water Reserve, located approximately 7 km south-east of the application area. It is considered unlikely that the proposed clearing will impact the quality of this water reserve. The application area is considered low risk for erosion and is unlikely to be affected by salinisation.

Given that the proposed exploration and resource definition drilling and associated works may potentially impact approximately 3.5 per cent of the total application area, and that the application area is not within a PDWSA and is not significant for surface water, the proposed clearing is not likely to be at variance to this Principle.

10. Potential of clearing to cause, or exacerbate, the incidence or intensity of flooding

Native vegetation should not be cleared if the clearing of vegetation is likely to cause, or exacerbate, the incidence of flooding.

Following cyclonic activity, localised natural flooding events may occur in the Pilbara region. The application area is likely to naturally be affected by flood events during wet season rainfall events. The survey area has extensive areas of floodplains, clay plains, banded mulga plains and mulga hard pan plains (represented by vegetation units P1, P5, P8, P9, P8/P9 Mosaic, P15, P16 and P18) which account for 38.0% (16,261.5 ha) of the application area. These plains are subject to sheet flow during good

rainfall seasons, soaking up large amounts of rainfall before a slow sheet of water flowing in a downward gradient is formed. The Wannamma land system occurs over 29.3% of the survey area and has a moderate flooding risk rating (van Vreeswyk et al. 2004).

Excessive clearing of these vegetation types may change the hydrology of the landscape and may cause flooding. However, the proposed exploration and resource definition drilling and associated works may potentially impact only approximately 3.5 per cent of the total application area. In accordance with the EMP, tracks will be constructed and maintained to ensure minimal impact on natural surface drainage patterns and to ensure surface run-off does not impact surrounding lands. Areas cleared for exploration will be progressively rehabilitated.

Based on the low proportion of the application area to be cleared, the proposed management measures and commitment to progressive rehabilitation, the proposed works are unlikely to be at variance to this Principle.

Conclusion

Based on specialist assessment of the study area and discussion below, it is deemed that the Proposal is unlikely to be at variance with any of the 10 clearing principles under Schedule 5 of the *Environmental Protection Act 1986*.

Attachments

Attachment 1 Iron Ore - Mineral Evaluation and Drilling – EMP
Attachment 2 TFL 103-2021 Seringia exastia Coverl Letter and Authorisation
Attachment 3 2021 12 16 TFL 103B-2021 Seringia exstia Amendment

Figures

Figure 1 Overview of proposed clearing permit
Figure 2 (a-c) Conservation Significant Vegetation
Figure 3 (a-e) Priority Flora
Figure 4 (a-d) Fauna

Attachments

Iron Ore (WA)

Mineral Evaluation and Drilling Environmental Management Plan

*Evaluation, exploration and water drilling within all areas of operation,
including environmentally significant areas*

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All acronyms and definitions are located in Section 7.

1 Context

The Mineral Evaluation and Drilling Environmental Management Plan (EMP) has been prepared to manage environmental aspects associated with mineral or hydrogeological evaluation / exploration (Resource Development) related activities within all lands, including areas of conservation significance, managed by Rio Tinto Iron Ore (RTIO). This plan will be implemented by the Resource Development division of RTIO business (WA). This Management Plan will be reviewed and updated as required.

2 Objective

The EMP details the methods and procedures to be applied in order to achieve RTIO's environmental commitments and objectives for Resource Development works.

The specific aims of this EMP are to:

- Summarise plans, guidelines and procedures to manage potential impacts to environmental receptors;
- Detail the planning required to meet environmental requirements;
- Detail specifications and actions to meet environmental requirements;
- Summarise measurements and evaluation of environmental performance;
- Detail accountabilities and responsibilities; and
- Ensure that the relevant stakeholders are contacted at the appropriate stages of the projects when planning and working within areas of conservation significance.

3 Management Procedures

This EMP is aligned with RTIO systems, procedures and work practices which are developed in accordance with legislative requirements and Australian standards.

3.1 Rio Tinto Iron Ore Management Systems

This EMP is an integral part to the Rio Tinto Health, Safety, Environment and Quality Management System (HSEQ MS). All personnel supporting the activities undertaken for Resource Development related activities are to adhere to HSEQ MS, including this EMP, to ensure impacts to environmental receptors are managed in accordance with legal requirements and other commitments.

To demonstrate this commitment, RTIO has an endorsed Health, Safety, Environment, and Communities Policy for all Rio Tinto businesses. The policy is the guiding document for environmental management and provides context and direction for continuous improvement.

This approved EMP supersedes all previous versions of the Mineral Evaluation and Drilling Environmental Management Plan.

RTIO has developed and implemented management plans and work practices to manage environmental aspects relating to and Resource Development. A number of these work practices¹ govern land clearing activities, and include:

- Approvals Request Co-ordination Systems (ARCS);
- Approvals Permit Guidelines and Procedures;
- HSEQ Ground Disturbance, Re-entering a Rehabilitated Area and Track maintenance Standard Work Practice;
- HSEQ Iron Ore (WA) – Equipment Hygiene Inspection Work Practice; and
- HSEQ Closure, Rehabilitation and Monitoring Standard Work Practice.

3.2 RTIO Approval Request Co-ordination System (ARCS)

The RTIO ARCS ensures RTIO obtains the relevant regulatory approvals and facilitates the necessary biological and heritage surveys, prior to the commencement of ground disturbing activities or installation of infrastructure. The process assists RTIO in maintaining legislative compliance and managing environmental risk by minimises the potential to disturb any protected or sensitive areas (biological or otherwise). During the approvals process, signoff and advice is sought from Subject Matter Experts (SMEs) prior to an internal Approvals Request (AR) permit being issued authorising works to occur. The SMEs provide advice on Heritage, Biological, Environmental, Tenure, State, Mining Act, Drinking Water Source Protection, Water Licensing, Part IV Environmental Approvals, Part V Licensing, Clearing Permit and Local Government matters. After SME advice is received (including gaining external regulatory approvals), the RTIO permit requestor is issued an AR permit, typically requiring the permit owner to ensure compliance with a number of conditions prior to commencing, during, and / or at the conclusion of the work.

¹ Note – work practices are internal documents and are subject to review and update in line with continual improvement.

4 Management Plan Environment Aspects

The environmental aspects detailed in this EMP form the requirements for undertaking Resource Development related activities in the Pilbara region of Western Australia. This EMP will apply to all proposed activities including Low Impact Authorised Activities (as defined in the Mining Act Amendment Bill 2015) and those proposed partially or wholly within areas of elevated conservation significance as defined in

Table 1 below.

Table 1: Environmentally Sensitive Areas – Tiered Management Approach

Category	Name	Identifier	Status	Tier	Vested Authority
Declaration of Environmentally Sensitive Areas under section 51B of the Environmental Protection Act 1986, values specially protected by the state Biodiversity Conservation Act 2016 and commonwealth Environment Protection and Biodiversity Conservation Act 1999.	Millstream Chichester National Park	Crown Reserve 38333 and 30071 – Class A	Existing	1	DBCA
	Karijini National Park	Crown Reserve 30082 – Class A	Existing	1	DBCA
	Register of National Estate	-	-	1	-
	Themeda Grasslands on cracking clays Threatened Ecological Community (TEC)	46. Themeda Grasslands {VU A}	Existing	1	DBCA
	Ethel Gorge aquifer stygobiont community TEC	78. Ethel Gorge {EN B} ii}	Existing	1	DBCA
	Threatened Fauna and associated critical/core habitat	-	Existing	1	DBCA
	Areas within 50 m of Threatened Flora	-	Existing	1	DBCA
	Infrastructure Corridor	5(1)(g) Reserve 41696 (Class C – managed as part	Existing	1	DBCA

		of Karijini National Park)			
DBCA Land of Interest	Proposed Conservation Estate/ Ex-Pastoral Stations	(Ex-stations) Yarraloola, Yalleen, Hamersley, Juna Downs, Rocklea, Marillana and Karratha stations	Proposed	2	DBCA
Areas designated as Water Reserves or Public Drinking Water Supply Areas (PDWSA)	Millstream Water Reserve	Water Supply Reserve 38991	Existing	2	DWER/ Water Corporation
	Harding Dam Catchment Area	Water Supply Reserve 35798	Existing	2	DWER/ Water Corporation
	Bungaroo Creek Water Reserve	Bungaroo Creek Water Reserve	Existing	2	DWER/ Water Corporation
	Southern Fortescue and Marandoo Water Reserves	Southern Fortescue and Marandoo Water Reserves	Existing	2	DWER/ Water Corporation
	Newman Water Reserve	Newman Water Reserve	Existing	2	DWER/ Water Corporation
Species, communities and ecosystems recognised in the conservation framework	Priority flora and fauna, Priority ecological communities	-	Existing	2	DBCA

All proposed activities are assessed internally by SME's through the ARC System to determine the level of environmental risk relevant to the works. Where a proposal is located within a location listed above in

Table 1, additional external environmental approvals may be required. When operating in these areas of elevated conservation significance RTIO has adopted a tiered management approach to define the additional environmental controls required depending on the environmental risk posed by the activity. Controls in Tier 1 and Tier 2 areas are in addition to the general controls implemented for all Resource Development.

This EMP outlines the objectives, management actions, performance indicators and reporting requirements for each relevant environmental aspect associated with the operations undertaken in Resource Development areas.

When working within Water Reserves or Public Drinking Water Source Areas (PDWSA), staff and contractors will follow, where practicable, the recommendations within the published water quality protection notes (WQPN) relevant to Resource Development activities (available online at Department of Water and Environmental Regulation website). Relevant WQPNs include:

- WQPN 10: Contaminant spills – emergency response
- WQPN 65: Toxic and hazardous substances – storage and use
- WQPN 83: Infrastructure corridors near sensitive water resources
- WQPN 84: Rehabilitation of disturbed land in PDWSA's

The key aspects which will be managed in line with WQPNs include but are not limited to:

- Hydrocarbon management;
- Sewage management;
- Refuelling activities; and
- Vegetation clearing.

4.1 Ground Disturbance and Land Clearing	
Responsibilities	Owner GM Resource Development
	Task Holder Approval Permit Owner
<p>Objectives</p> <ul style="list-style-type: none"> • To comply with all issued approval conditions with AR Permits. • To avoid or minimise impacts to environmentally sensitive areas, where practicable. • To minimise disturbed areas, as far as practicable. • To prevent unauthorised clearing of land and minimise adverse impacts. • Ensure clearing and rehabilitation data is collected and reported in accordance with internal and external requirements. 	
<p>Management</p> <ul style="list-style-type: none"> • All proposed ground disturbance must undergo a planning phase and be approved through the AR process to ensure all internal and external legal requirements are met (includes, but not limited to: exclusion and restriction zones; for example heritage and priority flora). <ul style="list-style-type: none"> ○ Biological SME reviews AR and provides advice on potential features of environmental significance. ○ If review of aerial imagery identifies potential significant flora or fauna habitat, a field survey would be undertaken prior to any ground disturbance. ○ If any features of elevated conservation significance are identified they are avoided through the AR permit process (where practicable). ○ If activities are proposed in an area where no baseline flora and fauna information exists, a desktop assessment (including information from publically available data sets and any data available from nearby or adjacent areas) and / or a field survey is undertaken prior to any ground disturbance. ○ Existing tracks are used where possible to reduce the cumulative impact of activities within an area. • An approved AR permit is required prior to any ground disturbance occurring. Execution of ground disturbing activities to occur in accordance to AR permit. • AR boundary and exclusion and restriction areas are programmed into machinery guidance system that defines the approved work area. • All ground disturbance and rehabilitation activities are recorded in GIS spatial data files which inform annual reporting. • Soil resources and rehabilitation are to be managed as per approval requirements. • Vehicles and machinery are to use existing tracks where practicable. • All tracks will be constructed and maintained to ensure minimal impact on natural surface drainage patterns and to ensure surface run-off does not impact surrounding lands. 	

- Staged or progressive clearing of drill pads and tracks will occur where possible to minimise the potential for erosion.
- Ground disturbance will be planned to avoid surface drainages where practicable.
- Sumps of appropriate capacity will be constructed to contain drilling cuttings.
- Once disturbed areas are no longer required, they will be progressively rehabilitated.
- Potential impacts to priority flora will be identified and risk assessed through the RTIO ARCS process. Priority flora and ecological communities will be avoided in the first instance and impacts minimised.
- All light vehicles (including registered trucks) will carry an appropriate working fire extinguisher while drills rigs / booster units and earthmoving equipment will be fitted with both fire extinguishers and fire suppression.

Additional controls - Tier 1 areas

- RTIO will consult with the Department of Biodiversity Conservation and Attractions (DBCA) prior to accessing National Parks, or progressing any approvals associated with activities within National Parks.
- Prior to undertaking ground disturbing activities a biological survey will be undertaken in accordance with RTIO requirements to support a NVCP application.
- A NVCP will be obtained and the environmental management measures listed both within the issued clearing permit and outlined in this EMP will be implemented.
- For vegetation communities that are not part of a TEC but are directly adjacent to a TEC, additional environmental management measures may be implemented if deemed appropriate on the advice from the RTIO Environment Operations team.
- No clearing within 50m of national parks boundary.
- Final close out report (where required) to be completed when activities are complete.

Additional controls - Tier 2 areas

- RTIO will consult with the DWER (Water branch) and/or DBCA for works in PDWSA or DBCA Land of Interest/Proposed Conservation Estates.
- A Biological Assessment Summary (BAS) will be provided to DBCA/DMIRS for works in DBCA Land of Interest/Proposed Conservation Estate only. The purpose of a BAS is to:
 - Outline RTIO Operational Controls;
 - Review AR and available biological information;
 - Provide an assessment of biological risks; and
 - Summarise amendments and changes to AR that reduce biological risks.
- Works are to be carried out in line with 'Memorandum of Understanding' between Department of Mines, Industry Regulation and Safety and the Department of Water and Environmental Regulation – Environmental Protection Authority Services where applicable (Section 8).
- No clearing within 50m of national parks boundary.
- Final close out report (where required) to be completed when activities are complete.

Performance Indicators

- Compliance with external approvals including but not limited to clearing limits, topsoil storage/handling and rehabilitation.

Monitoring

- Cleared areas are to be assessed for compliance to the AR permit requirements following ground disturbance works.
- Reconciliation of clearing area.

Reporting

- Breaches of the RTIO business AR process (including external approval conditions) shall be reported as an incident as per Iron Ore (WA) Non-Conformance, Incident and Action Management Procedure.
- Out of control bushfires, as a result of the company's activities will be reported to the relevant authority under the *Bush Fires Act 1954*, and if in or adjacent to a conservation area, to the Parks and Wildlife Service's Pilbara Regional Officer (emergency only) and Pilbara Regional Manager (see Section 6).

4.2 Hydrocarbon and Chemical Management	
Responsibilities	Owner GM Resource Development
	Task Holder Approval Permit Owner
Objective	
<ul style="list-style-type: none"> • To collect, treat, transport and dispose of wastes in an environmentally acceptable manner in accordance with relevant legislation. • To manage hydrocarbons and chemicals in accordance with relevant legislation. 	
Management	
<ul style="list-style-type: none"> • All hazardous materials storage facilities will be designed in accordance with the appropriate Australian design standards and legislation (i.e. containment bunds and chemical cabinets). • Spill control equipment shall be stored in high risk or sensitive locations to allow for a quick response to spills. • Any spills/ leaks shall be contained and managed in accordance with the internal spill management processes and procedures which follow the control, contain, clean-up and report methodology and reported in accordance with the relevant tenement conditions. • Biodegradable drilling fluids will be utilised where possible. • A licensed controlled waste carrier shall transport controlled waste in accordance with <i>Environmental Protection (Controlled Waste Regulations) 2004</i> and internal procedures for the management of controlled wastes. 	
Additional controls - Tier 1 and 2 areas	
<ul style="list-style-type: none"> • Where practicable, all refuelling of vehicles and machinery will occur outside of Tier 1 and 2 areas. No refuelling will occur within drainage lines or within the high water mark of PDWSA. If refuelling is required within these areas, fuel will be distributed from a service vehicle with a fuel tank on the back (10,000L maximum). Mobile equipment will be re-fuelled at the drill pad wherever possible and an operator will be present for the duration of the refuelling so as to prevent overfilling. Drip trays will also be used. • All planned servicing of vehicles will be conducted outside proposed and existing nature conservation reserves / areas and PDWSA's at a designated facility. Unplanned servicing (such as breakdowns and maintenance) within these areas will utilise drip trays and / or absorbent matting. • Where practicable, fuel will be sourced from existing facilities (e.g. mine sites) in preference to establishing temporary fuel storage facilities, in line with Water Quality Protection Note 56. <ul style="list-style-type: none"> ○ If required, temporary fuel or chemical storage will not exceed 250 litres within a Priority 1 (P1) PDWSA unless prior written approval has been received from the Department of Water and Environmental Regulation – Regulatory Services (Water). ○ If required, temporary fuel storage would not exceed 5000L in Priority 2 (P2) areas and would be outside of wellhead protection and reservoir protection zones. 	

- No underground hydrocarbon or chemical storage tanks are permitted within PDWSAs or Tier 1 / 2 areas.
- Above ground storage will not be located within well head protection zones (500 m in P1 areas, 300 m in P2 or P3 areas), or within reservoir protection zones (i.e. within 2 km of the top water level of a public water supply reservoir).
- Security locks will be fitted to unattended hydrocarbon dispensing hoses.
- Stormwater accumulated within fuel storage areas will be removed. Contaminated stormwater collected will be disposed of appropriately (e.g. utilise licensed disposal / treatment facility).
- Activities undertaken in accordance with WQPN 10: *Contaminant spills – emergency response* and WQPN 65: *Toxic and hazardous substances – storage and use*.

Performance Indicators

- No chemical or hazardous waste materials spilled which result in material environmental harm and cannot be recovered, including impact to groundwater, surface water or vegetation and which requires external notification to regulatory authorities.
- All environmentally hazardous chemicals stored within appropriately bunded facilities.

Monitoring

- Premise inspections and desktop audits will be completed based on the risk and sensitivity of the area and will determine:
 - Appropriate storage and handling of controlled wastes and neat hydrocarbon/chemical products.
 - Spill kits availability in areas of risk or sensitivity. Hydrocarbon or chemical specific kits are to be available based on the material stored.
 - Evidence of spills or leaks as a result of equipment failure.
 - Internal incident reporting for all spills and external reporting where required.
- Collection of controlled waste data and maintenance of controlled waste receipts in line with the *Environmental Protection (Controlled Waste Regulations) 2004*.

Reporting

- Any incidents, near misses and non-compliances shall be dealt with as per Iron Ore Non Conformance, Incident and Action Management Procedures.
- Spills within existing and proposed conservation areas, where potential environmental harm has occurred, will be reported to the DBCA – Parks and Wildlife Service's Pilbara Environmental Officer by email as soon as practicable (see Section 6 Project Notification for contact details).
- Spills which are unrecoverable or have the potential to cause material environmental harm within a PDWSA will be reported to the Water Corporation and DWER as soon as practicable (see Section 6 Project Notification for contact details) and in accordance with the tenement conditions or legislative requirements.

4.3 Non-Mineral Waste Management	
Responsibilities	Owner GM Resource Development
	Task Holder Approval Permit Owner
Objectives	
<ul style="list-style-type: none"> • To minimise the generation of waste by Resource Development works. • To dispose and manage waste in a manner compliant with legislative requirements. 	
Management	
<ul style="list-style-type: none"> • The Proponent will implement the appropriate internal Non-Mineral Waste Management Procedures and Management Plans for all Resource Development works. • All waste storage facilities will be designed in accordance with the appropriate Australian design standards and legislation (i.e. containment bunds). • All waste (including hydrocarbon, chemical and other controlled waste) generated is to be removed immediately for disposal at appropriately licensed or approved facilities. • A licensed controlled waste carrier shall transport controlled waste in accordance with <i>Environmental Protection (Controlled Waste Regulations) 2004</i> and Iron Ore Controlled Waste Guidelines and Work Practices. 	
Additional controls - Tier 2 areas	
<ul style="list-style-type: none"> • Drilling programmes within PDWSAs will utilise a 'mobile amenity caravan' with built in black water storage capacity and / or self-contained combusting toilets. 	
Performance Indicators	
<ul style="list-style-type: none"> • Compliance with the requirements of the licensed disposal facilities utilised. • Compliance with <i>Environmental Protection (Controlled Waste Regulations) 2004</i>. 	
Monitoring	
<ul style="list-style-type: none"> • Premise inspections and desktop audits will be completed based on the risk and sensitivity of the area and will determine: <ul style="list-style-type: none"> ○ Segregation of waste is appropriate for the area and type of work being conducted. ○ Disposal facilities are demarcated and placed in locations to maximise use. ○ If wind-blown rubbish is present. • Collection of controlled waste data and maintenance of controlled waste receipts in line with the <i>Environmental Protection (Controlled Waste Regulations) 2004</i>. • Collection of waste data. 	
Reporting	
<ul style="list-style-type: none"> • Non-compliances shall be reported as an incident within the Proponents Non Conformance, Incident and Action Management Procedures and in accordance with legislative requirements. 	

4.4 Weed Management					
Responsibilities	<table border="1"> <tr> <td>Owner</td> <td>GM Resource Development</td> </tr> <tr> <td>Task Holder</td> <td>Approval Permit Owner</td> </tr> </table>	Owner	GM Resource Development	Task Holder	Approval Permit Owner
Owner	GM Resource Development				
Task Holder	Approval Permit Owner				
<p>Objectives</p> <ul style="list-style-type: none"> To prevent the introduction and spread of weeds within disturbance footprints, directly attributable to Resource Development works. <p>Note: RTIO define weed attribution as new weed specimens or populations of existing species that are established within approved footprints that can be directly linked to Resource Development vehicle movement and drilling activities. Factors which may not be attributable to Resource Development include but are not limited to weed movement by wind, cattle or natural surface water flow processes.</p>					
<p>Management</p> <ul style="list-style-type: none"> Prior to works commencing a desktop review of weed occurrence within the proposal area will be undertaken as part of the AR process. Known populations of weeds within project areas will be identified on site plans, with 'weed data' updated in the RTIO business' Geographic Information System (GIS) post vegetation survey work. All earthmoving and ground engaging equipment will be inspected and cleaned of vegetation, mud and soil prior to entry and exit from site. The Proponent will implement equipment hygiene inspection procedure for the cleaning of ground engaging equipment prior to transportation to and between RTIO sites. As outlined in the procedure, all mobile equipment shall be free of all vegetative and soil matter prior to the arrival to an area and also at the departure from a site. Where weeds are identified by field team within the defined approval boundary, additional inspections will be completed. RTIO utilises the methods of dry brushing and/ or air blowing to remove the build-up of rock, mud and vegetation. Once assessed and equipment is clean an equipment hygiene inspection certificate is completed and a copy is saved. Resource Development will implement weed management procedures and management plans, both specific for Resource Development works and in line with RTIO business strategies. The plans/procedures will include provision for weed management activities as required. If a new weed species, which is defined as rapidly invasive and of high ecological impact (as per DBCA Pilbara Impact and Invasiveness ratings), is identified and is found to be directly attributable to Resource Development activities, then weed treatment will be undertaken to a level commensurate with the immediate surrounding land use quality. Only contractors who hold a current pest management technician license are to be used or direct employees of RTIO. <p>Additional Controls – Tier 2 Areas</p> <ul style="list-style-type: none"> Weed Management within PDWSAs will be conducted in accordance with Country Areas Water Supply Bylaws (1957) and Public Sector Circular 88 Use of Herbicides in Water Catchment Areas (PSC88) (Department of Health, 2006). Records of the herbicide and dates of use in PDWSAs will be retained. 					

Performance Indicators

- Weed identification guides maintained on-site (verified during risk based premise inspections).
- Verification of equipment hygiene inspection certificate completion during risk based desktop audits.
- No new weeds which are rapidly invasive and of high ecological impact found at established rehabilitation monitoring locations, which are directly attributable to Resource Development activities.
- No increase in spread of the known populations of weeds within disturbance footprints, directly attributable to implementation of Resource Development activities.

Monitoring

- Annual desktop assessment of priority weed management areas for planned Resource Development works. Information from RTIO's GIS database will be used to inform annual planning for weed management activities.
- Rehabilitation photo monitoring will be completed within 4 years of rehabilitation being completed and is used to make an assessment of weed identification and presence.
- Site inspections for weed presence will be opportunistic and aligned with rehabilitation monitoring activities required by the respective approval.

Reporting – Tier 2

- Weed survey and management information within DBCA Lands of interest and species, communities and ecosystems recognised in the conservation framework will be provided to DBCA as requested.

4.5 Discharge Management	
Responsibilities	Owner GM Resource Development
	Task Holder Approval Permit Owner
Objectives	
<ul style="list-style-type: none"> • To minimise the impacts on the quality and quantity of surface waters. • To contain any contaminated water within appropriately bunded areas. • To minimise unnecessary disturbance to natural surface drainages. 	
Management	
<ul style="list-style-type: none"> • A 26D and / or 5C water licence from the DWER authorising bore construction and discharge during test pumping will be managed through the AR process to ensure all internal and external legal requirements are met. • Design and construct drill pad and sumps to maximise settling period for the collected discharge. • A licensed water bore driller, utilising appropriate drilling equipment and techniques will be utilised to construct bores. • Approved biodegradable drilling fluids will be utilised. • All discharge, including cuttings, to be contained within sumps (where practicable) during bore construction. • In the absence of any regulatory / licensed discharge limits all discharge is to comply with section 4.3 ('Livestock drinking water quality') of the Australian and New Zealand guidelines for fresh and marine water quality: Volume 1, for pH (6.0 - 9.0 pH units), EC (3,730 µS/cm) and TDS (2,500 mg/L) and carry minimal sediment load. Water released to the environment during test pumping is sourced directly from the aquifer below and in un-modified prior to discharge. The immediate receptor, prior to the water soaking into the ground or evaporating, is livestock (or native fauna); thus livestock drinking water quality guidelines for EC, pH and TDS are applicable. The risk of test pumping discharge negatively impacting a PDWSA is low. • Test pumping will be conducted as per program specific Discharge Management Plans, which include: <ul style="list-style-type: none"> ○ A summary of the test pumping program (including predicted discharge volumes and water quality) and the proposed outcomes; ○ A map of the proposed controlled path of discharge; ○ A project / program specific environmental risk register; including a summary of controls for identified environmental risks; and ○ Identification of key operational stakeholders. • Prior to test pumping, groundwater will be analysed in the field (pH, EC or TDS only) to ensure compliance with external licencing requirements and / or section 4.3 ('Livestock drinking water quality') of the Australian and New Zealand guidelines for fresh and marine water quality: Volume 1. 	

- When discharging into a flowing creek, the background water chemistry of the creek and the discharge water (pH, EC or TDS only) will be determined in the field prior to mixing.
- Discharge waters will be monitored during discharge, via in-situ sampling.
- A site specific assessment will be made to determine if water diversion banks / bunds are required to prevent erosion due to surface water flow.
- Erosion control measures will be implemented at the discharge point.
- If discharge has the potential to adversely impact on the surrounding environment, and in particular any sensitive environmental receptors, then preventative measures will be implemented to mitigate any impacts including but not limited to:
 - Ceasing test pumping until the wetting footprint recedes prior to continuing.
 - Designing sumps to capture the anticipated volume of water during test pumping.
 - Instating a flow path which avoids sensitive receptors.
- Water bores that require disinfection will be disinfected in line with Section 14 of 'Minimum Construction Requirements for Water Bores in Australia'.

Performance Indicators

- Compliance with conditions of the 26D and / or 5C water licence.
- Development / implementation of a project / program specific Discharge Management Plan.
- Compliance with discharge water quality limitations, volumes and annual reporting requirements.

Monitoring

- Field analysis of pH, EC and TDS prior to test pumping and comparison to the limits set out in the 'Livestock drinking water quality' section of the Australian and New Zealand guidelines for fresh and marine water quality: Volume 1.
- Post works field inspection of hydro drilling works by the earthworks supervisor or delegate.

Reporting

- All breaches to water licences and water quality limits shall be reported as per the approval requirement.
- Unauthorised discharge will be reported (where required) with any areas impacted by discharge remediated as soon as practicable.

4.6 Rehabilitation	
Responsibilities	Owner GM Resource Development
	Task Holder Approval Permit Owner
Objectives	
<ul style="list-style-type: none"> To ensure landforms and other disturbed areas, at the completion of activities are safe, stable and capable of supporting native vegetation, to allow integration into the surrounding environment. To ensure good environmental outcomes and strategic rehabilitation practices across Pilbara wide operations. 	
Management	
<ul style="list-style-type: none"> Progressive rehabilitation shall occur as soon as practicable at the end of drilling activities with consideration given to timing of rehabilitation due to seasonality changes. Rehabilitation material (including topsoil) removed by clearing is collected and stored. Where tracks remain open for access, it is anticipated that all remaining rehabilitation of these areas to occur no later than 6 months of PoW expiry. Water bore drill holes that are no longer required will be decommissioned, backfilled and capped according to the techniques described in the National Minimum Bore Specifications Committee Minimum Construction Requirements for Water Bores in Australia (National Minimum Bore Specifications Committee 2012) Rehabilitation of abstraction bores or bores that intersect more than one aquifer will be backfilled using packers and cement grout or bentonite seal to prevent contamination or mixing of water between aquifers. Drill holes within confined aquifers will be sealed to prevent uncontrolled discharge to the surface. Remedial earthworks will be undertaken if monitoring determines that regeneration of disturbed areas is unlikely to achieve the species composition, structure and density comparable to adjacent undisturbed reference areas. Rehabilitation of tracks and other disturbance shall be conducted in accordance with this EMP which will consist of: 	
Timeframe	Task
Immediate	<p>Temporary capping of drill holes post drilling.</p> <hr/> <p>All sample bags will be removed post drilling and disposed of appropriately.</p> <hr/> <p>Any sump liners, which may have been installed, are to be removed and disposed of.</p>
Within 6 months of holes being drilled	<p>Cutting and plugging of all drill collars at least 400mm below ground level (unless required for subterranean fauna/ groundwater investigations).</p> <hr/> <p>Sumps and excavation infill.</p>

<p>Within 6² months of cessation of drilling program</p>	<p>Re-establishment of natural landform and drainage patterns.</p> <hr/> <p>Re-spreading of stockpiled topsoil and vegetation.</p> <hr/> <p>Shallow ripping / scarifying along the contour.</p>
<p>Within 6² months of the PoW expiring</p>	<p>All disturbances conducted under a PoW are to be rehabilitated within 6 months of the PoW expiring, unless endorsed (DMIRS) to remain open to facilitate ongoing access to other areas.</p>
<p>Note: A 6 month timeframe for rehabilitation limits RTIO in efficiently executing large scale rehabilitation programs commensurate with the scale of works within the Pilbara.</p>	
<p>Additional controls – Tier 1 areas</p> <ul style="list-style-type: none"> • Representative rehabilitation monitoring of pads and tracks within Resource Development areas and in accordance with the requirements of the relevant PoW and NVCP. • Rehabilitation summaries will be provided to the DBCA – Parks and Wildlife Pilbara Environment officer. 	
<p>Additional Controls – Tier 2 areas</p> <ul style="list-style-type: none"> • Rehabilitation within PDWSAs to be in accordance with WQPN 84: Rehabilitation of disturbed land in PDWSAs. 	
<p>Performance Indicators</p> <ul style="list-style-type: none"> • Rehabilitation is stable, supportive of native vegetation and compatible with surrounding land uses. • Compliance with PoW and NVCP rehabilitation timeframes for pads and tracks. <p>Performance indicators – Tier 1 areas</p> <ul style="list-style-type: none"> • The species composition, density and distribution of plants, within rehabilitated areas, shall be comparable with that of the surrounding environment. • Rehabilitated areas are to be assessed by a suitably qualified specialist as per the requirements of the NVCP. 	
<p>Monitoring</p> <ul style="list-style-type: none"> • Rehabilitation photo monitoring shall be conducted to monitor for rehabilitation success as per the requirements of the approval which the work was completed under (includes erosion risk). • Monitoring will be completed within four years of rehabilitation, or as per the conditions in the PoW or NVCP applicable to the program. 	
<p>Rehabilitation Deferral</p> <ul style="list-style-type: none"> • Where pad and track rehabilitation is proposed to be undertaken, post the approved timeframe for rehabilitation, a formal request to defer rehabilitation will be outlined in the Request for Deferral of the Annual Rehabilitation Report. 	

² All rehabilitation will be undertaken within 6 months of disturbance occurring (a requirement of tenement conditions) unless written approval has been obtained from the DMIRS Environmental Compliance Branch to complete rehabilitation within 12 months of cessation of the drilling program.

- Where areas are proposed to be left open for ongoing access, rehabilitation will be undertaken in all immediately adjacent areas no longer required for the purpose of which they were cleared.
- Deferral of rehabilitation may be required for the following reasons:
 - Tracks and pads required for subterranean monitoring (details of areas to remain open and the timeframes required to be outlined in annual report);
 - Tracks to remain open for on-going access to monitoring bores;
 - Arterial tracks to remain open for future exploration drilling program access (subject to approval) and;
 - Tracks to remain open for ongoing access to infrastructure.

4.7 Reporting					
Responsibilities	<table border="1" style="width: 100%;"> <tr> <td style="width: 30%;">Owner</td> <td>GM Resource Development</td> </tr> <tr> <td>Task Holder</td> <td>Environment Team</td> </tr> </table>	Owner	GM Resource Development	Task Holder	Environment Team
Owner	GM Resource Development				
Task Holder	Environment Team				
Objectives					
<ul style="list-style-type: none"> • To comply with PoW permit requirement to complete a report for all rehabilitation work that has been completed (includes photo monitoring of rehabilitation) during calendar year reporting period. • To provide a process to notify DMIRS of deferral of rehabilitation requests extending beyond 6 months since cessation of the drilling program. • To comply with reporting requirements defined <i>Environmental Protection Act 1986</i> Native Vegetation Clearing Permits annual reports submitted to DMIRS and DWER. 					
Reporting					
<ul style="list-style-type: none"> • Out of control bushfires directly resulting from the company's activities will be reported to the relevant authority under the <i>Bush Fires Act 1954</i>, and if in or adjacent to a conservation area, to the Parks and Wildlife Service's Pilbara Regional Officer (emergency only) and Pilbara Regional Manager (see section 6: Project Notification). • Accurate records of disturbance and rehabilitation activities of pads and tracks will be kept (GIS spatial files/ metadata and tracking registers). • DMIRS will be notified of any breach of this EMP or approval conditions that has the potential to result in environmental harm. • A summary of completed rehabilitation assessment (includes photo monitoring) and deferral of rehabilitation within legally required areas provided to DMIRS in the form of the following reports: <p>Annual Exploration Rehabilitation Report</p> <p>This report details PoWs completed within the reporting period and demonstrates all disturbance and rehabilitation (including supporting photos of revegetation establishment). A summary and map of each Reg ID will be populated as per DMIRS guidance document http://www.dmp.wa.gov.au/Documents/Environment/ENV-MEB-033.pdf. A report will be prepared for all PoWs following completion and assessment of rehabilitation.</p> <p>Request for Deferral of Rehabilitation Report</p> <p>This endorsed EMP entails an ongoing agreement between DMIRS and RTIO for the rehabilitation timeframes referenced in Section 4.6 - Rehabilitation. Deferral requests outside of these timeframes will be presented for endorsement within the deferral section of the Annual Exploration Rehabilitation Report.</p>					

Reporting – Tier 1 areas

When activities within National Parks / Proposed Conservation Estates are complete, the DBCA Environmental Officer will be provided with the final close out report that provides evidence that the appropriate environmental management measures were adhered to as well as the ability to undertake joint site inspections.

5 Environmental Risk Assessment

Rio Tinto uses a consistent HSEC qualitative risk analysis methodology for risk assessments, which is based on the following risk matrix.

Table 2: Risk matrix

Likelihood	Consequence				
	1 – Minor	2 – Medium	3 – Serious	4 – Major	5 - Catastrophic
A – Almost Certain	Moderate	High	Critical	Critical	Critical
B – Likely	Moderate	High	High	Critical	Critical
C - Possible	Low	Moderate	High	Critical	Critical
D - Unlikely	Low	Moderate	Moderate	High*	Critical
E - Rare	Low	Low	Moderate	High*	High*

Notes – All risks that have a critical risk classification from a qualitative analysis (using the risk determination matrix) must be re-evaluated using a level 3 quantitative analysis. *Consideration must be given to escalate all risks with a consequence of Major or Catastrophic and a classification of High to a Level 3 quantitative analysis.

Risk = consequence x likelihood

The following criteria are used to determine the consequence and likelihood of a risk event occurring (Table 3 and Table 4). The fundamental rule is to define the consequence first, as different consequences have different likelihoods.

Table 3: Consequence description

Consequence		Consequence description
Minor	On-site ³ Environment	Near-source confined and reversible impact able to be promptly rectified (typically a shift)
	Off-site Environment	Not applicable
Medium	On-site Environment	Near-source confined and short-term impact able to be promptly rectified (typically a week)
	Off-site Environment	Near-source confined and reversible impact, able to be promptly rectified (typically a shift)
Serious	On-site Environment	Near-source confined and medium-term recovery impact (typically a month)
	Off-site Environment	Near-source confined and short-term impact able to be promptly rectified (typically a week)

³ On- site is defined as the PoW/ NVCP boundary

Major	On-site Environment	Impact that is unconfined and requiring long-term recovery, leaving residual damage (typically years)
	Off-site Environment	Near-source confined and medium-term recovery impact (typically a month)
Catastrophic	On-site Environment	Impact that is widespread unconfined and requiring long-term recovery, leaving major residual damage (typically years)
	Off-site Environment	Impact that is unconfined and requiring long-term recovery, leaving residual damage (typically years)

Table 4: Likelihood descriptions

Likelihood	Likelihood description	Frequency
Almost certain	Recurring event during the life of an operation.	Occurs more than twice a year.
Likely	Event that may occur frequently during the life of an operation.	Typically occurs once or twice a year.
Possible	Event that may occur during the life of an operation.	Typically occurs in 1-10 years.
Unlikely	Event that is unlikely to occur during the life of an operation.	Typically occurs in 10-100 years.
Rare	Event that is very unlikely to occur during the life of an operation.	Greater than 100 year event.

To support the environment aspects defined in Section 4 a risk register has been populated of the key environment and compliance risk scenarios (Table 5) for mineral evaluation activities undertaken in the field and suitable management controls.

Table 5: Mineral evaluation and drilling risk register

ID	Tiered level	Environmental Factor	Project Phase	Risk Scenario	Consequence	Likelihood	Inherent Risk Rating	Controls	Consequence	Likelihood	Current Risk Rating
1a	All	Biodiversity / Flora / Fauna / Ecosystem	AR Review	Inadequate biological information resulting in impact to Tier 1 (Threatened flora/fauna/ecological community) or Tier 2 (Priority flora/fauna/ecological community) values	Serious	Possible	High	<ul style="list-style-type: none"> - Clearing is managed in accordance with RTIO operating procedures including: <ul style="list-style-type: none"> • AR permits progressed and issued via the ARC System; • Environmental restriction and exclusion areas maintained on RTIO's GIS database; • Areas of significance (Tier 1 to 3) are identified via the AR process and through GIS database. - Desktop review of RTIO GIS database conducted by Biological SME to ensure previous survey coverage, methodology and age provides an adequate context for assessment of risks to Tier 1 and Tier 2 values. <ul style="list-style-type: none"> • Tier 1 and 2 values within the AR will be excluded and avoided where practical. • If SME deems survey coverage is inadequate, a field survey will be conducted to ensure adequate context for assessment of impacts; and • If desktop review or field survey identifies Tier 1 values are present in application, and these values cannot be excluded from the AR boundary, the relevant external approvals will be sought and managed via specific Conservation Management Plan if required. - AR boundary and exclusion and restriction areas are programmed into machinery guidance system that defines the approved work area. 	Serious	Unlikely	Moderate
1b	Tier 2 – DECA Land of Interest only	Biodiversity / Flora / Fauna / Ecosystem	AR Review	Inadequate biological information resulting in impact to Tier 1 (Threatened flora/fauna/ecological community) or Tier 2 (Priority flora/fauna/ecological community) values	Serious	Possible	High	<ul style="list-style-type: none"> - As above for 1a, plus; - SME to prepare Biological Assessment Summary for proposed works (including information from desktop assessment and any field surveys), to be submitted to DMIRS & DBCA, identifying biological context, risk assessment and mitigation measures. 	Serious	Unlikely	Moderate

ID	Tiered level	Environmental Factor	Project Phase	Risk Scenario	Consequence	Likelihood	Inherent Risk Rating	Controls	Consequence	Likelihood	Current Risk Rating
2a	All	Biodiversity / Flora / Fauna / Ecosystem	Mineral/hydrogeological exploration	Unauthorised ground disturbance resulting in over clearing of vegetation	Serious	Possible	High	<ul style="list-style-type: none"> - Clearing is managed in accordance with RTIO operating procedures including: <ul style="list-style-type: none"> • AR permits issued via the ARC System; • Area is reviewed by Biological SME; and • Environmental restriction and exclusion areas are maintained on RTIO's GIS database. - AR boundary and exclusion and restriction areas are programmed into machinery guidance system that defines the approved work area; - All ground disturbance and rehabilitation activities are recorded in GIS spatial data files which inform annual reporting; - Project notification for access to and works within DBCA managed areas; - An approved AR permit is required prior to any ground disturbance occurring; - Execution of ground disturbing activities to occur in accordance to AR permit; - Soil resources and rehabilitation are to be managed as per approval requirements; - Vehicles and machinery are to use existing tracks where practicable. - All tracks will be constructed and maintained to ensure minimal impact on natural surface drainage patterns and to ensure surface run-off does not impact surrounding lands; - Ground disturbance will be planned to avoid surface drainages where practicable; - Sumps of appropriate capacity will be constructed to contain drilling cuttings; - Once disturbed areas are no longer required, they will be progressively rehabilitated; - Priority flora and ecological communities will be avoided as far as practicable; - All light vehicles (including registered trucks) will carry an appropriate working fire extinguisher while drills rigs / booster units and earthmoving equipment will be fitted with both fire extinguishers and fire suppression and - Ad-hoc premise inspections. 	Serious	Unlikely	Moderate
2b	Tier 1 and Tier 2 DBCA Land of Interest only	Biodiversity / Flora / Fauna / Ecosystem	Mineral/hydrogeological exploration	Unauthorised ground disturbance resulting in over clearing of vegetation	Serious	Possible	High	<ul style="list-style-type: none"> - As above for 2a, plus: <ul style="list-style-type: none"> - No clearing within 50m of national parks boundary; - Early engagement with DBCA to provide business context and overview of activities and if required separate supporting information and documents prepared (i.e. project proposals to be considered pursuant to Section 24 of the Mining Act 1978); and - Final close out report (where required) to be completed when activities are complete. - All hazardous material stored facilities to comply RTIO standards and procedures; - Spill control equipment (spill kits) shall be stored with all mobile equipment to allow for the prompt response to spills; - Internal incident reporting for all spills and external reporting where required; - Adherence to Public Drinking Water Source Areas and areas of significance where refuelling of vehicles and machinery is not permitted; Premise inspections and desktop audits will be completed based on the risk and sensitivity of the area; and - Collection of controlled waste data and maintenance of controlled waste receipts in line with the Environmental Protection (Controlled Waste Regulations) 2004. 	Serious	Unlikely	Moderate
3	All	Hydrocarbon management	Mineral/hydrogeological exploration	The use, transport and storage of hazardous materials results in groundwater contamination	Medium	Possible	Moderate	<ul style="list-style-type: none"> - All hazardous material stored facilities to comply RTIO standards and procedures; - Spill control equipment (spill kits) shall be stored with all mobile equipment to allow for the prompt response to spills; - Internal incident reporting for all spills and external reporting where required; - Adherence to Public Drinking Water Source Areas and areas of significance where refuelling of vehicles and machinery is not permitted; Premise inspections and desktop audits will be completed based on the risk and sensitivity of the area; and - Collection of controlled waste data and maintenance of controlled waste receipts in line with the Environmental Protection (Controlled Waste Regulations) 2004. 	Medium	Unlikely	Low

ID	Tiered level	Environmental Factor	Project Phase	Risk Scenario	Consequence	Likelihood	Inherent Risk Rating	Controls	Consequence	Likelihood	Current Risk Rating
4	All	Biodiversity / Flora / Fauna / Ecosystem	Mineral/ hydrogeological exploration	Inappropriate management of wastes resulting in windblown litter, local increase in feral fauna	Minor	Possible	Low	<ul style="list-style-type: none"> - Resource Development to adhere to RTIO non-mineral waste procedures and guidance; - All disposal facilities are demarcated and waste segregated; - A licenced controlled waste carrier shall transport waste in accordance with Environmental Protection (Controlled Waste Regulations) 2004; and - Premise inspections and desktop audits will be completed based on the risk and sensitivity of the area. 	Minor	Unlikely	Low
5a	All	Biodiversity / Flora / Fauna / Ecosystem	Mineral/ hydrogeological exploration	Spread of weeds outside of impact areas as a result of ineffective weed management	Medium	Possible	Moderate	<ul style="list-style-type: none"> - All earth moving and ground disturbance equipment to be inspected and cleaned prior to entering a site and also on departure. A completed Rio Tinto Equipment Hygiene Inspection Certificate must be completed and retained by Resource Development field teams; - Annual desktop assessment of priority weed management areas for planned Resource Development works. Information from RTIO's GIS database will be used to inform annual planning for weed management activities; - Assessment to be completed during rehabilitation photo monitoring (within four years of rehabilitation completed) to verify no rapid invasive weed or high ecological impact is present that can be attributed to Resource Development activities; - Weed control if weeds are determined to be attributed to Resource Development activities; and - Site inspections for weed presence. 	Medium	Unlikely	Low
5b	Tier 1 and Tier 2 DBCA Land of Interest only	Biodiversity / Flora / Fauna / Ecosystem	Mineral/ hydrogeological exploration	Spread of weeds outside of impact areas as a result of ineffective weed management	Medium	Possible	Moderate	<ul style="list-style-type: none"> - As above for 3a, plus; - New infestations or increased spread of weeds resulting from clearing activities that occur in conservation areas to be reported to DBCA; - Where weed specimens or populations of existing species are established and directly attributable to Resource Development activities, weed spraying and/or physical removal will be undertaken to a level commensurate with the surrounding land-use quality. Only contractors who hold a current pest management technician license are to be used or direct employees of RTIO. Assessment to be completed during rehabilitation photo monitoring (within four years of rehabilitation completed) to verify 	Medium	Unlikely	Low
6	All	Biodiversity / Flora / Fauna / Ecosystem	Mineral/ hydrogeological exploration	Unintended impact to significant fauna habitat (e.g. caves, rocky outcrops, riparian vegetation, BIF etc.)	Serious	Possible	High	<ul style="list-style-type: none"> - Clearing is managed in accordance with RTIO operating procedures including: <ul style="list-style-type: none"> • AR permits issued via the ARC System; • Area is reviewed by Biological SME; and • Environmental restriction and exclusion areas are maintained on RTIO's GIS database. - Areas identified (via a desktop assessment or field survey) with potential to have caves, rocky outcrops etc., are excluded from the AR permit. Exclusion buffers required by individual approval conditions will be instated within the GIS database to mitigate impacts to sensitive receptors. - AR boundary and exclusion and restriction areas are programmed into machinery guidance system that defines the approved work area; - All ground disturbance and rehabilitation activities are recorded in GIS spatial data files which inform annual reporting; - Project notification for access to and works within DBCA managed areas; and - Ad-hoc premise inspections. 	Serious	Unlikely	Moderate
7	All	Biodiversity / Flora / Fauna / Ecosystem	Mineral/ hydrogeological exploration	Bushfire from operational activities resulting in loss of vegetation, flora and fauna, with short term loss of biodiversity in the region	Minor	Possible	Low	<ul style="list-style-type: none"> - RTIO site emergency response team; - Local emergency management plan; - Installation and maintenance of firebreaks; and - Provision of firefighting equipment. 	Minor	Unlikely	Low

ID	Tiered level	Environmental Factor	Project Phase	Risk Scenario	Consequence	Likelihood	Inherent Risk Rating	Controls	Consequence	Likelihood	Current Risk Rating
8	All	Discharge management	Hydrogeological exploration	Water bore test pumping has adverse impacts to ground and surface waters (including drainage)	Medium	Possible	Moderate	<ul style="list-style-type: none"> - Groundwater abstraction water licences is managed in accordance with AR permits; - Discharge Management Plans are required to be completed prior to the commencement of test pumping programs. The document provides a summary of discharge volumes, expected path of discharge, risk assessment and identification of key stakeholders; - Risk assessment within PDNSAs (Tier 2) to include reference to Australian Drinking Water Guideline Framework (National Health and Medical Research Council, 2018) - If discharge has the potential to adversely impact on the surrounding environment, and in particular any sensitive environmental receptors, then preventative measures will be implemented; - Water quality limits as defined in licence or Australian and New Zealand standards must be adhered to at all times; - Where bore construction, air lifting or dosing may result in cuttings or increased sediment loads a sump will be constructed to contain the discharge; and - Erosion control matting used at point of discharge and lay flat piping to direct flow; and Post works field inspection of hydro drilling works by the earthworks supervisor or delegate. 	Medium	Unlikely	Low
9	All	Land Management	Mineral/ hydrogeological exploration	Ground disturbance resulting in erosion impacts to surrounding environment	Medium	Possible	Moderate	<ul style="list-style-type: none"> - Clearing is managed in accordance with RTIO operating procedures including: <ul style="list-style-type: none"> • AR permits issued via the ARC System; and • Rehabilitation work practices and guidelines. - A site specific assessment will be made to determine if water diversion banks / bunds are required to prevent erosion due to surface water flow. - Ground disturbance will be planned to avoid surface drainages where practicable; - Staged or progressive clearing of drill pads and tracks will occur where possible to minimise the potential for erosion; - Rehabilitation monitoring to assess erosion risk; - Consideration of timing of rehabilitation; and - Ad-hoc premise inspections. 	Medium	Unlikely	Low
10	All	Land Management	Mineral/ hydrogeological exploration	Soil deficit resulting from not collecting or managing topsoil resulting in reduced ability to rehabilitate areas with native vegetation	Medium	Possible	Moderate	<ul style="list-style-type: none"> - Clearing of rehabilitation material managed in accordance with RTIO standard operating procedure; and - Rehabilitation material (including topsoil) removed by clearing is collected and stored 	Medium	Unlikely	Low
11	All	Land Management	Mineral/ hydrogeological exploration	Lack of progressive rehabilitation resulting in non-compliance with relevant approval, resulting in delayed future approvals	Serious	Possible	High	<ul style="list-style-type: none"> - Progressive rehabilitation shall occur within 6 months of the cessation of drilling program (unless otherwise approved in writing by DMIRS); - Annual Resource Development budget and planning cycles; - Dedicated Resource Development planning team identify and schedule rehabilitation and directly link in with operational team to execute; and - Review of disturbance and rehabilitation data to inform annual reports and business tracking of performance. 	Serious	Unlikely	Moderate

ID	Tiered level	Environmental Factor	Project Phase	Risk Scenario	Consequence	Likelihood	Inherent Risk Rating	Controls	Consequence	Likelihood	Current Risk Rating
12	All	Land Management	Mineral/hydrogeological exploration	Ineffective rehabilitation planning results in incomplete rehabilitation and reduced biodiversity of the region	Serious	Possible	High	<ul style="list-style-type: none"> - Dedicated Resource Development planning team identify and schedule rehabilitation and directly link in with operational team to execute; - Minimum rehabilitation requirements outlined in AR permits and this EMP which include: <ul style="list-style-type: none"> • Temporary capping of drill holes; • All sample bags will be removed immediately post drilling and disposed of appropriately; • Removal of any sump liners which may have been installed to be removed and disposed of; • Within six months cutting and plugging of all drill collars at least 400mm below ground level (unless required for subterranean faunal/groundwater investigations); and • Within 6 months of cessation of drilling rehabilitation works to be completed which include sump infill, re-spreading of topsoil/vegetation and shallow ripping along contours (unless otherwise approved in writing by DMIRS). - Review of disturbance and rehabilitation data to inform annual reports and business tracking of performance. 	Serious	Unlikely	Moderate
13	All	Compliance	Mineral/hydrogeological exploration	Non-adherence to annual reporting obligations for PoW and NVCP approvals	Medium	Possible	Moderate	<ul style="list-style-type: none"> - Resource Development environment advisor role prepares and submit reports; - Current tracking registers for PoW and NVCP approvals; - GIS spatial data files of approvals areas; and - Metadata assigned to disturbance and rehabilitation. 	Medium	Unlikely	Low

6 Project Notification

The following contact details can be used for notification to the relevant people / departments. Such scenarios may include, but are not limited to the tabulated scenarios:

Scenario	Name and Role	Department	Contact Details
Access to a CALM Act Reserve	Conservation and Development Management Officer	Department of Biodiversity, Conservation and Attractions – Parks and Wildlife Service	Karratha.admin@dbca.wa.gov.au 08 9182 2005 / 0427 632 739
Access to a tenement which requires notification to Water Corporation e.g. Water Supply Reserve 38991	Clairly Lance – Team Leader Source Protection Cathryn Bell Technical Advisor – Water Quality NWR	Water Corporation	Clairly.Lance@watercorporation.com.au 0427 081 595 Cathryn.Bell@watercorporation.com.au 08 9186 8224
Access to a RTIO work area	Chris Morris – Superintendent Environment	RTIO business: Resource Development	Christopher.Morris@riotinto.com 0447 109 763
Emergency	SRS Manager / Response team	Department of Mines, Industry Regulation and Safety	minessafety@dmirs.wa.gov.au 08 9358 8001
Emergency e.g. wildfire	Pilbara Regional Duty Officer (emergency only)	Department of Biodiversity, Conservation and Attractions – Parks and Wildlife Service	08 9182 2088
	Allisdair MacDonald Pilbara Regional Manager (out of control bushfires)	Department of Biodiversity, Conservation and Attractions – Parks and Wildlife Service	Allisdair.Macdonald@dbca.wa.gov.au 08 9182 2000
	Daniel Petersen Karijini National Park Senior Ranger	Department of Biodiversity, Conservation and	Daniel.Petersen@dbca.wa.gov.au 08 9189 8147

		Attractions – Parks and Wildlife Service	
Emergency within PDWSA e.g. Significant hydrocarbon spill	After Hours Incident – Water Quality	Water Corporation	08 9420 2424
Rehabilitation, incident reports etc.	Pilbara Environmental Officer/ Regional Nature Conservation Leader	Department of Biodiversity, Conservation and Attractions – Parks and Wildlife Service	08 9182 2000 Karratha.admin@dbca.wa.gov.au

The DBCA – Parks and Wildlife Service will be provided at least 5 business days notification (via email) prior to accessing a Conservation Reserve. The notification will be provided to the Parks and Wildlife Service's Environmental Officer and will include:

- an entry date to the reserve;
- a proposed timeframe for which RTIO will be accessing the reserve for; and
- a direct contact number for the site supervisor to ensure that Parks and Wildlife Service has a direct line of contact in case of emergency (e.g. bushfire).

Following on from the email, at least 48 hours prior to the planned vehicular access, the DBCA Park Rangers are to be contacted via telephone (08 9189 8147) to discuss current and forecasted weather during the proposed access period.

Should the DBCA Park Rangers or other relevant Parks and Wildlife Service staff wish to inspect or view Project activities (prior, during and / or after) contact with the Superintendent Environment, who will arrange for safe passage within the project areas.

Where required by tenement condition, the Water Corporation, Karratha will be provided at least six weeks notification (via email) prior to accessing and exploring on Water Supply Reserves (e.g. Water Supply Reserve 38991 on E47/00054) and will include:

- an entry date to the reserve;
- a proposed timeframe for which RTIO will be accessing the reserve for; and
- the type and extent of the proposed ground disturbing activities.

Should the Water Corporation staff want to inspect or view Project activities on site (prior, during and / or after) they should contact the Superintendent Environment, who will arrange for safe passage within the project areas.

7 Definitions

Approvals Request (AR) Permit	Permit issued by Rio Tinto Iron Ore to authorise the commencement of certain works onsite, including land clearing.
Attributable – weeds	Where new weed specimens or populations of existing species are established with PoW approval footprints that can be directly linked to Resource Development vehicle movement and erosion. Factors which may not be attributable to Resource Development include but are not limited to weed movement by wind, cattle or natural flow processes.
Biological SME	Subject Matter Expert – Botanist/Ecologist with > 5 years' experience.
Conservation reserves	Conservation reserves are areas of Crown land set aside for the protection and conservation of biodiversity and / or natural or cultural heritage values. There are three main types of conservation reserves in Western Australia - nature reserves, national parks and conservation parks.
DBCA	Department of Biodiversity Conservation and Attractions
DMIRS	Department of Mines, Industry Regulation and Safety
DWER (Water)	Department of Water and Environmental Regulation – Regulatory Services (Water)
EMP	Environmental Management Plan
Environmental harm	<p>As defined in the <i>Environmental Protection Act 1986</i> (Part 1 s. 3A).</p> <p>Means direct or indirect:</p> <ul style="list-style-type: none"> • harm to the environment involving removal or destruction of, or damage to native vegetation or the habitat of native vegetation or indigenous aquatic or terrestrial animals; • alteration of the environment to its detriment or degradation or potential detriment or degradation; • alteration of the environment to the detriment or potential detriment of an environmental value; or • alteration of the environment of a prescribed kind.
Environmentally Sensitive Area	<ul style="list-style-type: none"> • A declared World Heritage property as defined in section 13 of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> of the Commonwealth; • An area that is registered on the Register of the National Estate, because of its natural values, under the <i>Australian Heritage Commission Act 1975</i> of the Commonwealth; • A defined wetland and the area within 50 m of the wetland; • the area covered by vegetation within 50 m of rare flora, to the extent to which the vegetation is continuous with the vegetation in which the rare flora is located; • The area covered by a Threatened Ecological Community (TEC); • Public Drinking Water Source Areas (PDWSAs); and / or • National Parks (both existing and proposed).

Ground disturbance	<p>Ground disturbance is defined as any disturbance of the ground. For example:</p> <ul style="list-style-type: none"> • establishing fence lines around heritage sites, firebreaks and tracks; • excavation of a depression for pit traps (fauna trapping) or Induced Polarisation Surveys; • clearing vegetation and soil for camp establishment and drilling pads; • major modifications (e.g. realignment, drainage upgrade etc.) to existing tracks / roads; and / or. • installing star pickets for the establishment of survey stations or environmental monitoring points.
HSEQ MS	Rio Tinto Health, Safety, Environment and Quality Management System
Land clearing	Any disturbance of native vegetation including rehabilitated or regenerated areas. Includes low impact disturbance resulting from driving over vegetation.
Low Impact Authorised Activities	Activities occurring within areas as defined in the <i>Mining Act Amendment Bill 2015</i>
Native Vegetation Clearing Permit (NVCP)	A Native Vegetation Clearing Permit (NVCP) is required to clear native vegetation unless the clearing is for an exempt purpose (as specified in Schedule 6 of the <i>Environmental Protection Act 1986</i> or Regulation 5 of the Environmental Protection (Clearing of Native Vegetation) Regulations 2004).
Rapid Invasive Weed / High Ecological Impact	<p>As defined by the Pilbara Impact and Invasiveness Ratings determined by the Department of Biodiversity, Conservation and Attractions. Available at:</p> <p>https://www.dpaw.wa.gov.au/plants-and-animals/plants/weeds/156-how-does-dpaw-manage-weeds</p>
Resource Development	Resource Development – A division of the RTIO business whose objective is to expand and convert resources to reserves and improve and manage orebody knowledge for studies and operations.
Parks and Wildlife Service	Department of Biodiversity, Conservation and Attractions – Parks and Wildlife Service
Public Drinking Water Source Area (PDWSA)	<p>Is the collective description for:</p> <ul style="list-style-type: none"> • Underground Water Pollution Control Areas; • Water Reserves; and • Catchment Areas. <p>Declared under the <i>Metropolitan Water Supply, Sewerage and Drainage Act 1909</i> or the <i>Country Areas Water Supply Act 1947</i>.</p>
RTIO	Rio Tinto Iron Ore business (WA)

Test Pump	A controlled field experiment in which a well / bore is pumped at a controlled rate, and the water-level response (drawdown) is measured in one or more surrounding observation wells and optionally in the pumped well (control well) itself.
Threatened Ecological Community (TEC)	A community which is found to fit into one of the following categories; “presumed totally destroyed, critically endangered, endangered or vulnerable”.
Tier	A hierarchy of control or prioritisation for work areas based on sensitivity. ‘All Tiers’ references apply to all areas of work. Tier 1 & 2 indicated additional requirements above and beyond ‘All Tier’ references.
Well Head Protection Zone	Defined area around bores that supply drinking water and generally have a 500 m radius in P1 areas and a 300m radius in P2 and P3 areas.

8 Associated Documents

Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) – Section 4.3 Primary Industries: <http://www.agriculture.gov.au/SiteCollectionDocuments/water/nwqms-guidelines-4-vol1.pdf>

Department of Biodiversity, Conservation and Attractions – Parks and Wildlife Service: ‘Definitions, Categories and criteria for Threatened and Priority Ecological Communities’
https://www.dpaw.wa.gov.au/images/plants-animals/threatened-species/definitions_categories_and_criteria_for_threatened_and_priority_ecological_communities.pdf

Department of Biodiversity, Conservation and Attractions – Parks and Wildlife Service: ‘WA’s Threatened Ecological Communities’: <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/wa-s-threatened-ecological-communities>

Department of Health (2006) Public Sector Circular 88 Use of Herbicides in Water Catchment Areas (PSC88): https://ww2.health.wa.gov.au/~/_media/Files/Corporate/general%20documents/water/Drinking%20water/S10%20PSC88_use_of_herbicides_in_water_catchment_areas.pdf

Department of Mines, Industry Regulation and Safety: Guidelines for the Protection of surface and ground water Resources: <http://www.dmp.wa.gov.au/Documents/Environment/ENV-MEB-209.pdf>

Department of Water and Environmental Regulation (1957) Country Areas Water Supply By-Laws: www.legislation.wa.gov.au

Memorandum of Understanding for Collaborative Arrangements between the Office of the EPA and the DMIRS: <http://www.dmp.wa.gov.au/Documents/Environment/ENV-MEB-016.pdf>

National Uniform Drillers Licensing Committee: Minimum Construction Requirements for Water bores in Australia: <https://www.adia.com.au/documents/item/154>

National Health and Medical Research Council (2018) National Water Quality Management Strategy: Australian Drinking Water Guidelines, version 3.5: <https://www.nhmrc.gov.au/sites/default/files/documents/attachments/australian-drinking-water-guidelines-may19.pdf>



Your ref:

Our ref: TFL 103-2021

Enquiries: Rosemarie Rees

Phone: (08) 9219 9513

Email: flora.data@dbca.wa.gov.au

Mr Hayden Ajduk
Biological Specialist
Rio Tinto Iron Ore
Central Park, Level 12
152 - 158 St Georges Terrace
Perth WA, 6000

Dear Mr Ajduk

**APPLICATION FOR AUTHORISATION TO TAKE OR DISTURB THREATENED FLORA :
*Seringia exastia***

I refer to your application to take the above species of Threatened Flora for the purpose of Clearing for mining, exploration activities, and for the maintenance of infrastructure at Rio Tinto Iron Ore's tenements, live agreement areas and pastoral stations in the Pilbara Bioregion. The application to take *Seringia exastia* under section 40 of the *Biodiversity Conservation Act 2016* has been approved and the Threatened Flora Authorisation is attached. Please ensure all conditions are complied with, including the submission of a final reports. Please provide all records and reports required under the attached authorisation to flora.data@dbca.wa.gov.au

Please note a person who proposes to take an action that will have, or is likely to have, a significant impact on federally listed threatened species must refer that action to the Federal Minister for a decision on whether assessment and approval is required under the *Environment Protection and Biodiversity Conservation Act 1999*. It is your responsibility to determine whether such approval is required, and if so, to obtain such approval before undertaking the actions covered by this authorisation. The EPBC Act referral process is outlined in detail on the Commonwealth Department's website at <http://www.environment.gov.au/epbc/assessments/process.html>

If you have any queries regarding this authorisation please contact Rosemarie Rees (Flora Administration Office, Ph. 9219 9513 or flora.data@dbca.wa.gov.au).

Yours sincerely

Rosemarie Rees
A/Flora Administration Officer
for the DIRECTOR GENERAL

23 December 2020
CC: DBCA Pilbara District



Department of **Biodiversity,
Conservation and Attractions**

AUTHORISATION TO TAKE OR DISTURB THREATENED SPECIES

Section 40 of the Biodiversity Conservation Act 2016

AUTHORISATION DETAILS

Authorisation Number: TFL 103-2021

Duration of Authorisation: From date of signature below until 31 December 2021, this time period covers the full operation of the authorisation. Note also the date in the section below, 'Dates within which taking/disturbance authorised'

AUTHORISATION HOLDER

Mr Hayden Ajduk
Biological Specialist
Rio Tinto Iron Ore
Central Park, Level 12
152 - 158 St Georges Terrace
Perth WA, 6000

AREA TO WHICH THIS AUTHORISATION APPLIES

Rio Tinto Iron Ore's tenements, live agreement areas and pastoral stations in the Pilbara Bioregion (See Map in Attachment 1).

AUTHORISED ACTIVITY

Purpose of taking/disturbance:

Clearing for mining, exploration activities, and for the maintenance of infrastructure to support Rio Tinto Iron Ore operations in the Pilbara, in accordance with native vegetation clearing approvals or exemptions.

Threatened species authorised to be taken/disturbed:

Seringia exastia - listed as a Critically Endangered species.

Quantity of threatened species authorised to be taken/disturbed:

Minimum number of whole plants or plant parts required to undertake activities.

Authorised taking/disturbance methodology:

Clearing using heavy machinery for mining, exploration and maintenance of infrastructure.

Dates within which taking/disturbance authorised:

From date of signature below until 31 December 2021.

PERSONS AUTHORISED TO TAKE THREATENED SPECIES UNDER THIS AUTHORISATION

The Authorisation Holder, employees of Rio Tinto Iron Ore and contractors working for Rio Tinto Iron Ore under the direction of the Authorisation Holder.

CONDITIONS

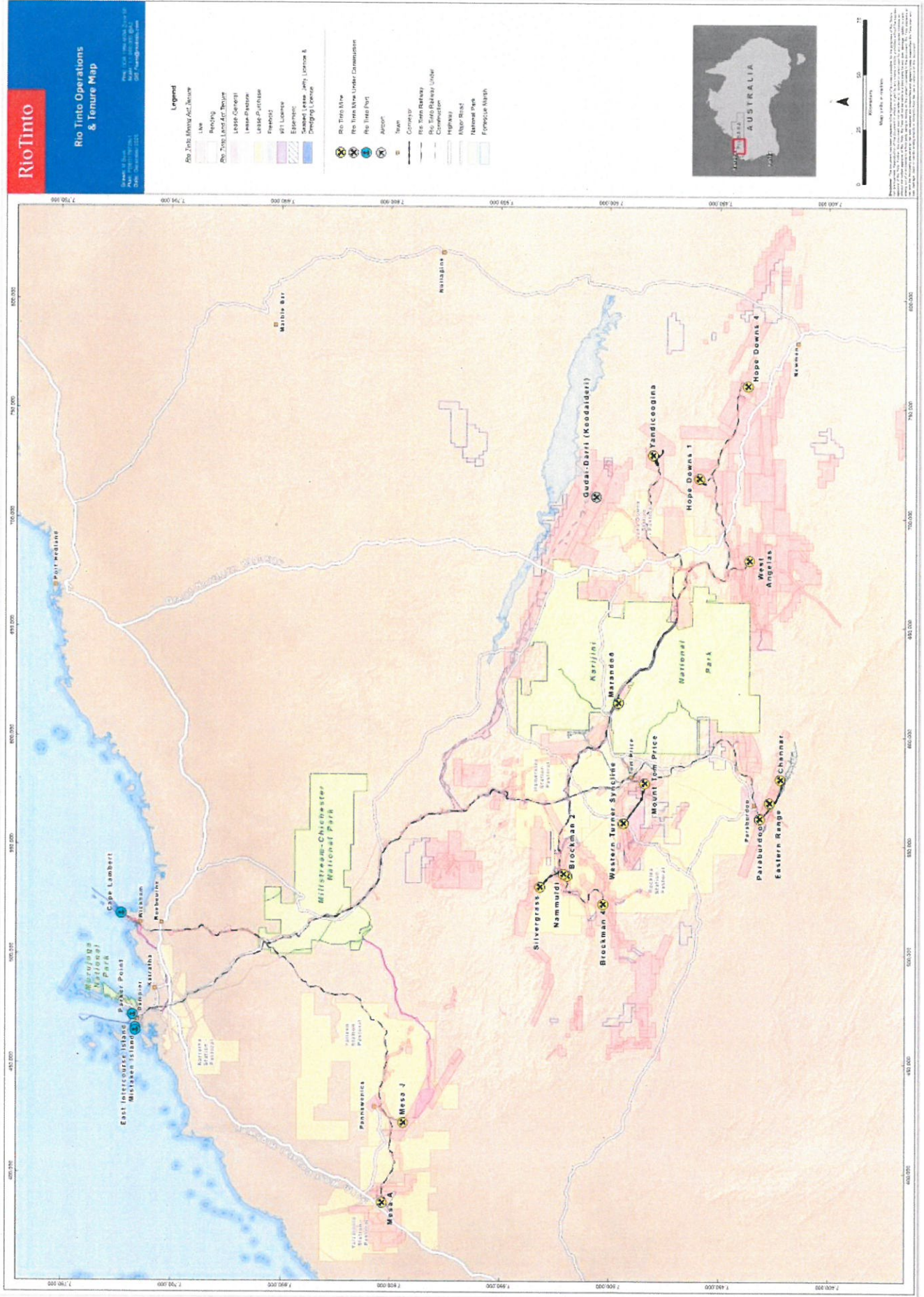
1. No additional impacts (which includes no introduction or spread of weeds or disease) to the Threatened Flora habitat.
2. The Authorisation Holder must maintain the following records for activities done pursuant to this Authorisation:
 - a. the location where the taking/disturbance occurred;
 - b. the date that the taking/disturbance occurred;
 - c. the species and approximate quantity taken if known;
3. The Authorisation Holder must provide a final Report, and the records required under condition 3 of this Authorisation to the CEO upon the expiry of this Authorisation, or when requested by the CEO.
4. No material taken under this Authorisation shall be used for purposes other than that specified above.
5. The location of Threatened Flora populations must be treated as confidential and under no circumstances disclosed to other persons without the written permission of the CEO.
6. The Authorisation Holder or any Authorised Persons undertaking the Authorised Activity must produce this Authorisation and any land owner/occupier's consent to access the land, whenever requested to do so by a Wildlife Officer.

NOTES

1. Before undertaking the Authorised Activity, permission must be obtained from: (a) the owner or occupier of private land; or (b) the Department or Authority controlling Crown land, on which the Threatened Flora occur. This includes obtaining the written endorsement from Department of Biodiversity, Conservation and Attractions (DBCA) if the authorised activity is proposed for land managed by DBCA.
2. All clearing of vegetation is to be undertaken in accordance with State and Federal legislation.

.....
Dr Margaret Byrne
Executive Director of Biodiversity
and Conservation Science
AS DELEGATE OF THE MINISTER
DATE: 23/12/202

Attachment 1: Area to which authorisation TFL 103-2021 applies





Department of Biodiversity,
Conservation and Attractions

AMENDMENT TO AUTHORISATION TO TAKE OR DISTURB THREATENED SPECIES

Section 40(3) of the Biodiversity Conservation Act 2016

AUTHORISATION DETAILS

Authorisation Number: TFL 103-2021

Duration of Authorisation: From date of signature below until 31 December 2022, this time period covers the full operation of the authorisation including any commitment to monitor. Note also the date in the section below, 'Dates within which taking/disturbance authorised']

Amendment Number: TFL 103B-2021

AUTHORISATION HOLDER

Mr Hayden Ajduk
Biological Specialist
Rio Tinto Iron Ore
Central Park, Level 12
152 - 158 St Georges Terrace
Perth WA, 6000

AREA TO WHICH THIS AUTHORISATION APPLIES

No amendment – in accordance with Authorisation TFL 103-2021

AUTHORISED AMENDED ACTIVITY

Purpose of taking/disturbance:

No amendment – in accordance with Authorisation TFL 103-2021

Threatened species authorised to be taken/disturbed:

No amendment – in accordance with Authorisation TFL 103-2021

Quantity of threatened species authorised to be taken/disturbed:

No amendment – in accordance with Authorisation TFL 103-2021

Authorised taking/disturbance methodology:

No amendment – in accordance with Authorisation TFL 103-2021

Dates within which taking/disturbance authorised:

From date of signature below until 31 December 2022

PERSONS AUTHORISED TO TAKE THREATENED SPECIES UNDER THIS AUTHORISATION

The Authorisation Holder, employees of Rio Tinto Iron Ore and contractors working for Rio Tinto Iron Ore under the direction of the Authorisation Holder.

CONDITIONS

No amendment – in accordance with Authorisation TFL 103-2021

NOTES

No amendment – in accordance with Authorisation TFL 103-2021

Margaret Byrne

.....
Dr Margaret Byrne

Executive Director of Biodiversity
and Conservation Science

AS DELEGATE OF THE MINISTER

DATE: *16/12*...../2021




Figures

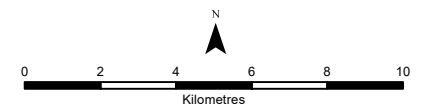
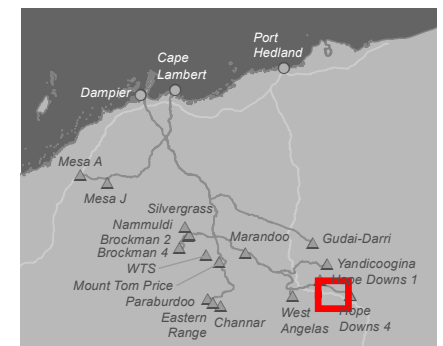
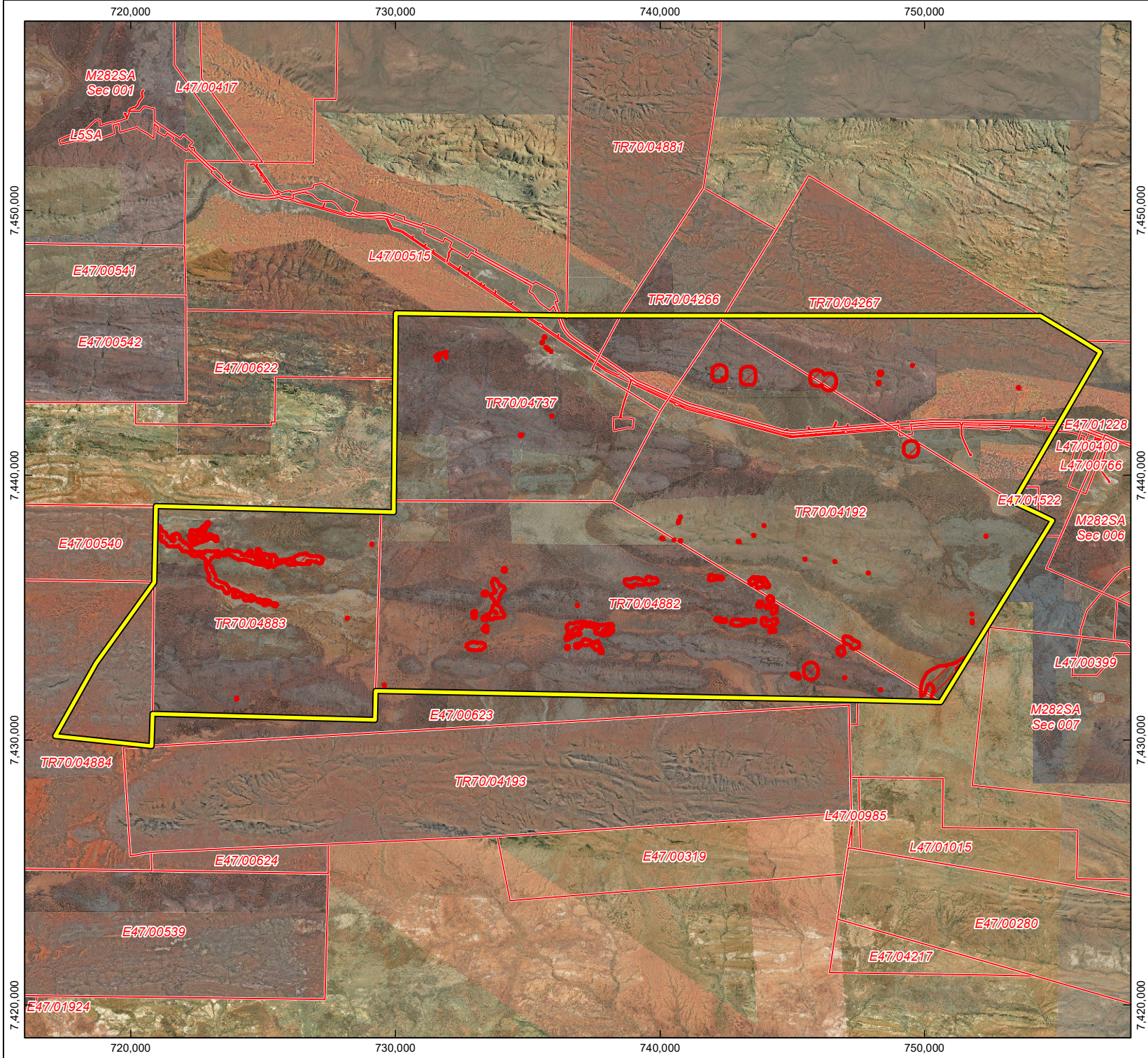
Figure 1
Overview of application area -
Conservation significant biological
values proposed protection areas

Drawn: GIS Team
 Plan: PDE0189960v1
 Date: May 2022

Proj: GDA 1994 MGA Zone 50
 Scale: 1:200,000 @ A4
 gisteam@riotinto.com

Legend

-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas
-  Rio Tinto Live Mining Act Tenure









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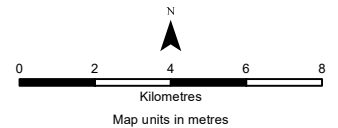
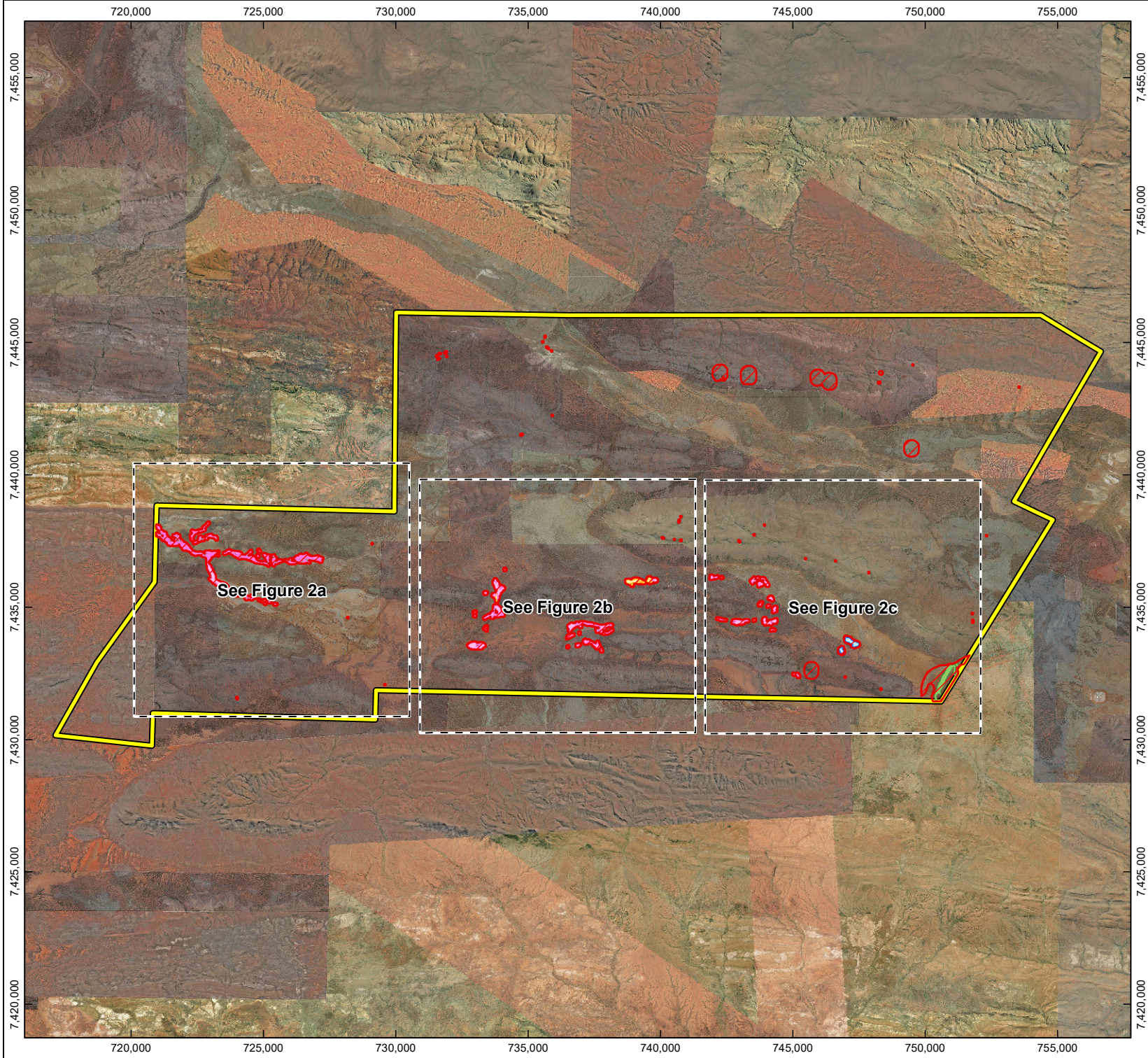
Figure 2 - Overview Vegetation of conservation significance: Recorded locations and proposed protection areas

Drawn: GIS Team
Plan: PDE0189960v1
Date: May 2022

Proj: GDA 1994 MGA Zone 50
Scale: 1:200,000 @ A4
gisteam@riotinto.com

Legend

-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas
- Conservation significant vegetation units**
 -  West Angelas Cracking-Clays P1
 -  Coolibah-lignum flats P3
- Other significant vegetation**
 -  D13
 -  D19






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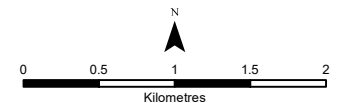
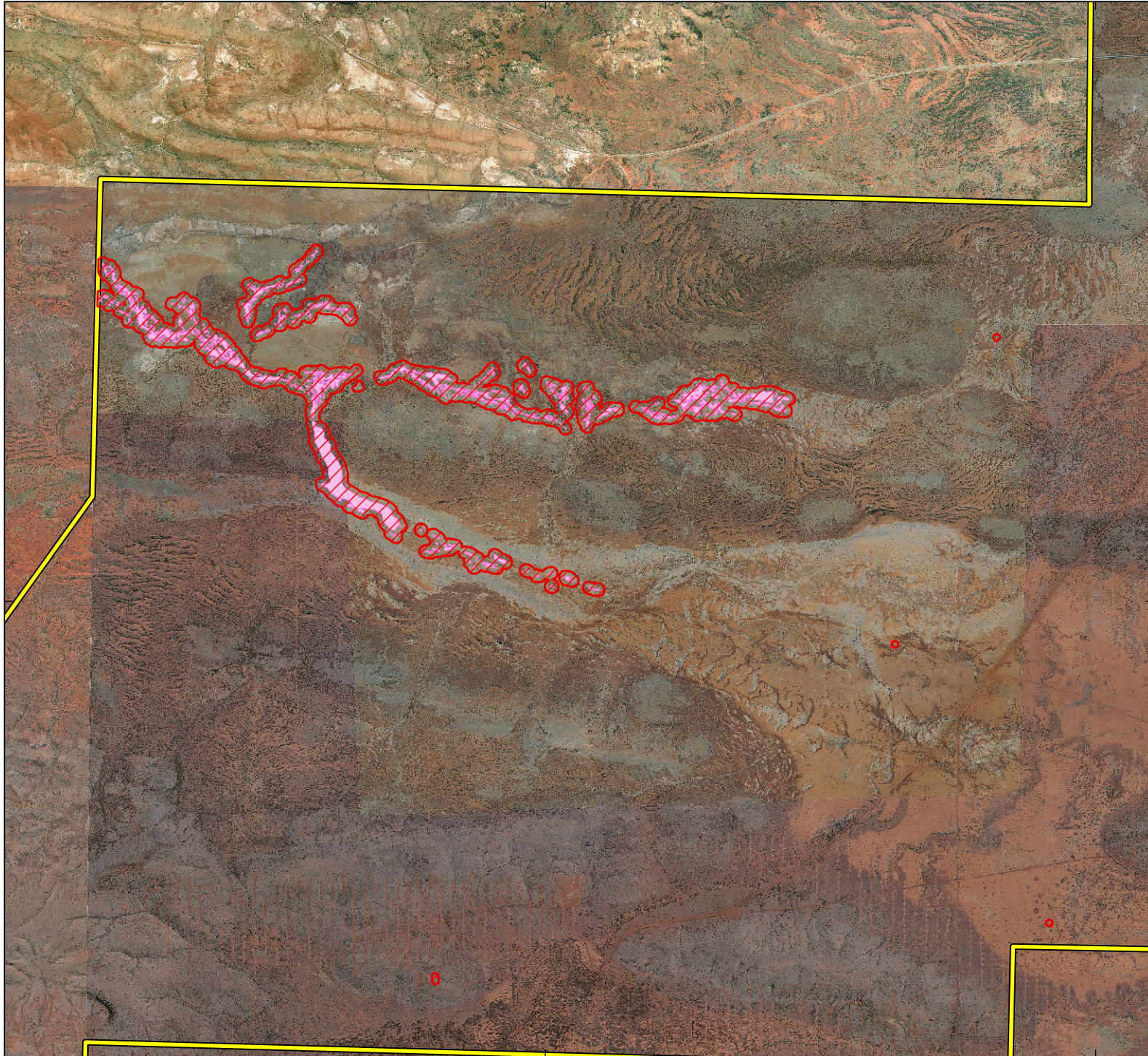
Figure 2a Vegetation of conservation significance: Recorded locations and proposed protection areas

Drawn: GIS Team
Plan: PDE0189960v1
Date: May 2022

Proj: GDA 1994 MGA Zone 50
Scale: 1:50,000 @ A4
gisteam@riotinto.com

Legend

-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas
- Conservation significant vegetation units**
 -  West Angelas Cracking-Clays P1



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735,000





740,000

Figure 2b Vegetation of conservation significance: Recorded locations and proposed protection areas

Drawn: GIS Team
Plan: PDE0189960v1
Date: May 2022

Proj: GDA 1994 MGA Zone 50
Scale: 1:50,000 @ A4
gisteam@riotinto.com

Legend

-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas
- Conservation significant vegetation units**
-  West Angelas Cracking-Clays P1
-  Coolibah-lignum flats P3

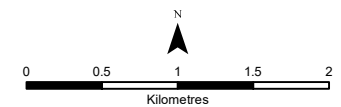


7,435,000

7,435,000

735,000

740,000



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745,000



750,000

Figure 2c Vegetation of conservation significance: Recorded locations and proposed protection areas

Drawn: GIS Team
Plan: PDE0189960v1
Date: May 2022

Proj: GDA 1994 MGA Zone 50
Scale: 1:50,000 @ A4
gisteam@riotinto.com



Legend

-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas

Conservation significant vegetation units

-  West Angelas Cracking-Clays P1

Other significant vegetation

-  D13
-  D19

7,435,000

7,435,000

745,000

750,000



Map units in metres



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Figure 3 - Overview Priority 1 & 2 flora: Recorded locations and proposed protection areas

Drawn: GIS Team
Plan: PDE0189960v1
Date: May 2022

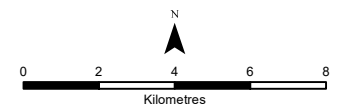
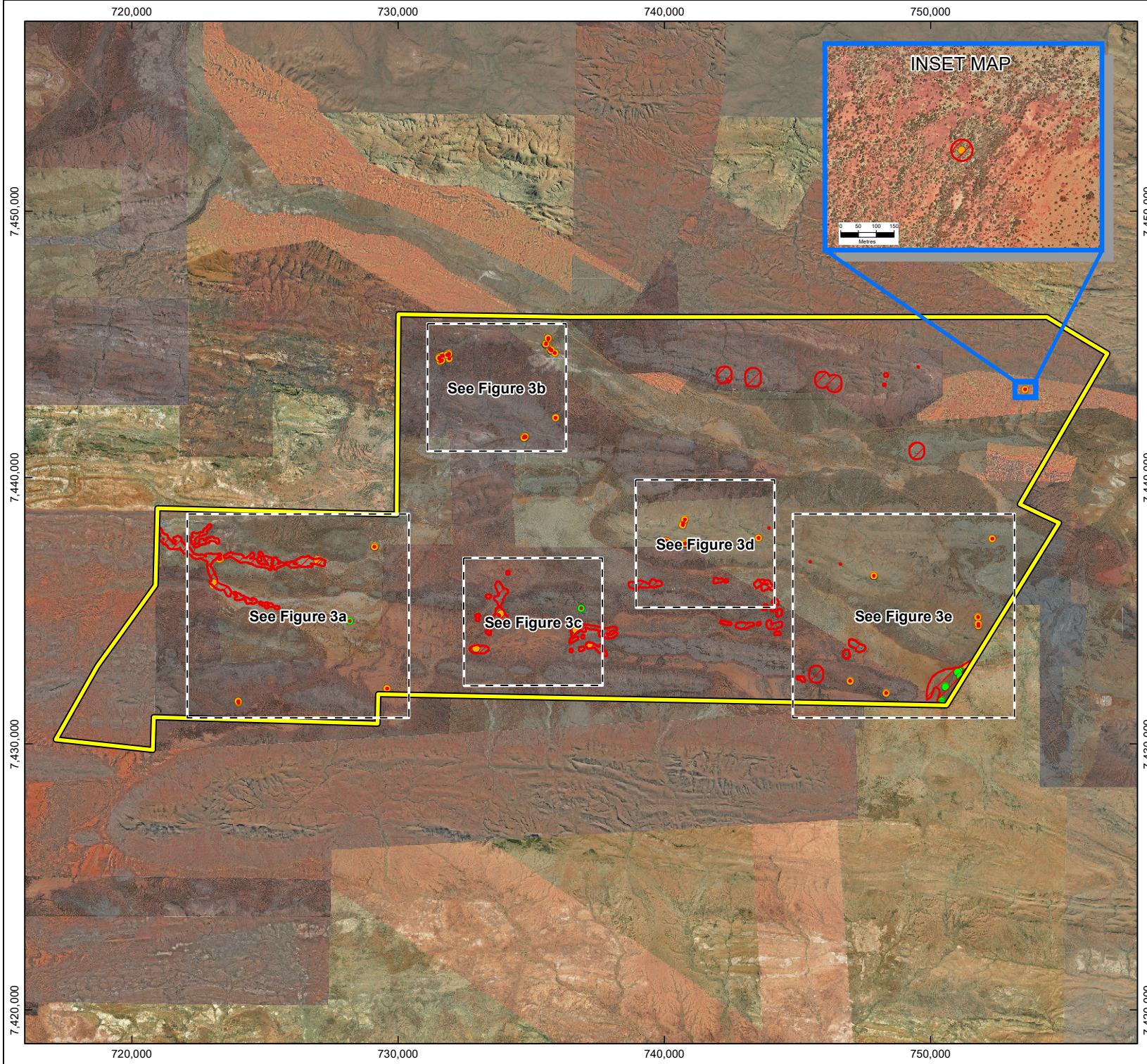
Proj: GDA 1994 MGA Zone 50
Scale: 1:200,000 @ A4
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Legend

-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas

Priority Flora

-  P1
-  P2





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Figure 3a Priority 1 & 2 flora: Recorded locations and proposed protection areas

Drawn: GIS Team
Plan: PDE0189960v1
Date: May 2022

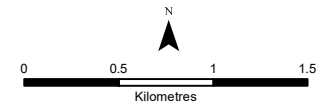
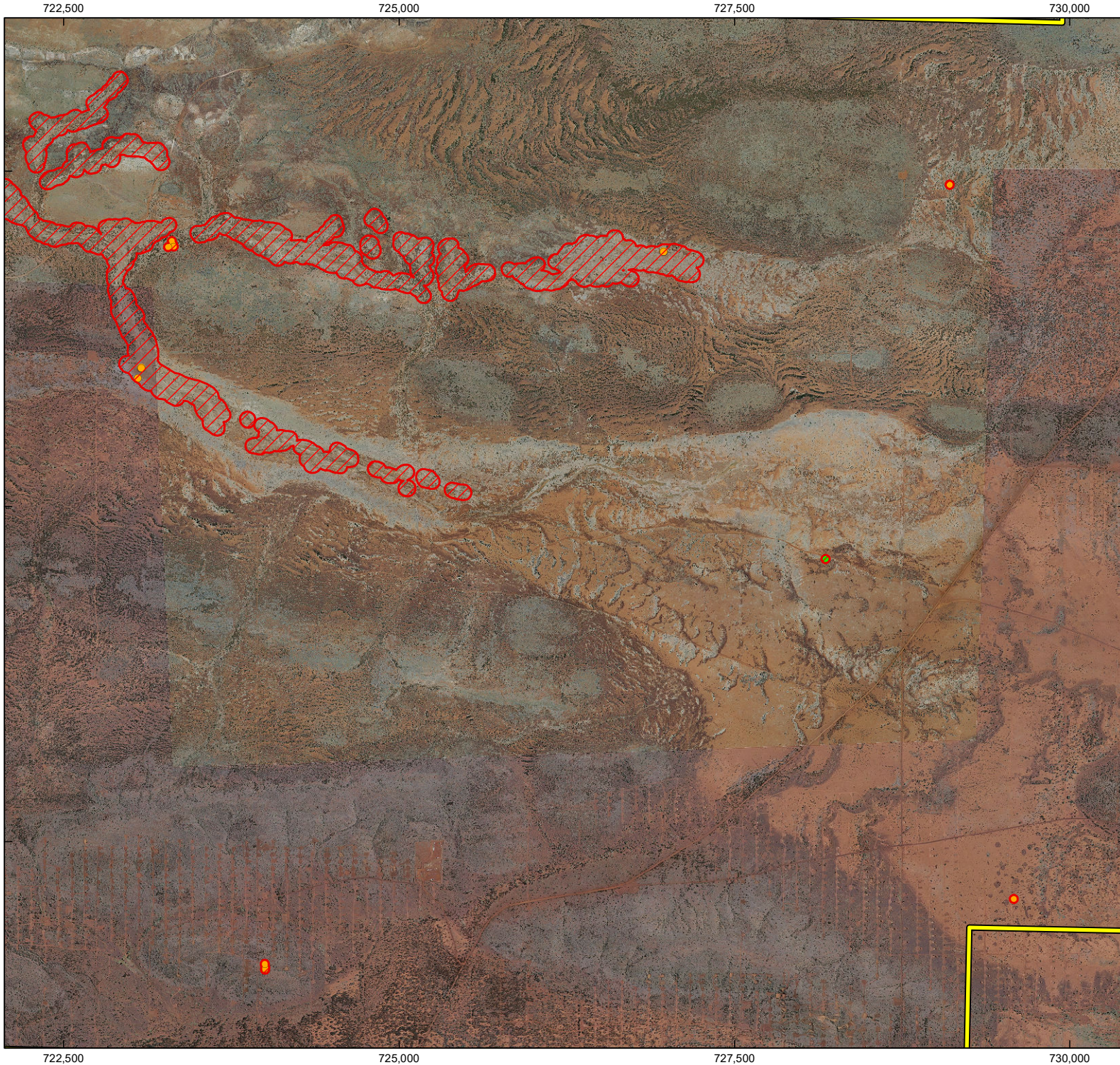
Proj: GDA 1994 MGA Zone 50
Scale: 1:40,000 @ A4
gisteam@riotinto.com

Legend

-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas

Priority Flora

-  P1
-  P2





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Figure 3b Priority 1 & 2 flora: Recorded locations and proposed protection areas

Drawn: GIS Team
Plan: PDE0189960v1
Date: May 2022

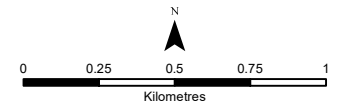
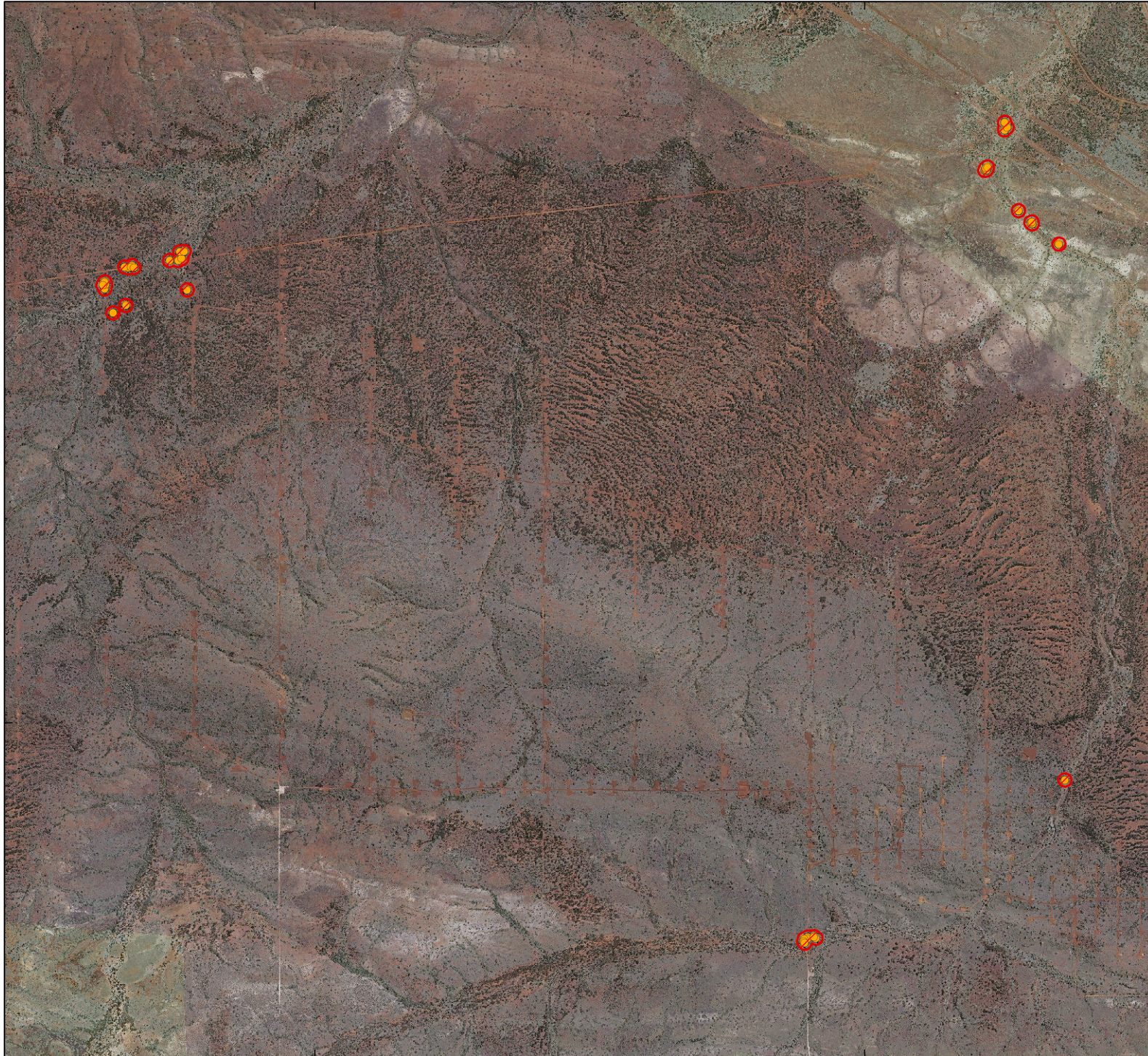
Proj: GDA 1994 MGA Zone 50
Scale: 1:25,000 @ A4
gisteam@riotinto.com

Legend

-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas

Priority Flora

-  P2



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732,500

735,000



737,500

Figure 3c Priority 1 & 2 flora: Recorded locations and proposed protection areas

Drawn: GIS Team
Plan: PDE0189960v1
Date: May 2022

Proj: GDA 1994 MGA Zone 50
Scale: 1:25,000 @ A4
gisteam@riotinto.com

Legend

-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas

Priority Flora

-  P1
-  P2

7,435,000

7,435,000

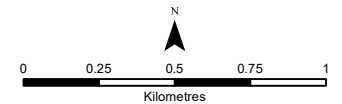
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7,432,500

732,500

735,000

737,500



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740,000



742,500

Figure 3d Priority 1 & 2 flora: Recorded locations and proposed protection areas

Drawn: GIS Team
Plan: PDE0189960v1
Date: May 2022

Proj: GDA 1994 MGA Zone 50
Scale: 1:25,000 @ A4
gisteam@riotinto.com

Legend

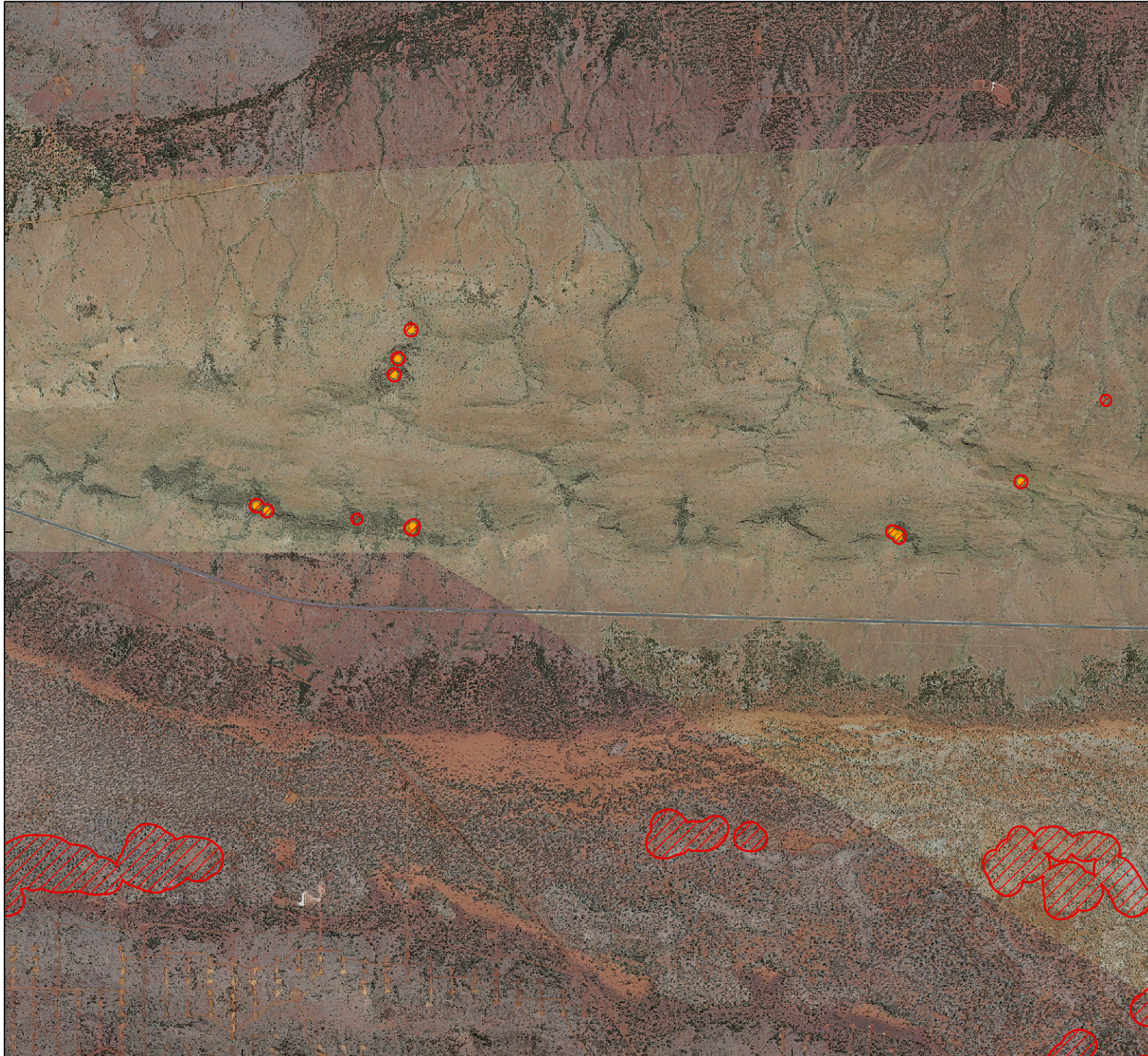
-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas

Priority Flora

-  P2

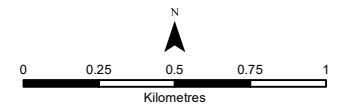
7,437,500

7,437,500



740,000

742,500





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Figure 3e Priority 1 & 2 flora: Recorded locations and proposed protection areas

Drawn: GIS Team
Plan: PDE0189960v1
Date: May 2022

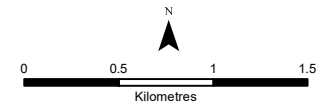
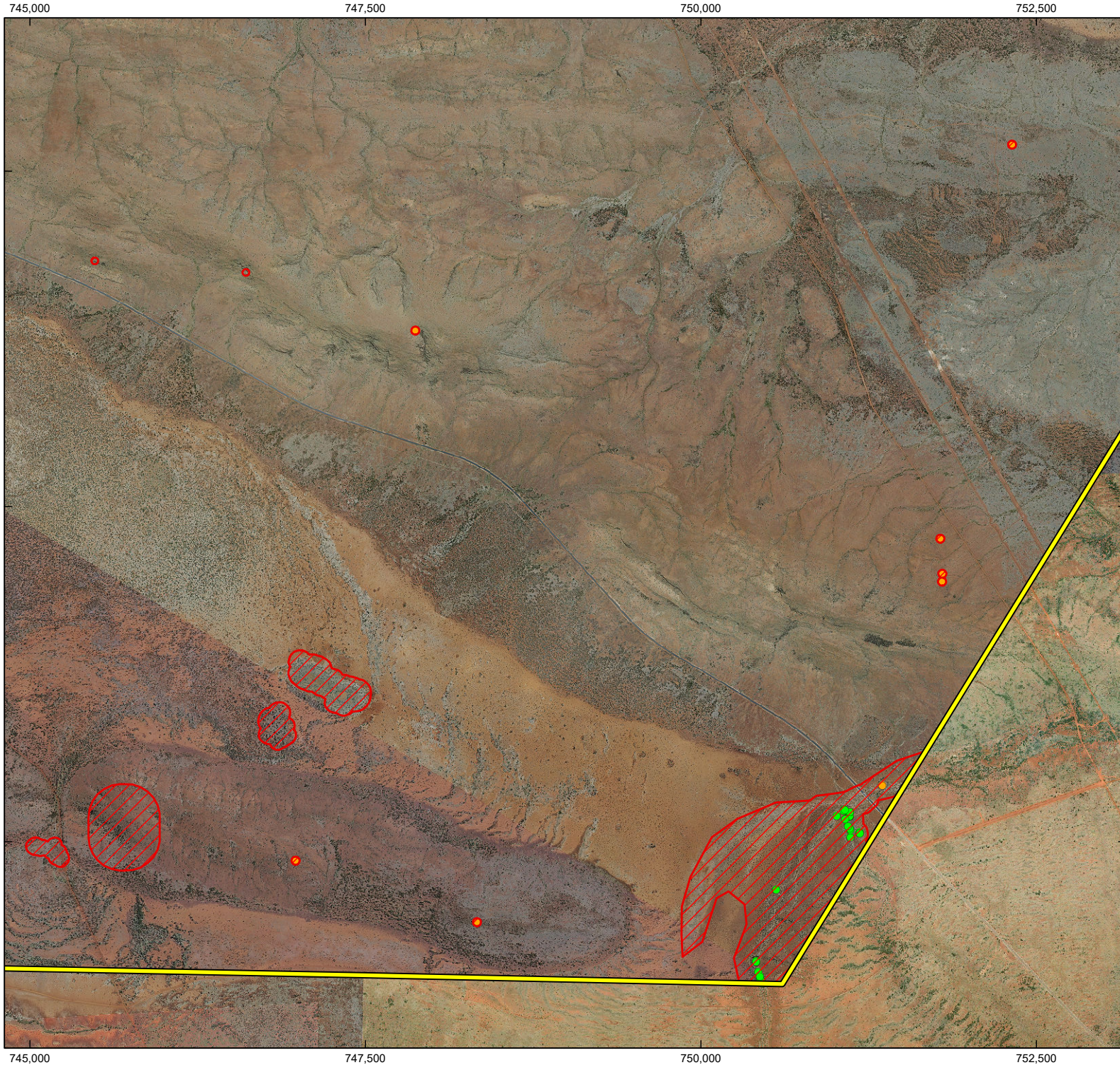
Proj: GDA 1994 MGA Zone 50
Scale: 1:40,000 @ A4
gisteam@riotinto.com

Legend

-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas

Priority Flora

-  P1
-  P2









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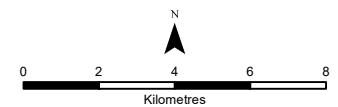
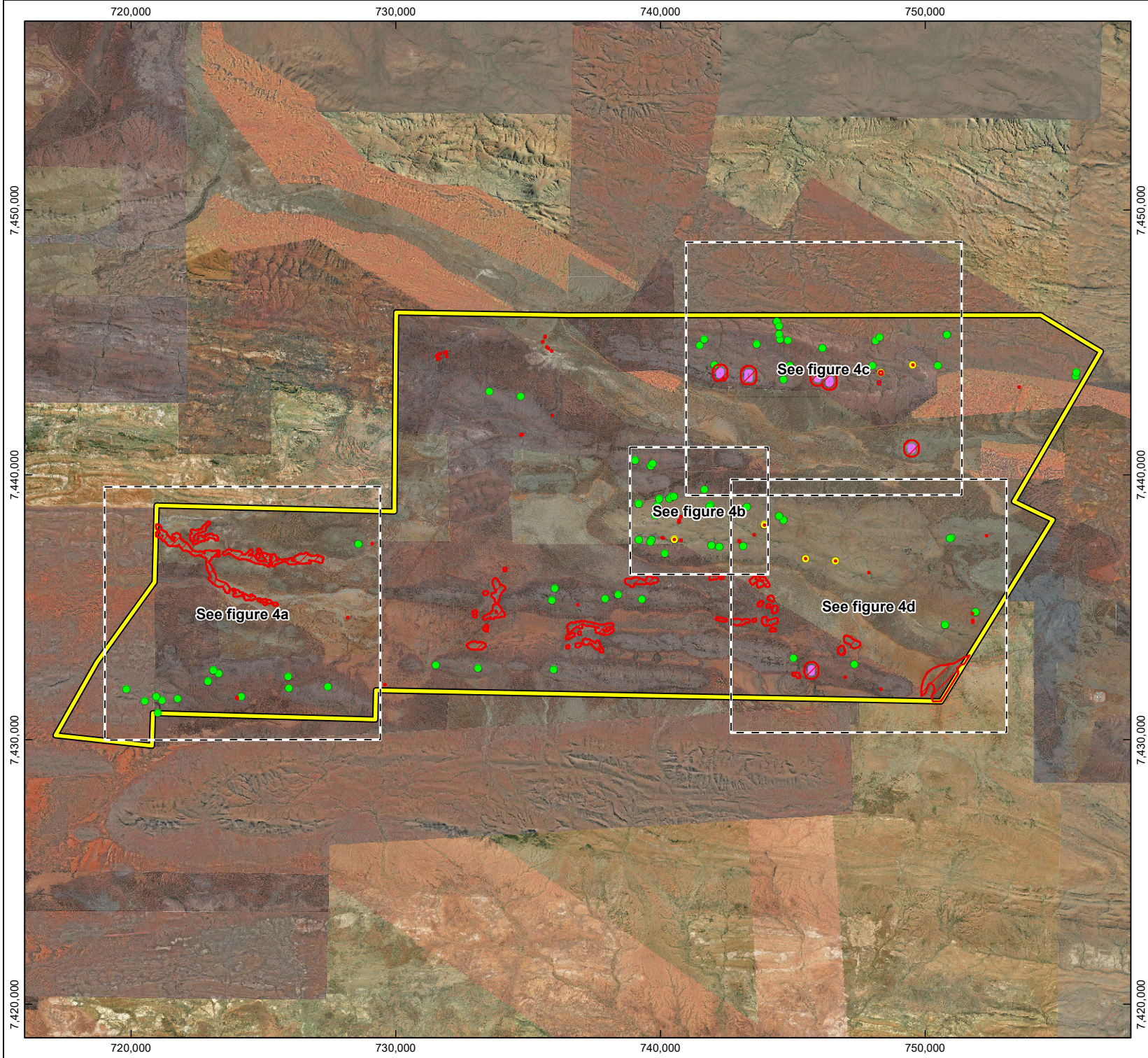
Figure 4 - Overview Threatened and Priority fauna: Recorded locations, habitat and proposed protection areas

Drawn: GIS Team
Plan: PDE0189960v2
Date: May 2022

Proj: GDA 1994 MGA Zone 50
Scale: 1:200,000 @ A4
gisteam@riotinto.com

Legend

-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas
- Threatened and Priority fauna habitat**
 -  Pebble Mounds
 -  Category 3/4 Cave
 -  Semi permanent pool
 -  Adits Buffer



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Figure 4a

Threatened and Priority fauna: Recorded locations, habitat and proposed protection areas


Drawn: GIS Team
Plan: PDE0189960v2
Date: May 2022

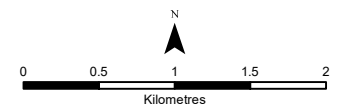
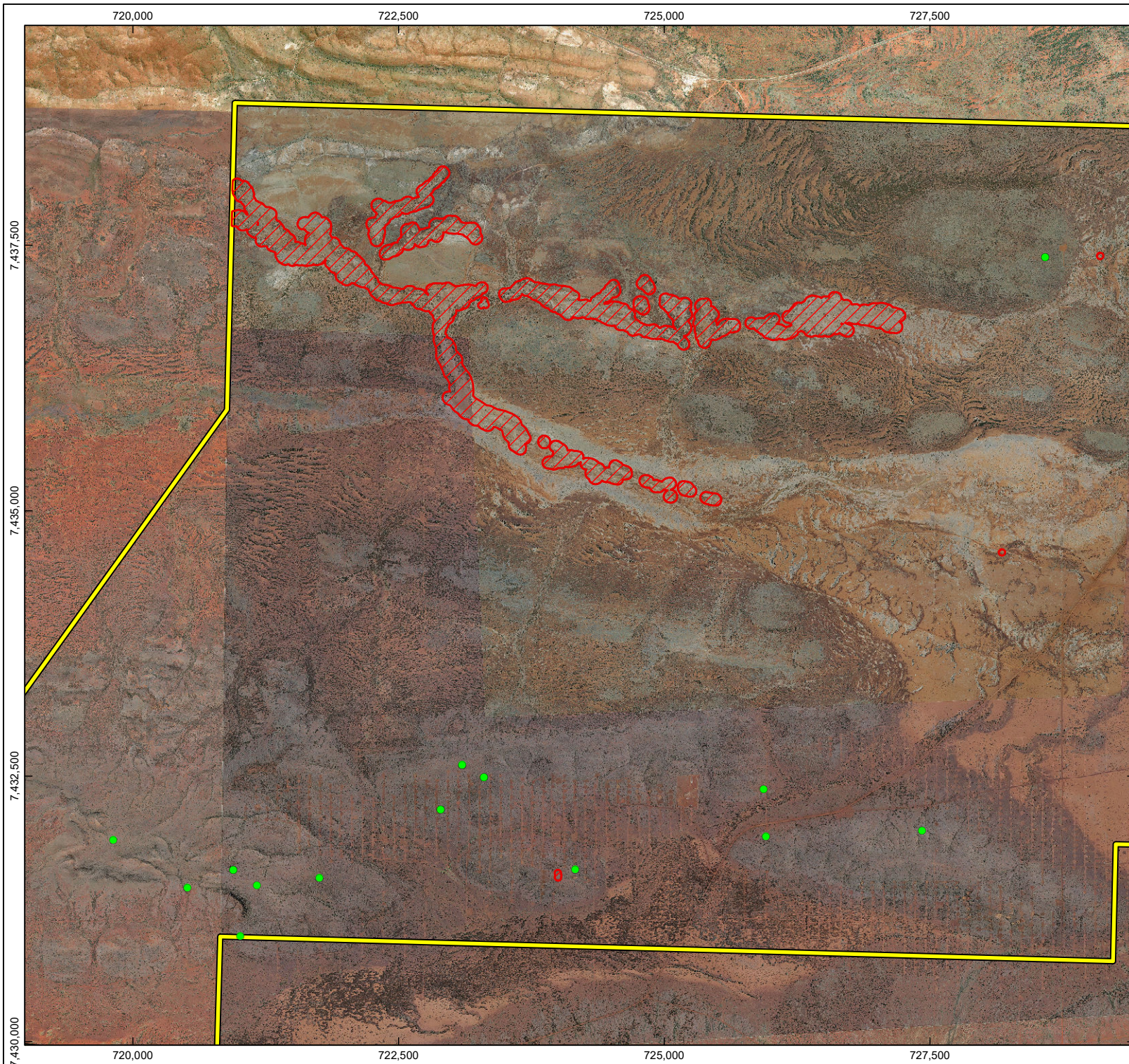
Proj: GDA 1994 MGA Zone 50
Scale: 1:50,000 @ A4
gisteam@riotinto.com

Legend

-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas

Threatened and Priority fauna habitat

-  Pebble Mounds



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Figure 4b

Threatened and Priority fauna: Recorded locations, habitat and proposed protection areas



Drawn: GIS Team
Plan: PDE0189960v2
Date: May 2022

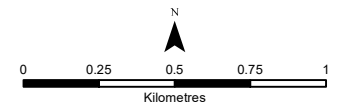
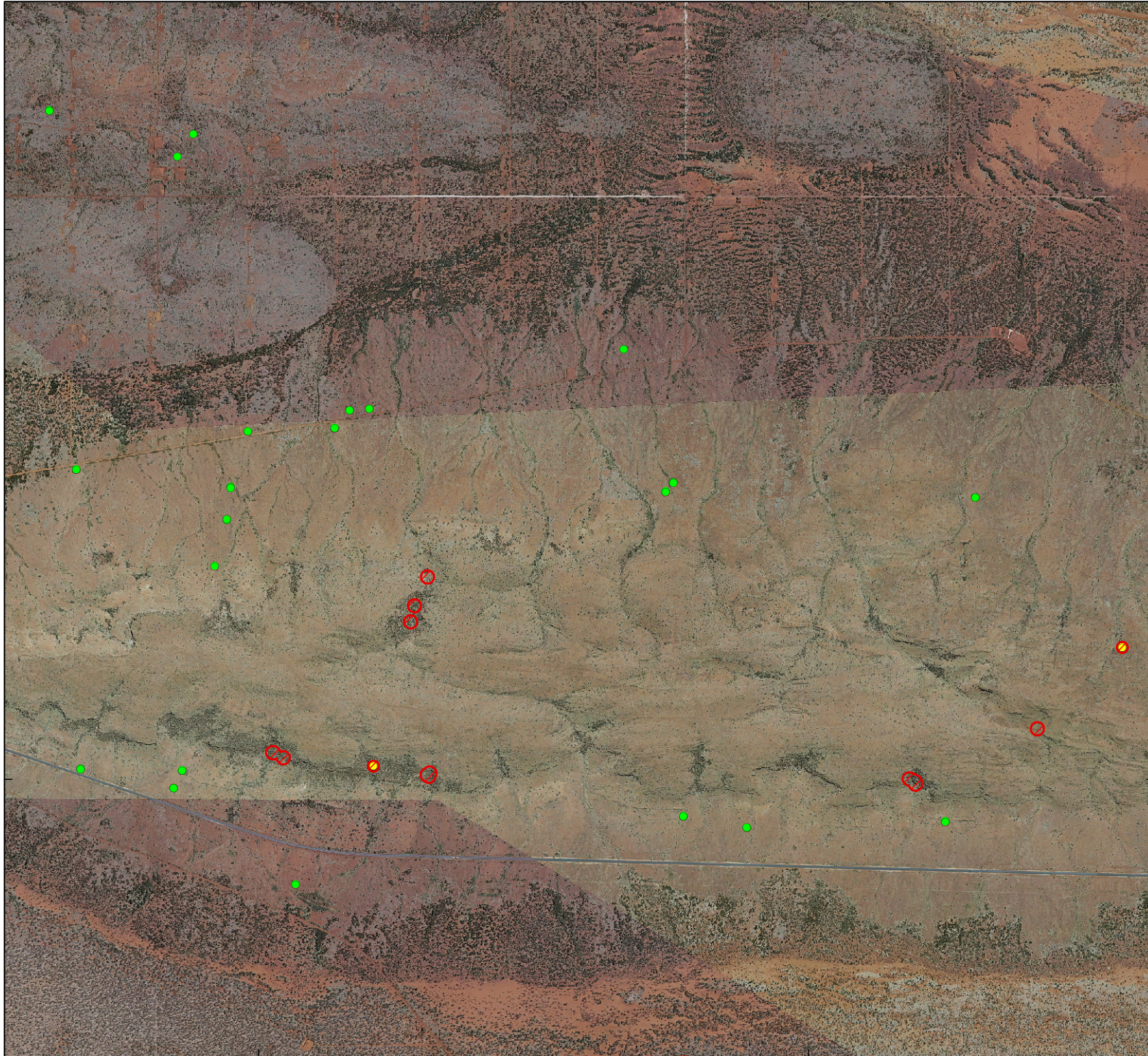
Proj: GDA 1994 MGA Zone 50
Scale: 1:25,000 @ A4
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Legend

-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas

Threatened and Priority fauna habitat

-  Pebble Mounds
-  Category 3/4 Cave



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

Figure 4c

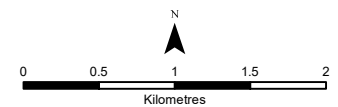
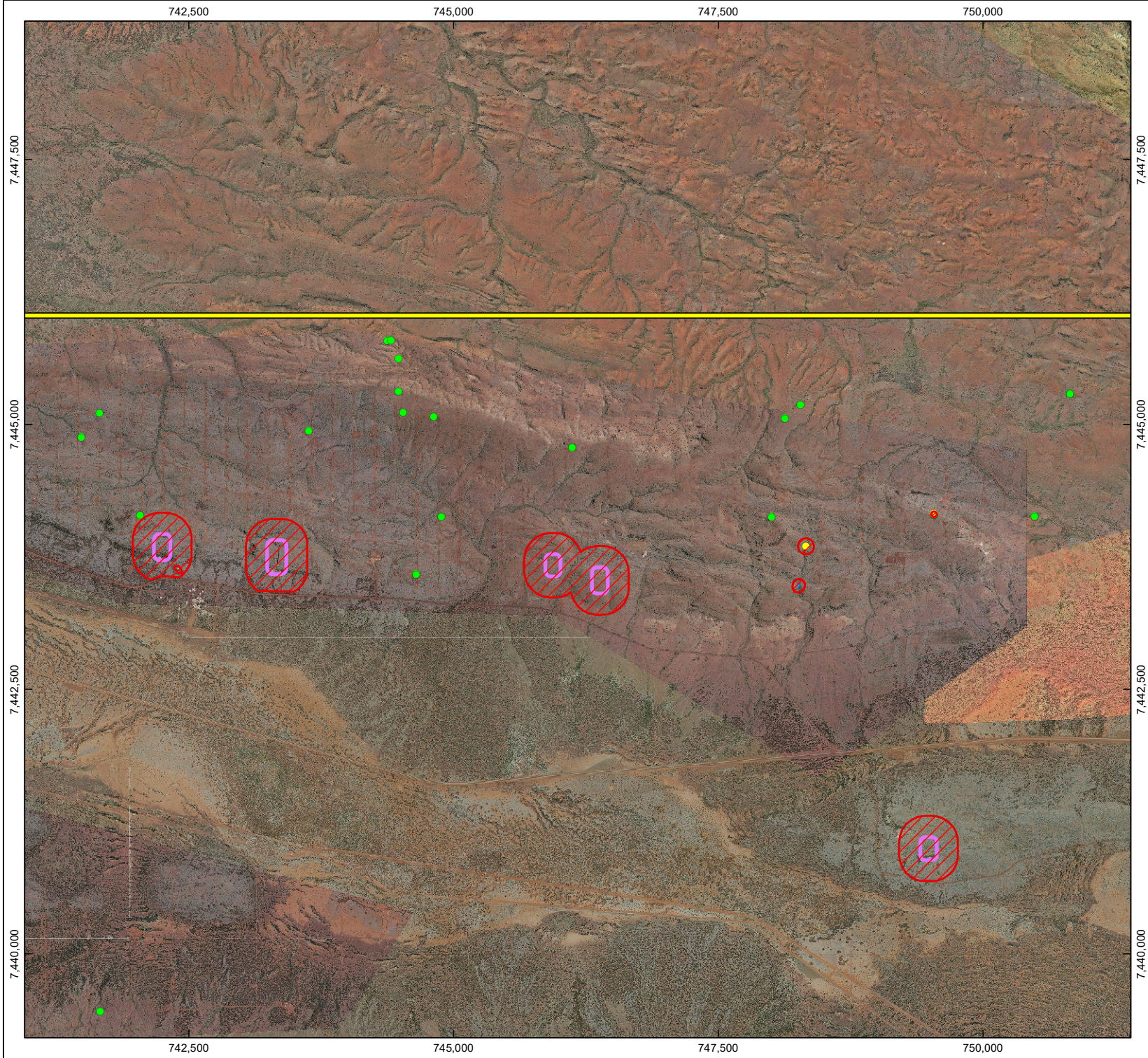
Threatened and Priority fauna: Recorded locations, habitat and proposed protection areas

Drawn: GIS Team
Plan: PDE0189960v2
Date: May 2022

Proj: GDA 1994 MGA Zone 50
Scale: 1:50,000 @ A4
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Legend

-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas
- Threatened and Priority fauna habitat**
 -  Pebble Mounds
 -  Category 3/4 Cave
 -  Semi permanent pool
 -  Adits Buffer



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Figure 4d

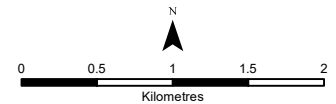
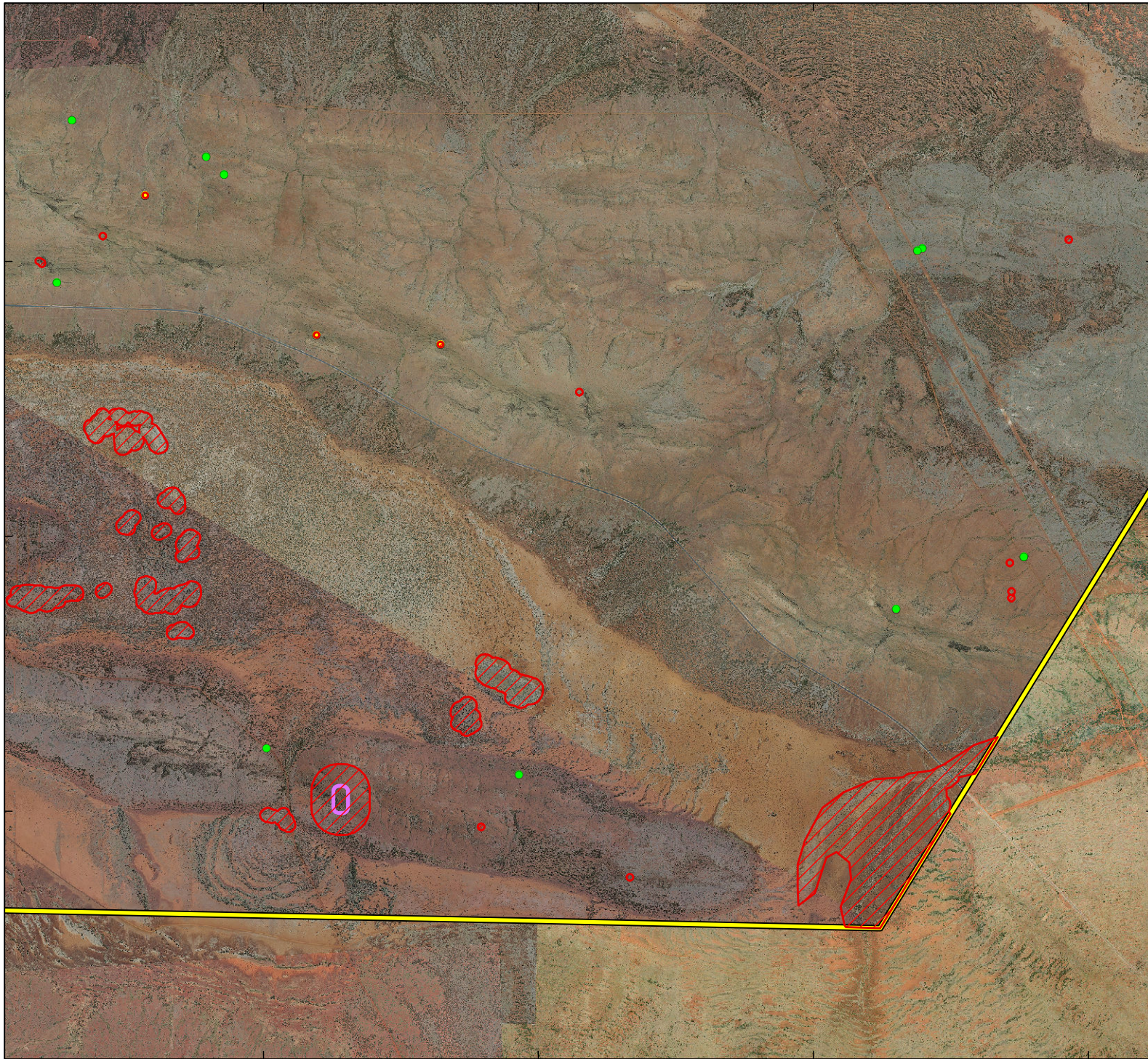
Threatened and Priority fauna: Recorded locations, habitat and proposed protection areas

Drawn: GIS Team
Plan: PDE0189960v2
Date: May 2022

Proj: GDA 1994 MGA Zone 50
Scale: 1:50,000 @ A4
gisteam@riotinto.com

Legend

-  Rhodes Ridge NVCP Application
-  Conservation significant biological value protection areas
- Threatened and Priority fauna habitat**
 -  Pebble Mounds
 -  Category 3/4 Cave
 -  Adits Buffer



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