EPBC Act referral

Australian Government
Department of Agriculture, Water and the Environment

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Title of proposal	2021/9067 - Arrowsmith Central Silica Sand Project

Section 1

Summary of your proposed action

1.1 Project industry type Mining

1.2 Provide a detailed description of the proposed action, including all proposed activities

Overview

VRX Silica Limited (VRX) is seeking to develop the Proposed Action, a high-grade silica sand mine located approximately 260 km north of Perth in the Geraldton Sandplain bioregion of WA (Att. 1, Fig 1).

The Proposed Action will involve sequentially mining 2 - 3 m of sand from below the surface of the soil profile. Mining will be performed in sections by removing blocks (typically 150 m x 150 m), with an estimated five blocks being mined per year. The mined area will be progressively rehabilitated using Vegetation Direct Transfer (VDT) as mining occurs.

Long-term infrastructure will include access / haul roads, pipelines, water storage dams, processing plant, Power Sub-station, stockpiles and laydown area. The Proposal is based on a Probable Ore Reserve of 18.7 Mt comprising of 99.6% SiO2. The life of the Proposal is estimated to be 25 years, with additional reserves available that could extend this mine life (pending approval).

Vegetation Direct Transfer

VDT, or community translocation, is the practice of salvaging and replacing intact sods of vegetation with the underlying soil intact (Att. 1, Fig 2; Figure 2; Ross et al., 2000). Examples of utilising VDT in rehabilitation have shown rapid recovery of indigenous vegetation cover and conservation of the habitat. There are numerous advantages to utilising direct transfer as a rehabilitation technique, such as: recycling of plant and soil materials; faster re-vegetative process; restoration of the whole ecosystem; and erosion control (Ross et al., 2000). Rehabilitation using this method allows for the retention of root stock, seed banks and soil micro-organisms (Rodgers et al., 2011).

The sandy soil profiles within the Development Envelope are ideally suited to the VDT rehabilitation method – the sandy soils are easy to handle, with little resistance to machinery and fewer problems with materials 'sticking' to machinery during handling, or rocky materials that cause additional fracturing and difficulty in handling.

The Proposed Action has a relatively small annual mining footprint and does not need to follow long strandlines (as does mineral sand mining). These attributes make it ideally suited to the VDT method – where the soil blocks being harvested need only be transported tens to hundreds of metres to the pre-prepared rehabilitation area.

The complete VDT process is shown in a video prepared by VRX and is accessible via the following link: https://www.vrxsilica.com.au/miningandrehabilitationmethodology/

The efficacy of VDT as a rehabilitation method, particularly for the rehabilitation of the resprouting, rhizomatous and tuberous species that dominate the heath communities of the Proposed Action area, are reported in a report on VDT Trials by Mattiske (2020, Att. 2).

VDT provides a rehabilitation surface that is far less susceptible to erosion by wind or water, having a stable cover layer transferred from the harvested area. The placement of sods will result in gaps which will disrupt surface water drainage and promote the collection of humus and seed. This significantly reduces the risk of rehabilitation failure due to sandblasting, erosion or poor establishment conditions.

The inability to direct transfer deep rooted or large rooted species can be offset by infill planting with seedlings, or direct seeding in the gaps between soil blocks in the rehabilitation areas. Many of these species are re-sprouters however, all species are easily grown from seed at a nursery and have also been successfully established in mine rehabilitation. Combining these species with the ability of VDT to ensure recalcitrant species are largely retained (along with the other advantages listed above), makes VDT a logical choice for rehabilitation method.

Mining

VRX will employ a dry mining method that uses front end loaders to extract the upper 2 – 3 m of the soil profile. A vertically exaggerated (20x) mine cross-section is provided in Att. 1, Fig 3.

Silica sand will be mined in 150m x 150m blocks in a linear pattern, as each block is mined, previously disturbed land will be rehabilitated using VDT. The complete mining sequence is illustrated in the video referenced earlier in this section, and

details of the mining sequence are provided below. The mining stages are shown in Att. 1, Fig 4 - Fig 7.

Mine Feed Plant

Mined sand is processed through a MFP (Att. 1, Fig 8) that lies within the mine area (i.e. separate to the Processing Plant). The MFP is comprised of a hopper, conveyor and trommel screen.

Slurry Pipeline and Site Access

The Proposed Action lies adjacent to the Eneabba / Geraldton Rail (Rail), site access is provided by an Access Corridor that runs parallel to the Rail and intersects Beekeepers Road. The Access Corridor is within a Miscellaneous Licence L70/203 (which overlies Unallocated Crown Land) granted under the Mining Act 1978.

Processing Plant

Mined sand is pumped as a slurry to the processing plant located adjacent to the Eneabba / Geraldton Railway (Att. 1, Fig 9). The sand is upgraded to a commercial grade using gravity and magnetic separation. A simplified sand processing flow chart is provided in (Att. 1, Fig 10). Upgraded sand is pumped to a dewatering screen for drying, and clean dry product is stockpiled adjacent to the Rail using a radial stacker conveyor in preparation for export.

Reject material (slimes) will report to a thickener tank with flocculant addition to create a single plant tail. The tails will be dried and then taken offsite for sale in the local market.

Train Load Out

The train load out will be located adjacent to the Processing Plant stockpile.

Power and Water Supply

Process water will be sourced from a groundwater bore that will target the Yarragadee aquifer with an abstraction rate of 0.9 GL per annum. Potable water will be required for personnel, which will be trucked to site.

The Proposed Action will have minimal energy requirements. A gas fired base load power station will be established at the processing plant site. VRX will explore options to develop a solar power farm nearby to provide supplementary power.

Supporting Infrastructure

To facilitate the Proposed Action, the following supporting infrastructure will be developed:

- Administration building;
- Power supply (including solar power farm);
- Potable water storage;
- Communications;
- Workshop; and
- Laydown.

1.3 What is the extent and location of your proposed action?

See Appendix B

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland)

The Proposed Action lies approximately 20 km north-west of Eneabba and 4 km west of the Brand Highway in the Geraldton Sandplain bioregion (Att. 1, Fig 1). It is located immediately adjacent to the existing rail line that connects Eneabba to the Port of Geraldton (Att. 1, Fig 11). The Proposed Action is located within tenements issued under the Mining Act 1978 (WA).

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?

The Proposed Action includes clearing of up to 333 ha of native vegetation, up to 30 ha will remain cleared for the life of the Proposed Action and 303 ha will be cleared for mining and progressively rehabilitated via VDT.

The disturbance is to occur entirely within a 1,569 ha Development Envelope, which is sized to enable flexibility to avoid any key environmental features that may be identified during field surveys. The Development Envelope, Indicative Disturbance Footprint and Indicative Infrastructure Layout of the Proposed Action is shown in Att. 1, Fig 11.

1.7 Proposed action location

Other - Mining Lease (M) 70/1392 and the Miscellaneous Licences: L70/203 and L70/202

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1.8 Primary jurisdiction	Western Australia	
1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?		
☐ Yes ☑ No		
1.10 Is the proposed action subject to local government planning approval?		
☐ Yes ☑ No		
1.11 Provide an estimated start and estimated end date for the proposed action	Start Date	01/01/2022
	End Date	01/01/2047

1.12 Provide details of the context, planning framework and state and/or local Government requirements

Environmental Protection Act 1986 (WA)

The Proposed Action is expected to require assessment under Part IV of the Environmental Protection Act 1986 (WA; EP Act). VRX submitted a referral under Section 38 of the EP Act to the Environmental Protection Authority (EPA) on 22 September 2021. VRX will be seeking that the EPA conduct an accredited assessment for this Proposed Action if the Department of Agriculture, Water and the Environment (DAWE) consider it to be a 'Controlled Action'.

Land Tenure

The Proposed Action is to be implemented on the following tenure:

- Extraction, processing, tailings disposal, transport corridor and water supply activities will be undertaken within tenure issued under the Mining Act 1978; and
- Intersection works (if required) will be undertaken within the Beekeepers Road corridor reserve, managed by Main Roads WA.

Other Decision-Making Authorities, Approvals and Regulation

Other key approvals and regulations that apply to the Proposed Action are detailed below:

- Mining Proposal and Mine Closure Plan is required under the Mining Act 1978 for all proposed activities on Mining Act 1978 tenure;
- Project Management Plan is required under the Mine Safety and Inspection Act 1994 for all proposed activities on Mining Act 1978 tenure;
- 26D Licence is required under the Rights in Water and Irrigation Act 1914 (WA) for the exploration for groundwater sources;
- 5C Licence is required under the Rights in Water and Irrigation Act 1914 (WA) for Groundwater abstraction;
- Works Approval and Licence is required under Part V EP Act (WA) for Silica sand processing;
- Section 18 approval may be required under the Aboriginal Heritage Act 1972 (WA) for the Disturbance of Aboriginal heritage sites (if recorded and cannot be avoided); and
- Dangerous Goods Licence may be required under the Dangerous Goods Safety Act 2004 (WA) for Fuel and/or chemical storage (if above prescribed volumes).

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders

The following stakeholders have been consulted to-date or will be consulted with regarding the Proposed Action:

Commonwealth Government

- DAWE – regarding submission of Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) Referral, potential accredited assessment by the WA Environmental Protection Authority (EPA), potential impacts on Matters of National environmental Significance (MNES);

State Government

- Department of Biodiversity, Conservation and Attractions (WA) (DBCA) – threatened and priority flora, ecological communities and fauna, offsets;
- Department of Jobs, Tourism, Science and Innovation (WA) (DJTSI);
- Department of Planning, Lands and Heritage (WA) (DPLH) – potential impacts to Aboriginal heritage sites and heritage surveys;
- Department of the Premier and Cabinet;

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- Department of Transport (WA) (DoT) – haulage of product on rail and shipping;
- Department of Mines, Industry Regulation and Safety (DMIRS; WA) – Mining Act 1978 tenure; investigations approvals, closure and rehabilitation;
- DWER (EPA Services, Industry Regulation and Water Licensing) – Part IV EP Act assessment process, accredited assessment by the EPA, water supply approvals, work approvals and licences under Part V of the EP Act;
- Mid-West Chamber of Commerce;
- Mid-West Development Commission;
- Minister for Regional Development; Agriculture and Food; Ports;
- Minister for the Environment; Disability Services; Electoral Affairs;

Other

- ARC Resources (Geraldton - Eneabba rail infrastructure);
- Australian and New Zealand Environment and Conservation Council;
- Australian Nature Conservation Society / Australian Wildlife Conservancy;
- Birdlife WA;
- Birds Australia;
- City of Greater Geraldton - Local Government Authority;
- Conservation Council of WA;
- Greening Australia;
- Member for the Agricultural Region;
- Midwest Ports Authority (MPA) – Export operations through Geraldton Port;
- MLA for Butler;
- MLA for Geraldton;
- MLA for Moore;
- Non-government organisations and community groups – impacts to species, habitats or areas of interest to organisations or groups.
- Shire of Carnamah – Local Government Authority;
- Shire of Irwin – Local Government Authority;
- Southern Yamatji People Native Title Group – Native Title rights and heritage agreements;
- Native Title Claimants and Working Groups - Project presentation including employment and contracting opportunities;
- State Treasurer and Minister for Aboriginal Affairs;
- Wildflower Society of WA;

Consultation is expected to be ongoing with most of the stakeholders identified throughout the construction, operational and closure phases of the Proposed Action.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project

The Proposed Action will require assessment under Part IV of the EP Act. VRX submitted a referral under Section 38 of the EP Act to DWER on 22 September 2021. VRX seeks that DWER conduct an accredited assessment for this Proposed Action if DAWE considers it to be a 'Controlled Action'.

The EPA's 'Potential Key Environmental Factors' that may require assessment under Part IV of the EP Act (WA) have been identified as: Flora and Vegetation, Terrestrial Fauna, Inland Waters and Social Surroundings. This is primarily due to the following:

Vegetation clearing resulting disturbance to 30 ha of native vegetation for the life of the Proposed Action and up to 303 ha will be disturbed and progressively rehabilitated by VDT;

Vehicle movements, resulting in fauna strike and the spread of weeds and dieback;

Alterations to surface water and groundwater regimes;

Dust, light or noise emissions from the Proposed Action; and

Restrictions to recreational or traditional uses of the area.

1.15 Is this action part of a staged development (or a component of a larger project)?

☑ Yes ☐ No

1.15.1 Provide information about the larger action and details of any interdependency between the stages/components and the larger action

The Proposed Action is to mine silica sand from a large silica sand deposit for an estimated 25 year period. This could be considered to be the first stage of a potentially larger project as the silica sand deposit at Arrowsmith Central is significant and as such mining could continue for a number of decades after the Proposed Action has been completed, depending on market conditions and environmental factors.

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The Proposed Action includes rehabilitation methods (VDT) that will be refined over the next 25 years and provide additional scientific evidence of the residual impacts of the larger project.

1.16 Is the proposed action related to other actions or proposals in the region?

☑ Yes ☐ No

1.16.1 Identify the nature/scope and location of the related action (Including under the relevant legislation)

The Proposed Action is one of VRX's three Silica sand projects. The closest project is Arrowsmith North (pending approval) which is located 20 km north of the Proposed Action. Both projects are independent of each other however, the Proposed Action will contribute to the volume of product exported at Geraldton Port.

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Section 2

Matters of national environmental significance

2.1 Is the proposed action likely to have any direct or indirect impact on the values of any World Heritage properties?

☐ Yes ☑ No

2.2 Is the proposed action likely to have any direct or indirect impact on the values of any National Heritage places?

☐ Yes ☑ No

2.3 Is the proposed action likely to have any direct or indirect impact on the ecological character of a Ramsar wetland?

☐ Yes ☑ No

2.4 Is the proposed action likely to have any direct or indirect impact on the members of any listed species or any threatened ecological community, or their habitat?

☑ Yes ☐ No

Species or threatened ecological community

Carnaby's Black-Cockatoo (Calyptorhynchus latirostris) - Endangered

Impact

Likelihood of Occurrence: Likely.

Potential impacts:

- Disturbance of up to 30 ha of medium to high value foraging habitat for the life of the Proposed Action
- Disturbance and progressive rehabilitation (using VDT and infill planting) of up to 303 ha of moderate to high value foraging habitat
- Mortality and injury of individuals from vehicle strike (unlikely)
- Breeding trees would be avoided if present (unlikely)
- Potential indirect impacts to habitat health

Significance of impacts:

Roosting and breeding habitat is not present within the Indicative Disturbance Footprint and therefore will not be impacted by the Proposed Action (BCE, 2021, Att.10, pg36, 39, 40).

The Proposed Action will result in 30 ha of long-term disturbance and 303 ha of progressive disturbance and rehabilitation across three different Vegetation Soil Associations including, which may be utilised by Carnaby's Black-Cockatoo. None of the VSAs are restricted to the Indicative Disturbance Footprint;

Given the conservation status of this species, the residual impacts of the Proposed Action may be significant and are proposed to be counterbalanced by offsets.

Species or threatened ecological community

Malleefowl (Leipoa ocellata) - Vulnerable

Impact

Likelihood of Occurrence: Irregular Visitor

Potential impacts:

- Disturbance of up to 30 ha of Malleefowl habitat for the life of the Proposed Action

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- Disturbance and progressive rehabilitation (using VDT and infill planting) of up to 303 ha of Malleefowl habitat
- Mortality and injury of individuals from vehicle strike (unlikely)
- Any new Malleefowl mounds would be avoided if possible, or disturbance will occur when not in use
- Potential indirect impacts to habitat health

Significance of impacts:
There is no indication that there is a resident, breeding population in the survey area, with no evidence of the species found during the site visits despite the tracks and mounds being distinctive (BCE, 2021, Att. 10, pg 34). Consultation with Indigenous groups local to the area during heritage surveys indicated that their generation had not identified any Malleefowl in the Project area. No sign of Malleefowl or their mounds were recorded during any surveys within the Development Envelope (flora and vegetation, fauna, aboriginal heritage). Malleefowl may be present but likely only as an irregular visitor (BCE, 2021, Att. 10, pg 34).

At a local scale, the Proposal will result in 30 ha of long-term disturbance and 303 ha of progressive disturbance and rehabilitation across three different vegetated VSAs, all of which may be utilised by Malleefowl.

There will be unavoidable impacts to Malleefowl habitat health within rehabilitated VDT areas, however the health of these areas are predicted to improve close to background over time. There may also be some changes to habitat structure as a result of improved access to groundwater, with deeper rooted species predicted to be able to become established in greater numbers.

Species or threatened ecological community

Endangered:
Conostylis dielsii subsp. teres
Conostylis micrantha
Hemiandra gardneri
Paracaleana dixonii
Tetratheca nephelioides

Impact

Likelihood of occurrence: Moderate
None of these species have been recorded within the Indicative Disturbance Footprint to-date.
Mattiske (Mattiske, 2021, Att. 3, Pg 33 and Appendix C) assessed known soil type, topography and distribution to determine the likelihood of Threatened species occurring in the Study Area. This assessment showed that these five species had a moderate likelihood of occurring within the Indicative Disturbance Footprint.

Potential impacts:
- Clearing of up to 30 ha of potential habitat for the life of the Proposed Action
- Up to 303 ha of potential habitat translocation via VDT
- Indirect impacts to habitat health

Threatened Flora records will be avoided by the Proposed Action wherever practicable (any new records should be able to be avoided given the flexibility provided by the larger Development Envelope).

Significance of impacts:
The Proposed Action is not predicted to result in significant impacts to any regional vegetation associations or local vegetation communities.
VRX is proposing to conduct targeted significant flora surveys, and if Threatened Flora are recorded during these surveys VRX will avoid these individuals wherever practicable (noting the Disturbance Envelope allows for significant flexibility in mining and infrastructure locations). If individuals cannot be avoided then VRX will monitor the success of the VDT translocation, and infill planting will be conducted if required to target a similar number of individuals in the rehabilitation areas.

2.4.2 Do you consider this impact to be significant?

☑ Yes ☐ No

2.5 Is the proposed action likely to have any direct or indirect impact on the members of any listed migratory species or their habitat?

☑ Yes ☐ No

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Migratory species

Fork-Tailed Swift (Apus pacificus) - Migratory

Impact

Likelihood of occurrence: Possible.

The Fork-Tailed Swift is an aerial, non-breeding migrant in Australia and while it ranges widely, it exists largely independently of terrestrial ecosystems. It may occasionally fly over the Development Envelope during the summer months (BCE, 2021, Att. 10, Pg 34).

Potential impacts: Indirect impacts to behaviour (dust, noise and light).

Significance of impacts: the extent of disturbances for the Proposed Action is unlikely to be significant given the Indicative Disturbance Footprint of the Proposed Action is relatively small and the species does not specifically utilise the Indicative Disturbance Footprint for feeding or breeding.

2.5.2 Do you consider this impact to be significant?

☐ Yes ☑ No

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

☐ Yes ☑ No

2.7 Is the proposed action likely to be taken on or near Commonwealth land?

☐ Yes ☑ No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

☐ Yes ☑ No

2.9 Is the proposed action likely to have any direct or indirect impact on a water resource from coal seam gas or large coal mining development?

☐ Yes ☑ No

2.10 Is the proposed action a nuclear action?

☐ Yes ☑ No

2.11 Is the proposed action to be taken by a Commonwealth agency?

☐ Yes ☑ No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage place overseas?

☐ Yes ☑ No

2.13 Is the proposed action likely to have any direct or indirect impact on any part of the environment in the Commonwealth marine area?

☐ Yes ☑ No

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Section 3

Description of the project area

3.1 Describe the flora and fauna relevant to the project area

Flora

Mattiske (2021) carried out an environmental desktop assessment of the VRX Arrowsmith tenements and a field survey of the Development Envelope within tenements M70/1392, L70/202 and L70/203 (Att.1, Fig 12).

General Flora

The desktop study outlined a total of 230 vascular plant taxa consisting of 104 genera and 46 families that have the potential to occur within the Arrowsmith Central survey area.

Threatened Flora

Thirteen Threatened Flora species listed under the EPBC Act were identified as potentially occurring within the broader VRX Arrowsmith tenements. An assessment of the likelihood of recording any of the listed threatened taxa was conducted (Mattiske, 2021, Att. 3, Pg 13). No Threatened Flora species had a high likelihood of occurring. The following five endangered species were identified as having a moderate likelihood of occurrence (Mattiske, 2021, Att. 3, Pg 33 and Appendix C):

Irwin's Conostylis (Conostylis dielsii subsp. teres);
Red Snakebush (Hemiandra gardneri);
Sandplain Duck Orchid (Paracaleana dixonii);
Small-flowered Conostylis (Conostylis micrantha); and
Tetratheca nephelioides.

Eight species were identified as having a low likelihood of occurrence. The location of Threatened Flora species identified in the area during the desktop survey is shown in (Att. 1, Fig 13; Figure 13).

Introduced Flora

Five introduced weed species were identified in the Study Area, two were listed as having a high ecological impact and two were listed as having a low ecological impact. The remaining species were listed as having an unknown ecological impact (DPaW, 2013). None of the identified weed species were listed as Weeds of National Significance (Mattiske, 2021, Att. 3, Pg 25).

Fauna

BCE (2021) was engaged to conduct a Basic (Level 1) fauna survey of the Development Envelope boundary, which intersects with the Indicative Disturbance Footprint proposed in this EPBC Referral.

Fauna Habitat

VSAs are the environments that provide habitats for fauna. Three VSAs were identified in the Study Area during the field survey; and include:

VSA 1 - Kwongan Heath;
VSA 2 - Dense Riparian Thickets; and
VSA 3 - Drainage Line.

General Fauna

The BCE (2021) desktop assessment drew on previous field surveys, NatureMap species records and reports predating NatureMap. The assessment identified a total of 204 vertebrate fauna species having the potential to occur in the Study Area. The fauna assemblage consists of three fish, 10 frogs, 50 reptiles, 121 birds and 23 mammals.

Short Range Endemic Invertebrates

Bennelongia (2021, Att. 5) performed a desktop assessment of the Development Envelope and surrounds to determine the potential Short Range Endemic (SRE) invertebrates present. Bennelongia (2021) recognised 25 species from SRE Groups recorded within the search area that have known or potential ranges of <10,000 km^2. These species included modern and trapdoor spiders, pseudoscorpions, scorpions, centipedes, millipedes, and slaters. None of the species had sufficient taxonomic certainty and representation in collections to categorise as confirmed SREs. However, based on available information regarding habitat specialisation, biology and ecology of the species or their close relatives, 14 of the species are considered likely potential SREs (Bennelongia 2021, Att. 5, pg 13). No threatened species listed under the EPBC Act were identified in the desktop survey search area.

EPBC Listed Fauna

The potential fauna assemblage of the survey areas includes four species that are listed under the EPBC Act; these species are detailed below (BCE, 2021).

Carnaby's Black-Cockatoo (Calyptorhynchus latirostris; Endangered) - Regular migrant

Carnaby's Black-Cockatoo may forage on proteaceous and myrtaceous vegetation in the survey areas and roost in large trees near water courses. Foraging by Carnaby's Black-Cockatoos have been confirmed adjacent to the survey areas approximately 2.5 km North of the Proposed Action (BCE, 2021).

Malleefowl (Leipoa ocellata; Vulnerable) - Irregular visitor

Malleefowl have occasionally been recorded in the general area and the WA Museum has reported breeding in the general region (evidenced by mounds) but details are not available. There is no indication that there is a resident, breeding population in the survey areas, with no evidence of the species found during the site visits despite the tracks and mounds being distinctive. It may be present but likely only as an irregular visitor. Its general decline is due to habitat clearing and fragmentation as well as predation by introduced species (specifically Cats and Foxes; BCE, 2021).

Fork-Tailed Swift (Apus pacificus; Marine Migratory) - Regular migrant

This species is an aerial, non-breeding migrant in Australia and while it ranges widely, it exists largely independently of terrestrial ecosystems. It may occasionally fly over the survey areas during the summer months (BCE, 2021).

3.2 Describe the hydrology relevant to the project area (including water flows)

Groundwater

The information contained within this section has been sourced from HydroConcept (2019, Att. 8) unless otherwise stated. HydroConcept conducted the hydrological feasibility assessment on the Proposed Action tenement boundaries and surrounds as illustrated in (Att. 1, Fig 14; Figure 14).

The Proposed Action lies entirely within the Eneabba Plains subarea of the Arrowsmith Groundwater Area defined by DWER in the Arrowsmith Groundwater Allocation Plan (Department of Water; DoW, 2010). There are two aquifers are present beneath the Proposed Action, one within the relatively thin Superficial Formations, which are underlain by a major regional aquifer within the Yarragadee Formation (HydroConcept, 2019, Att. 8, Pg 2).

Superficial Geology and Aquifer

The water table within the Superficial aquifer (Att. 1, Fig 15) falls from around 50 - 60 m AHD about the eastern margin of the coastal plain to sea-level at the coast. The watertable under the Proposed Action ranges from 10 - 20 m AHD, or >15 m below current ground level. Near the inland margin of the coastal plain, the water table is typically within the Mesozoic formation (Yarragadee Formation) underlying the Superficial Formations, the Superficial aquifer is unsaturated (HydroConcept, 2019, Att. 8, Pg 5).

The saturated thickness of the Superficial aquifer is shown by the interpretive isopach (Att. 1, Fig 16). The inland margin of the Superficial aquifer is unsaturated. Below the Development Envelope, the saturated thickness is mostly 10 - 20 m, with a saturated profile in the nearby monitoring bores of 26.3 m and 12.3 m at LS19 and LS20 while being unsaturated in LS24.

Groundwater salinity within the Superficial aquifer is generally fresh at less than 1,000 mg/L TDS about its eastern margin, increasing toward the coast where it becomes saline. Beneath the Development Envelope, the groundwater salinity is approximately 1,000 - 1,200 mg/L TDS (HydroConcept, 2019, Att. 8, Pg 5).

Yarragadee Geology and Aquifer

Beneath the Superficial Formations, the Proposed Action is underlain by the Yarragadee Formation, which is Middle to Late Jurassic in age. Numerous deep wells have been drilled as part of petroleum exploration and development in the Arrowsmith area, which has provided geological mapping.

The Yarragadee Formation is a major, regionally extensive formation within the Perth Basin that can exceed 3,600 m thick. It consists of predominantly weakly to moderately cemented sandstone, with interbedded siltstone, shale and claystone (DoW, 2017). The Yarragadee Formation is conformably underlain by the Cadda Formation, comprising sandstone, siltstone and claystone. The Proposed Action is located south of the Abrolhos Transfer Fault and has a thin interval of the Yarragadee Formation present, which is projected to thicken beneath the Proposed Action from around 400 m in the western portion to 800 m in the east (HydroConcept, 2019, Att. 8, Pg 11).

The Yarragadee Formation contains the Yarragadee aquifer which is the largest regional aquifer within the northern and central Perth Basin, forming a thick, permeable aquifer.

Groundwater Licences

There are two active groundwater licences under the Rights in Water and Irrigation Act 1914 (WA) that are within close proximity to the Proposed Action, these groundwater licences are held by:

Beach Energy (Operations) Limited (0.0206 GL/year)

Northwest Energy NL (0.001 GL/Year)

Surface Water

The information contained within this section has been sourced from RPS (2021; Att. 9) unless otherwise stated. The RPS (2021) desktop surface water assessment was conducted on the Development Envelope and surrounds as defined in (Att. 1, Fig 17).

Catchment Characteristics

At a regional scale, surface water drains west and to the sea, notably in a dryland Arrowsmith River (North of the Proposed

Action), and into Arrowsmith Lake (Att. 1, Fig 17). The Development Envelope consists of a low, slightly undulating sandplain landscape that slopes down to the southwest. The Development Envelope avoids existing infrastructure, trees, drainage lines and potential conservation areas. The land elevations vary from about 50 - 65 m RL (RPS, 2021, Att. 9, Pg 4).

Key Surface Water Features

The Arrowsmith River traverses the landscape westward from the small town of Arrino for approximately 85 km then heads north for 10 km before terminating in Arrowsmith Lake. Arrowsmith Lake is a permanent pool approximately 14 km northwest of the Development Envelope. It is 850 m long and approximately 30 ha in size. Arrowsmith Lake is one of the few permanent water bodies in the wider area, but has no recreational use. A smaller water course runs south down the west side of the site to Arro Lake, 2km west of the plant site and is topographically several meters lower than the proposed mining site. The location of Arrowsmith River, the smaller watercourse and Arro Lake are shown in Att. 1, Fig 17 (RPS, 2021, Att. 9, pg4

3.3 Describe the soil and vegetation characteristics relevant to the project area

Soil

The underlying geology of the area is predominantly Permian to Cretaceous sedimentary basins, with horsts of Proterozoic rocks. The area is characterised by undulating lateritic sandplains with leached sandy soils over laterite in coastal areas; earthy, yellow sands over laterite further inland; and hard-setting loams with red clay subsoils (Mattiske, 2021, Att. 3, Pg 12).

The Development Envelope is comprised of two land systems defined by the Department of Primary Industries and Regional Development (DPIRD), predominately the Correy Land System with a small portion Eneabba Plain Land System.

The Correy System (221Cy) is described as a broad sandy alluvial fan of the lower Arrowsmith River. Pale deep sands predominate, with grey shallow sandy duplexes, moderately deep sandy gravels and yellow deep sands less common. Banksia woodlands and heathlands. The Eneabba Plain System (221En) is described as a level to gently undulating sandplain to the north-west and south-west of Eneabba. It is comprised of pale deep sands, grey shallow to deep sandy duplexes, moderately deep sandy gravels and yellow deep sands. Banksia woodlands and heathlands (Mattiske, 2021, Att. 3, Pg 12).

Vegetation

Beard (1990) described the vegetation of the Irwin Botanical District as coastal scrub heath on sandplains, with Acacia and Allocasuarina thickets further inland, and hard-setting loams with Acacia scrub and scattered Eucalyptus loxophleba.

The Pre-European vegetation systems present within the survey area include:

1. Eridoon System: flat coastal plain with various small rivers and creeks with numerous small lakes and swamps and some limited alluvial flats of heavier soil on the lower Arrowsmith River. Vegetation consists of scattered small trees with an open layer of tall shrubs over a closed layer of small heath-like shrubs, which experiences frequent fires.

a. Vegetation Association 378: Shrublands; scrub-heath with scattered Banksia spp., Eucalyptus todtiana and Xylomelum angustifolium on deep sandy flats in the Geraldton Sandplain Region – Beard (1976) code x5SZc

The Indicative Disturbance Footprint falls within the Geraldton Sandplain 3 (GS3 – Lesueur Sandplain) subregion as defined by the Interim Biogeographical Regionalisation for Australia (IBRA) (DotEE, 2019). The GS3 – Lesueur Sandplain subregion is described as having high floristic diversity and levels of endemism, with vegetation composed mainly of proteaceous scrub-heaths (Desmond and Chant 2001). Extensive York Gum (Eucalyptus loxophleba) and Jam woodlands occur on outwash plains associated with drainage (Desmond and Chant 2001; Mattiske, 2021, Att. 3, pg 13).

Vegetation Communities

Mattiske (2021, Att. 3, pg 27) recorded the following seven vegetation types in the Development Envelope, none of which matched Threatened Ecological Communities (TECs) listed under the EPBC Act:

- H3: Open heath of Melaleuca leuropoma, Leptospermum oligandrum and Hakea polyanthema, Conospermum triplinervium, Beaufortia elegans and Pileanthus filifolius, with isolated trees of Banksia attenuata and Xylomelum angustifolium over Mesomelaena pseudostygia and Ecdeiocolea monostachya.
- H6: Heathland of Banksia attenuata, Hakea polyanthema and Melaleuca leuropoma, over isolated Verticordia grandis and Styphelia xerophylla on white to grey sand.
- S1: Isolated trees of Eucalyptus todtiana, over shrubland of Banksia leptophylla var. melletica, Acacia blakelyi over mixed understorey of Proteaceae and Myrtaceae species on grey/white sand plains;
- S4: Open shrubland of Calothamnus quadrifidus subsp. angustifolius, Melaleuca lateritia, Melaleuca rhaphiophylla and Melaleuca concreta over isolated Patersonia occidentalis and Conostylis candicans subsp. procumbens on grey/white sands.
- S5: Open shrubland of Calytrix chrysantha, Banksia leptophylla var. melletica and Eremaea beaufortioides var. beaufortioides, over Jacksonia hakeoides and Banksia nivea on white/grey sand.
- T2: Thicket to scrub of Allocasuarina campestris, Melaleuca concreta, Guichenotia macrantha and Calothamnus quadrifidus subsp. angustifolius, over sparse Leptosema aphyllum on white sand over grey to brown clay/loam.

- W1: Woodland of Xylomelum angustifolium and Eucalyptus todtiana, over open shrubland of Melaleuca leuropoma and Hakea polyanthema over isolated Mesomelaena pseudostygia on cream sand plains.

Threatened Ecological Communities

There are no TECs listed under the EPBC Act that potentially occur in the Development Envelope (Mattiske, 2021, Att. 3, Pg 17).

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area

The Development Envelope is composed of coastal scrub heath on sandplains, with Acacia thickets which are consistent with the surrounding terrestrial habitats. A drainage line is present, running east to west crossing the Access Route to the south. The Development Envelope consists of a low, slightly undulating sandplain landscape. There are no significant features within the Development Envelope. The closest significant features are the Arrowsmith River, a registered Aboriginal Site (30068) (DPLH, 2020) to the north and Arro Lake which lies to the south west of the Development Envelope.

3.5 Describe the status of native vegetation relevant to the project area

The desktop assessment by Mattiske (2021) identifies a single vegetation association (Vegetation Association 378; Erindoon) within the Development Envelope. The Pre-European extent of Vegetation Association 378 is 93,523.98 ha and the extent remaining is 60,826.66 ha (65.03%).

3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area

The Proposed Action is situated upon the Swan Coastal Plain which is up to 30 km wide. At a regional scale the landscape slopes from the east, towards the ocean in the west.

The Development Envelope is comprised predominately of the Correy System (221Cy) outlined in the DPIRD Land Systems as a broad sandy alluvial fan of the lower Arrowsmith River. The terrain at Arrowsmith Central is relatively flat and exhibits a moderate slope from the Tamala Limestone outcrops in the west to the eastern edge of the tenement. There are no significant topographical features present within the Development Envelope.

Land elevations over the Development Envelope vary from about 50 - 65 m RL. The Indicative Disturbance Footprint avoids existing infrastructure, trees, drainage lines and potential conservation areas.

3.7 Describe the current condition of the environment relevant to the project area

The condition of the vegetation within the Survey Area ranged from Pristine to Very Good, with the majority of the area considered Pristine according to the Keighery (1994) scale. The vegetation condition of the survey area is summarised below.

- Pristine (1,458.97 ha, 92.95%)
- Excellent (102.68 ha, 6.54%)
- Very Good (8.04 ha, 0.51%)

3.8 Describe any Commonwealth Heritage places or other places recognised as having heritage values relevant to the project

There are no Commonwealth Heritage Places or other places recognised as having heritage values relevant to the Development Envelope.

3.9 Describe any Indigenous heritage values relevant to the project area

Ethnographic surveys have been completed on all exploration lines within the Development Envelope (YMAC, 2018 and 2020; Att. 6 and 7), which identified the Arrowsmith River as a significant site. The Arrowsmith River is a Registered Aboriginal Heritage Site (30068) (DPLH, 2020) that traverses the landscape from east to west approximately 2 km north of the Development Envelope. No other heritage features have been identified in the Development Envelope to-date.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area

The current land use within the Indicative Disturbance Footprint is underlying Unallocated Crown Land, Mining Act 1978 Leases and Licences.

3.11 Describe any existing or any proposed uses relevant to the project area

The dominant land use within the Lesueur Sandplain subregion is dry-land agriculture (69.34%), with lesser areas of conservation and Unallocated Crown Land and crown reserves (Desmond & Chant, 2001).

The Indicative Disturbance Footprint is located on Unallocated Crown Land and is currently native vegetation.

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

No conservation reserves or other Environmentally Sensitive Areas, as defined under section 51B of the EP Act are located within the Development Envelope. The closest conservation reserves are the Beekeepers Nature Reserve (R24496) located approximately 5 km to the west and Yardanogo Nature Reserve (R 36203) and Nature Reserve (R 47436) are located 20 km and 10 km to the north respectively. The Lake Logue Nature Reserve (R29073) and nature reserves R39744 and R25495 are located south of the Proposed Action. These Nature Reserves are managed by DBCA for the conservation of flora and fauna.

The Development Envelope does not overlap any listed or proposed wetlands of national or international importance.

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Section 4

Measures to avoid or reduce impacts

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action

Alternative Locations and Designs Considered

During the initial planning phase of the Proposed Action VRX identified that environmental factors should have a significant influence on the design and location of the mine layout and infrastructure. Several baseline environmental surveys have been conducted, which have enabled VRX to incorporate avoidance and mitigation measures into the design of the Proposed Action. The key changes made to the Proposed Action are:

- Relocation of the Development Envelope to exclude unique vegetation associations that contain priority flora and vegetation that provide suitable Carnaby's Black Cockatoo breeding and roosting habitat;
- The VDT method has been refined and a rehabilitation strategy has been developed to mitigate the loss of vegetation during the mining process; and
- The development of the Proposed Action has been prioritised over other VRX resources as it poses a lower risk to key environmental factors and MNES. The Proposed Action will provide valuable information about silica sand mining and a proof of concept for the VDT rehabilitation method.

Mitigation

VRX has mitigated the potential impacts to MNES using the mitigation hierarchy; avoid, minimise, rehabilitate and offset.

Avoid

The key avoidance mechanism implemented by VRX will be the design of the Indicative Disturbance Footprint to avoid key environmental features (for example, avoiding areas with trees suitable for Carnaby's Black-Cockatoo roosting or breeding). VRX conducted numerous ecological surveys of the areas within and surrounding the Development Envelope, and have utilised this information to conduct multiple mine planning and access road design revisions. This avoidance process resulted in the final boundaries of the Development Envelope and Indicative Disturbance Footprint presented in this EPBC referral.

Minimise

The following mitigation measures are proposed to ensure that direct and indirect impacts to terrestrial fauna are minimised:

1. Implement industry best practice management measures for MNES and relevant habitat;
2. Obtain and comply with WA legislation approvals;
3. Conduct additional targeted Threatened Flora searches of final proposed mine and infrastructure layout;
4. Develop and implement a Rehabilitation Strategy;
5. Prepare and implement a Fauna Habitat Management Plan (FHMP);
6. Conduct pre-clearance surveys for active Malleefowl mounds;
7. Implement measures to minimise the risk and impact of hydrocarbon spills; and
8. Comply with Water Quality Protection Guidelines and guidance notes.

Rehabilitate

Progressive rehabilitation via VDT and targeted infill planting will occur during the mining process and will be described in the Rehabilitation Strategy. The Rehabilitation Strategy will be developed in consideration of DMIRS Guidelines (2020a and 2020b) and will describe the rehabilitation process for the Proposed Action, and the associated management and monitoring proposed during the progressive and final rehabilitation phase including completion criteria, monitoring and reporting during closure.

At the completion of the Proposed Action the site will be further rehabilitated to reinstate fauna habitat within areas that were disturbed for the life of the Proposed Action. A MCP will be required under the Mining Act 1978 and the key rehabilitation measures that relate to flora and vegetation.

The MCP will be submitted to DMIRS for assessment and approval prior to the construction of the Proposed Action and will be reviewed and revised at least every three years.

Offsets

After the implementation of the mitigation measures described above, the Proposed Action is predicted to have a residual impact on moderate to high value Carnaby's Black-

Cockatoo foraging habitat.

An Offset Strategy is to be developed and approved by DAWE prior to implementation of the Proposed Action. As the Proposed Action impacts to moderate to high value Carnaby's Black Cockatoo foraging habitat will occur progressively, the Offset Strategy is likely to be developed in stages.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Proposed outcomes that are able to be confirmed at this early stage include:

Fauna:

- Minimise mortality and disturbance to fauna by reducing traffic during night works, attenuating noise and supressing dust where practicable;
- Minimise disturbance to habitats utilised by Threatened Fauna; and
- Maintain surface water corridors on main surface water creeks.

Flora:

- Avoid any records of Threatened Flora if practicable (to be defined after the targeted survey stage);
- Maintain species richness, diversity and condition throughout the mining operation via ongoing, direct translocation of topsoil and vegetation;
- Mitigate habitat loss through selective, low impact clearing and the management of fire risks;
- Minimise the spread of dieback and the introduction of weed species through good hygiene practices; and
- Maintain the structure of habitats through land forming prior to rehabilitation.

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Section 5

Conclusion on the likelihood of significant impacts

5.1 You indicated the below ticked items to be of significant impact and therefore you consider the action to be a controlled action

- ☐ World Heritage properties
- ☐ National Heritage places
- ☐ Wetlands of international importance (declared Ramsar wetlands)
- ☑ Listed threatened species or any threatened ecological community
- ☐ Listed migratory species
- ☐ Marine environment outside Commonwealth marine areas
- ☐ Protection of the environment from actions involving Commonwealth land
- ☐ Great Barrier Reef Marine Park
- ☐ A water resource, in relation to coal seam gas development and large coal mining development
- ☐ Protection of the environment from nuclear actions
- ☐ Protection of the environment from Commonwealth actions
- ☐ Commonwealth Heritage places overseas
- ☐ Commonwealth marine areas

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action

Not Applicable

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Section 6

Environmental record of the person proposing to take the action

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Explain in further detail

VRX does not have any active projects and therefore does not have an environmental record. All exploration activities have been in compliance with relevant WA legislation.

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application

VRX has not past or present proceedings under Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework?

☑ Yes ☐ No

6.3.1 If the person taking the action is a corporation, provide details of the corporation's environmental policy and planning framework

An Environmental Policy and Environmental Management System (EMS) will be developed by VRX prior to the commencement of construction of the Proposed Action. The EMS will be developed to be consistent with the principles of the ISO 14001 requirements.

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

☑ Yes ☐ No

6.4.1 EPBC Act No and/or Name of Proposal

Directors of VRX Silica Limited were involved in the referral of the Tiwi Islands, Andranangoo Creek & Lethbridge Bay Mineral Sand Project (EPBC referral number: 2005/2155).

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Section 7

Information sources

Reference source

Beard, J. S. (1976). Vegetation survey of Western Australia: The vegetation of the Dongara area, 1:250,000 series, map and explanatory memoir, Vegmap Publications, Perth, WA.

Reliability

High

Uncertainties

None

Reference source

Beard, J. S. (1990). Plant life of Western Australia, Kangaroo Press, Kenthurst, NSW.

Reliability

High

Uncertainties

None

Reference source

Department of Mines, Industry Regulation and Safety (2020a). Mining Proposal Guidance - How to prepare in accordance with Part 1 of the Statutory Guidelines for Mining Proposals. Perth, Western Australia.

Reliability

High

Uncertainties

None

Reference source

Department of Mines, Industry Regulation and Safety (2020b). Mine Closure Plan Guidance - How to prepare in accordance with Part 1 of the Statutory Guidelines for Mine Closure Plans. Perth, Western Australia.

Reliability

High

Uncertainties

None

Reference source

Department of Parks and Wildlife (2013). An integrated approach to weed management on DPaW-managed lands in WA, Government of Western Australia. https://www.dpaw.wa.gov.au/plants-and-animals/plants/weeds/156-how-does-dpaw-manage-weeds. (Accessed 14 February 2019).

Reliability

High

Uncertainties

None

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Reference source

Department of Planning Lands and Heritage (2020). Aboriginal Heritage Inquiry System. Accessed from: https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS

Reliability

High

Uncertainties

None

Reference source

Department of the Environment and Energy (2019). EPBC Protected Matters Search Tool. https://www.environment.gov.au/epbc/protected-matters-search-tool (Accessed January 2019).

Reliability

High

Uncertainties

None

Reference source

Department of Water (2010). Arrowsmith Groundwater Allocation Plan. Water resource allocation planning series report no 28. August 2010. Perth, Western Australia.

Reliability

High

Uncertainties

None

Reference source

Department of Water (2017). Northern Perth Basin: Geology, hydrogeology and groundwater resources. Department of Water, Hydrogeological Bulletin Series, Report No. HB1, Perth, Western Australia.

Reliability

High

Uncertainties

None

Reference source

Desmond, A. and Chant, A. 2001, 'Geraldton Sandplain 3 (GS3 – Lesueur Sandplain subregion)' in A biodiversity audit of Western Australia's 53 biogeographical subregions in 2002, eds. JE May and NL McKenzie, Department of Conservation and Land Management, Western Australia, pp. 293 – 313.

Reliability

High

Uncertainties

None

Reference source

Keighery, B.J. (1994). Bushland plant survey: a guide to plant community survey for the community. Wildflower Society of WA (Inc.), Western Australia.

Reliability

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

High

Uncertainties

None

Reference source

Rodgers, D., Bartlett A. R., Simcock B. R., Wratten, S. and Boyer, S. (2011). Benefits of Vegetation Direct Transfer as an Innovative Mine Rehabilitation Tool. Australian Mine Restoration Conference.

Reliability

High

Uncertainties

None

Reference source

Ross, C., Simcock, R., Williams, P., Toft, R., Flynn, S., Birchfield, R and Comeskey, P. (2000). Salvage and direct transfer for accelerating restoration of native ecosystems on mine sites in New Zealand. New Zealand Minerals and Mining Conference Proceedings 29 – 31, October 2000

Reliability

High

Uncertainties

None

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Section 8

Proposed alternatives

Do you have any feasible alternatives to taking the proposed action?

Yes ☑ No

Australian Government
Department of Agriculture, Water and the Environment

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Section 9

Person proposing the action

9.1.1 Is the person proposing the action an organisation or business?

☑ Yes ☐ No

Organisation

Organisation name (as registered for ABN/ACN)	VRX SILICA LIMITED
Business name	
ABN	59142014873
ACN	
Business address	Level 1, 6 Thelma Street, West Perth, 6005, Western Australia, Australia
Postal address	
Main Phone number	+61 8 9226 3764
Fax	
Primary email address	info@vrxsilica.com.au
Secondary email address	

9.1.2 I qualify for exemption from fees under Regulation 5.23(1)(ii) of the EPBC Regulations because I am:

☑ Small business
☐ Not applicable

9.1.2.1 You must provide the date/income year that you became a small business entity:

01/07/2016

9.1.2.2 I would like to apply for a waiver of full or partial fees under Regulation 5.21A of the EPBC Regulations

☐ Yes ☑ No

9.1.3 Contact (for an organisation - the contact details of the person authorised to sign on behalf of the organisation)

First name	Bruce
Last name	Maluish
Job title	Managing Director
Phone	+61892263764
Mobile	0418 940 417
Fax	
Email	brucem@vrxsilica.com.au
Primary address	Level 1, 6 Thelma Street, West Perth, 6005, Western Australia, Australia
Address	

Declaration: Person proposing the action (To be signed by the person at 9.1.3)

I, BRUCE MALUISH **, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity.**

Signature: .....  **..... Date: .....** 14/10/2021

I, BRUCE MALUISH **, the person proposing the action, consent to the designation of** VRX SILICA LIMITED **as the proponent for the purposes of the action described in this EPBC Act Referral.**

Signature:....  **.....Date: .....** 14/10/2021

I have read the Department of the Environment and Energy's guidance in the online form concerning the definition of a small business entity and confirm that I qualify for a small business exemption.

Signature:.....  **.....Date: .....** 14/10/2021

Australian Government
Department of Agriculture, Water and the Environment

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Proposed designated proponent

9.2.1 Is the proposed designated proponent an organisation or business?

☑ Yes ☐ No

Organisation

Organisation name (as registered for ABN/ACN)	VRX SILICA LIMITED
Business name	
ABN	59142014873
ACN	
Business address	Level 1, 6 Thelma Street, West Perth, 6005, Western Australia, Australia
Postal address	
Main Phone number	+61 8 9226 3764
Fax	
Primary email address	info@vrxsilica.com.au
Secondary email address	

9.2.2 Contact (for an organisation - the contact details of the person authorised to sign on behalf of the organisation)

First name	Bruce
Last name	Maluish
Job title	Managing Director
Phone	+61892263764
Mobile	0418 940 417
Fax	
Email	brucem@vrxsilica.com.au
Primary address	Level 1, 6 Thelma Street, West Perth, 61005, Western Australia, Australia
Address	

Declaration: Proposed Designated Proponent

I, BRUCE MALUISH ON BEHALF OF VRX SILICA LIMITED **,the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.**

Signature: ..... Date: 14/10/2021

Australian Government
Department of Agriculture, Water and the Environment

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Referring party (person preparing the information)

9.3.1 Is the referring party an organisation or a business?

☑ Yes ☐ No

Organisation

Organisation name (as registered for ABN/ACN)	VRX SILICA LIMITED
Business name	
ABN	59142014873
ACN	
Business address	Level 1, 6 Thelma Street, West Perth, 6005, WA, Australia
Postal address	
Main Phone number	+61 8 9226 3764
Fax	
Primary email address	info@vrxsilica.com.au
Secondary email address	

9.3.2 Contact (for an organisation - the contact details of the person authorised to sign on behalf of the organisation)

First name	Bruce
Last name	Maluish
Job title	Managing Director
Phone	0892263764
Mobile	0418 940 417
Fax	
Email	brucem@vrxsilica.com.au
Primary address	Level 1, 6 Thelma Street, West Perth, 6005, Western Australia, Australia
Address	

Declaration: Referring party (person preparing the information)

I, BRUCE MALUISH **, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.**

Signature: ..... Date: 14/10/2021 .....

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Appendix A

Attachment

Document Type	File Name
action_area_images	F3 - Development Envelope and Indicative disturbance area.pdf
public_consultation_reports	Stakeholder engagement register.pdf
supporting_tech_reports	A1 - Figures.pdf
supporting_tech_reports	A2 - Review of VDT Trials and Roots Studies - Mattiske 2020.pdf
supporting_tech_reports	A3 - Flora and Vegetation Assessment - Mattiske 2021.pdf
supporting_tech_reports	A4 - Phytophthora Dieback Occurrence Assessment - Glevan 2021.pdf
supporting_tech_reports	A5 - SRE Invertebrate Desktop Assessment - Bennelongia 2021.pdf
supporting_tech_reports	A6 - Archaeological and ethnographic heritage survey - YMAC 2018.pdf
supporting_tech_reports	A7 - Archaeological and ethnographic heritage survey - YMAC 2020.pdf
supporting_tech_reports	A8 - Hydrogeological Feasibility Assessment - HydroConcept 2019.pdf
supporting_tech_reports	A9 - Arrowsmith Central Surface Water Assessment - RPS 2021.pdf
supporting_tech_reports	*A10 - Fauna assessment - BCE 2021 DRAFT not for publishing.pdf

*NOT PUBLISHED

Appendix B

Coordinates

Area 1
-29.706024214999,115.201056456
-29.708250789999,115.203041491
-29.708252829999,115.201995639
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Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Area 2
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-29.672192120999,115.174349207
-29.674074341999,115.171541486
-29.670890170999,115.168720739
Area 3
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-29.676613019999,115.17381111
-29.674076182999,115.17154326
-29.673934608999,115.171762604
-29.676487850999,115.174035866
Area 4
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-29.669064696999,115.171453354
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-29.708009501999,115.202476531
-29.708034991999,115.202130217
-29.673934001999,115.171763413
-29.672192350999,115.174353083
Area 5
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-29.659439683999,115.186383571
-29.671893481999,115.197555143
-29.680563611999,115.182400049
-29.668916003999,115.171670012
Area 6
-29.668586794999,115.166943513
-29.670755090999,115.168917334
-29.670886481999,115.168718726
-29.668706164999,115.166745542
-29.668586794999,115.166943513