# Nannine CEV Facility

Construction Environmental Management Plan

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## Construction Environmental Management Plan

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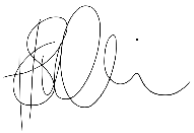
|  |  |  |
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In accordance with the scope of services, WEPL has conducted environmental field monitoring and/or testing in the preparation of this report. The nature and extent of monitoring and/or testing conducted is described in this report.

On all sites, varying degrees of non-uniformity of vertical and horizontal conditions in media (soil, water, air, waste or other media as described in the report) are encountered. Hence no monitoring, common testing or sampling technique can eliminate the possibility that monitoring or testing results/samples are not totally representative of media conditions encountered. The conclusions are based on the data and the environmental field monitoring and/or testing actually undertaken, and are therefore merely indicative of the environmental condition of the site at the time of preparing this report, including the presence or otherwise of contaminants or emissions. It should be recognised that site conditions, including the extent and concentration of contaminants, can change.

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WEPL will not be liable to update or revise this report to take into account any events or circumstances or facts becoming apparent after the date of this report.

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## Tables



## Figures

# 1. Introduction

This Construction Environmental Management Plan (CEMP) has been developed for the construction of a Controlled Environment Vault (CEV) associated with Vocus' Project Horizon fibre optic network.

This CEMP relates specifically to the Nannine CEV (hereafter referred to as the 'Site'). The Site is contained within Lot 239 on Deposited Plan 218692, approximately 52 km southeast of Meekatharra on Great Northern Highway, within the Shire of Cue (Figure 1).

To facilitate construction, an estimated 0.88 ha native vegetation will be removed. Of that, 0.2 ha is for the CEV facility and the remaining 0.68 ha is to establish an Asset Protection Zone (APZ) for bushfire risk reduction.

The following activities are proposed:

- Earthworks, vegetation clearing, and site preparation.
- Installation of temporary facilities (including access roadway, set-down areas, and crib shed).
- Excavation (up to 700 mm below ground level [bgl] for electrical and communication infrastructure, and CEV footings).
- Installation of CEV building with a battery hut and 5-kW solar array, supported by a self-contained emergency diesel-powered generator set no its own separate footing.

## 1.1 Approvals Context and Purpose

The proposed clearing will be referred to the Department of Water and Environmental Regulation (DWER) to determine whether a native vegetation clearing permit (NVCP) is required under Part V Division 2 of the *Environmental Protection Act 1986* (EP Act). It is expected that the proposed clearing will not require a permit, due to the low level of environmental impact. An assessment of the proposed clearing against the Ten Clearing Principles identified the need for a CEMP to minimise the risk of environmental impacts resulting from construction. The CEMP seeks to provide adequate assurance that environmental impacts will be appropriately managed in the case that a permit is not required, and conditions are not imposed by DWER.

## 1.2 Objective and Scope

The objective of this CEMP is to ensure the risk of environmental impacts arising through construction is minimised, and that those environmental impacts can be managed in the absence of conditions associated with an NVCP.

This CEMP applies to all staff, contractors, and visitors to the Site for the duration of construction and applies to all activities outlined in section 2.



**LEGEND**

- Design
- Clearing Permit Area (0.85 ha)
- DAF
- Cultural Heritage Survey Area

N

0 10 20 m

**NANNINE**

Project Horizon - Clearing Referral Sites

Scale: 1:1,000
Coordinate System: GDA2020 MGA Zone 50
Reference: 2024_035_nannine_r3

Date: 2/07/2024
Size: A4L



RFF VERTIV

# 2. Project Description

This section provides an overview of the proposed works. Figure 1 illustrates the location and orientation of key infrastructure.

## 2.1 Project Schedule

Construction is currently scheduled to commence by the 12th of November 2024, and to be completed with staff demobilised from the Site by the 21st of December 2024. Works are expected to take approximately six weeks from commencement, assuming no delays.

## 2.2 Construction Methodology

Construction of the CEV facility and associated infrastructure will comprise of the following sequence of activities:

- Surveyor to mark out Site boundaries (engaged by the contractor).
- Identify and record the location of any existing services both above and below ground.
- Mark out access pathway (length and width).
- Mark out temporary Site security fence to define the work area, in accordance with the Construction Site Plan.
- Establish temporary access roadway, worker parking area, set-down area, truck turning area, crane manoeuvring area (all of which will be located within area to be cleared for the CEV and bushfire mitigation).
- Place temporary crib shed, amenities, and first-aid equipment within area to be cleared for CEV and bushfire mitigation.
- Undertake vegetation clearing, bulk earthworks, cut/fill, grading, compaction, and dust suppression. This will involve use of the following:
    - Excavator/back-hoe.
    - Dozer.
    - Compactor.
    - 8 tonne tipper truck.
- Excavate trenches for electrical and communications infrastructure (to maximum depth of 700 mm bgl), install earth rods and connections.

- Excavate for CEV footings, generator slab with block-outs, and solar power pole footing if required (excavation to maximum depth of 700 mm bgl).
- Install conduits for all in-ground services.
- Form, reinforce, and place concrete for footings, pads and slabs.
- Receive and place CEV module and generator using crane.
- Undertake surface treatment of flat level Site in accordance with bulk excavation and civil engineering design drawings.
- Connect electrical and fibre services.
- Excavate for security fence footings, and install fence and signage.
- Undertake commissioning procedures.
- Complete all building works and Site cleanup.
- Remove temporary construction fencing and traffic management items from Site.

## 2.3 Project Signage

Project signage is required at the site which shall include information that access is restricted to construction personnel only, mandatory personal protective equipment (PPE) requirements, and contact details (including after-hours) for the Site Manager and Project Manager. Signs to divert vehicles and pedestrians safely around the site via temporary paths will be installed on site fencing.

Relevant safety notices and signs shall be prominently displayed in such a manner as to ensure personnel in the vicinity are made obviously aware of any potential hazard. The provision of safety signage is the responsibility of the contractor, except where this responsibility has been contractually assumed by the Shire of Cue or some other third party.

Signs shall comply with *AS 1319 – Safety Signs for the Occupational Environment and Occupational Safety* and *Health Regulations 1996 – Part 3, Regulation 3.11.*

## 2.4 Environmental Induction and Training

All employees onsite are required to be inducted by the contractor by the Site Manager, Health, Safety, Environment and Quality (HSEQ) Advisor, or similar. The induction will cover the following:

- Fencing, site access, and traffic management.
- Approved boundaries for native vegetation clearing.

- Vegetation clearance procedures (including hygiene protocol).
- Prevention of death and injury to fauna.
- Waste management.
- Management of dust and noise emissions.
- Storage of hazardous materials (including approved vehicle refuelling and maintenance areas).
- Soil erosion management.

A register of completed inductees will be maintained by the contractor for the duration of the project. Key project roles and responsibilities are outlined in Section 4.

# 3. Environmental Context

A summary of the Site's environmental context is provided in Table 1.

### Table 1. Environmental Context

| Environmental Factor | Description |
|---|---|
| **Surrounding Land Uses** | The area surrounding the Site is comprised of scattered shrubs over bare ground, with Great Northern Highway to the immediate east. |
| **Environmentally Sensitive Areas** | The Site is located approximately 3.9 km north of an Environmentally Sensitive Area (ESA) (DWER-046), Lake Annean (ID 2605) and, as such, will not impact an ESA. |
| **Legislated Lands and Waters** | The nearest reserve managed by the Department of Biodiversity, Conservation and Attractions (DBCA) to the Site is Lakeside Conservation Park located 84 km to the west. |
| **Climate** | The nearest weather station to the Site is Meekatharra Airport (ID 007045), approximately 50 km southwest of the Site. Meekatharra experiences a subtropical climate which is characterised by very hot summers with mild, dry winters. The average annual rainfall is around 233.8 mm. Most of summer rains occur with scattered thunderstorms and occasional cyclones. Tropical cloud bands can lead to secondary rainfall peaks in May and June. Almost all storms occur during summer (wet season). |
| **Topography** | Elevation within the Site ranges from 454.6 mAGL in the northwest of the Site to 455 mAGL in the southeast. |
| **Geology** | The Site is located in the Yanganoo Land System, mapped as 272Yg_523 red-brown hardpan, shallow loam. This land system is defined as almost flat hardpan wash plains with or without small wanderrie banks and weak groving; supporting mulga shrubland and wanderrie grasses on banks (DPIRD-027). Hardpans are subject to sheet-overland flow (van Vreeswyl et al., 2004) however construction is unlikely to exacerbate any erosion on or around the Site. |
| **Acid Sulfate Soils** | According to DWER datasets available (DWER-047, DWER-048, DWER-049, DWER-053) no PASS or ASS is identified on or near the Site. |
| **Contamination** | No contaminated sites were identified on or near the Site (DWER, 059). |
| **Surface Water** | The Site is located within the Murchison River sub catchment. There are no surface water bodies or RIWI Act rivers within 1 km of the Site. The nearest is 4.8 km to the north (DWER-031). |
| **Groundwater** | The Site is within the East Murchison proclaimed Groundwater Area and is not within a PDWSA drinking area. The construction within the Site does not interfere with or take groundwater, and the small scale of proposed clearing is highly unlikely to impact groundwater quality. |
| **Vegetation** | The Site is mapped within the Wiluna (18) vegetation association, which is described as a low woodland, open low woodland or sparse woodland of mulga Acacia aneura and associated species (Beard et al., 2013).<br>The Site has been disturbed over time due to edge effects from infrastructure corridors, resulting in vegetation condition identified as Degraded to Completely Degraded. |

| Environmental Factor | Description |
|---|---|
| | A record of Yagahong Land System (a Priority 3 Priority Ecological Community [PEC] occurs 3 km to the west. There are no Threatened Ecological Communities (TEC) mapped within 50km of the Site.<br>The vegetation within the Site does not represent a PEC or TEC. |
| **Flora** | The Site does not contain any records or suitable habitat for any Threatened or Priority flora taxa. |
| **Fauna** | The Site provides limit fauna habitat value given its degraded nature, small size, and location adjacent to Great Northern Highway. Three species of conservation significant fauna may occur within or pass over the Site on occasion: Grey falcon (*Falco hypoleucos*), Peregrine falcon (*Falco peregrinus*), and Northern shield-backed trapdoor spider (*Idiosoma clypeatum*). It is highly likely that the Site constitutes significant habitat for any of these species given their widespread nature and poor value of the Site.<br>Other mobile fauna species are likely to traverse the area on occasion. Therefore, this CEMP includes measures to minimise the risk of direct and indirect impacts to terrestrial fauna. |
| **Heritage** | A cultural heritage survey was undertaken for the Site with representatives of the Yugunga-Nya Native Title Aboriginal Corporation (YN PBC). The survey found no Aboriginal sites within the Site, and that activities can proceed without impacting any Aboriginal heritage sites. Consistent with the recommendations of the cultural heritage survey, Vertiv will engage and appoint YN PBC cultural heritage monitors to supervise all construction and ground-disturbing works. |

# 4. Roles, Responsibilities and Reporting

All personnel have a responsibility to make decisions with respect to environmental protection. All personnel must comply with and adhere to the CEMP and relevant procedures.

Responsibilities and accountabilities for key personnel are defined in Table 2. These will be clearly communicated to personnel via a site induction (see section 2.4).

## 4.1 Roles and Responsibilities

The roles and responsibilities for delivering this CEMP are outlined in Table 2.

**Table 2. Roles and Responsibilities**

| Role | Responsibilities |
|---|---|
| **Project Manager** | • Establish the project objectives, targets and performance indicators for the project, including environment, safety and health, and quality management.<br>• Identify and document risk analysis from pre-mobilisation to project completion.<br>• Provide adequate resources and expertise for effective environmental management.<br>• Appointment of HSEQ Representative.<br>• Ensure all site personnel are aware of their responsibilities within the CEMP and have the sufficient training and skills to fulfil their roles. |
| **Construction Contractor** | • Ensure all site personnel is trained and are aware of CEMP requirements.<br>• Provide support to the Project Manager during construction phase in all matters associated with construction planning and on-site implementation.<br>• Keep track and report to the Project Manager about:<br>○ any non-compliance,<br>○ incidents,<br>○ planned or undertaken clearing activities,<br>○ key dates and construction progress,<br>○ environmental observations and<br>○ unexpected findings. |
| **Site Manager** | • Ensure the requirements of this CEMP are implemented within their area of responsibility, as delegated.<br>• Ensure all personnel are inducted in accordance with the CEMP.<br>• Conduct prestart meetings and toolbox talks.<br>• In the event of an incident, take corrective action to prevent repeat offences.<br>• Ensure sub-contractors comply with the conditions set by the WRS and this CEMP.<br>• Ensure hazardous materials are stored and disposed of in accordance with Dangerous Goods requirements.<br>• Licenses as applicable.<br>• Ensure that the workplace remains tidy and safe for work.<br>• Liaise with WRS representatives as required. |
| **Environmental Representative** | • Report to Project Manager.<br>• Comply with and support the implementation of this CEMP with supervisors and site management.<br>• Develop further management tools as required, for use by project personnel.<br>• Provide environmental training to key personnel. |

| Role | Responsibilities |
|---|---|
| | • Ensure all employees are aware of the requirements of the CEMP and the system used for reporting of environmental incidents.<br>• Assist in the production of compliance reports when required.<br>• Liaise with supervisors to identify day-to-day environmental issues.<br>• Undertake site inspections, monitoring programs and audits.<br>• Ensure all notified incidents are recorded, investigated and tracked to close out in a timely manner.<br>• Capture/collate and maintain all environmental documentation. |
| **All personnel (including. Subcontractors)** | • Comply with and adhere to this CEMP.<br>• Report all environmental incidences or risks as they occur.<br>• Attend environmental inductions or any other training as required.<br>• Be responsible for adhering to the nominate Environmental Policy for the project. |

## 4.2 Environmental Induction and Training

All employees, contractors, and utility staff working on Site shall undergo an induction that covers the following:

- The requirements of this CEMP.
- Approved clearing boundaries (including APZ).
- General flora and fauna management measures for clearance activities, including fauna rescue and egress requirements for excavations.
- Responsibilities for weed and disease control.
- Erosion, sediment, and dust management measures.

Records of training shall be maintained and include the following:

- Name of person receiving the training.
- Name of the trainer.
- Date of training.
- Summary of training provided.

## 4.3 Emergency Contacts and Procedures

In the event of an environmental emergency (e.g. injury to listed Threatened or Priority fauna or spill of hazardous material) all works that have the potential to cause further harm must cease and the Site Manager must be contacted immediately.

Any environmental incidents with the potential to cause material harm will be reported in accordance with the contractor's HSEQ requirements.

Internal telephone lists will be kept up to date for the reporting of emergencies to the appropriate personnel. Personnel will have the power to stop and direct works. The Site emergency management plan will cover more detailed information regarding emergency contacts outside of Vertiv or the contractor, should the need arise.

Emergency contact information will be advertised on site.

## 4.4 Site Meetings

A weekly project meeting shall be held at a time to be confirmed. The Project Manager, based on advice and feedback from key project personnel, may direct additional meetings as required.

The Site Manager will be in attendance on a daily basis to outline the proposed works for the day and conduct a pre-start meeting with employees.

A register of project and daily pre-start meetings will be maintained by the contractor for the duration of the project.

## 4.5 Incident Reporting

The following incident management procedures will be followed:

- All incidents, including injury, illness, property damage, near miss, environmental impact and loss of process, must be reported verbally to the Site Manager within one hour. A written incident report must be completed and provided to the Site Manager by the end of the work shift.
- The Site Manager is responsible for informing the Project Manager as soon as practicable, within 24 hours. The Site Manager is required to report to the Project Manager any actual or potential incidents using an Incident Report Form.
- The Project Manager is directly responsible for managing complaints, conducting incident investigations, compiling and collating incident reports, and maintenance of an incident register.
- Incident reporting and investigation will be in accordance with Vertiv's management standards or a contractor’s management standards subject to Vertiv's review and agreement.
- Any complaint by any stakeholder is to be reported to the Project Manager within 24 hours.

## 4.6 Unexpected Finds

In the event of an unexpected find (e.g. environmental value, environmental hazard, contaminant, or heritage value) within the work zone, the following general procedure will be adopted:

- Stop work. Cordon off area with barriers or tape to prevent unauthorised access.
- Notify the Site Manager, who shall notify the Project Manager. The Project Manager will notify authorities as soon as practicable to execute appropriate investigation/management procedures.
- Via authorised personnel or sub-contractor, remediate or make good area, or safely manage heritage site to allow for resumption of works.

## 4.7 Complaints Management

Any feedback or complaints from the community and other stakeholders will be recorded by completing a feedback and complaints record form. Any feedback will be reviewed within five work days and management will reply, preferably using the same mode of communication as the comment was received. The Site Manager will decide if provided feedback requires immediate action and implementation or if a different timeframe will be sufficient. Where necessary, the Shire and the associated State departments will be notified.

## 4.8 Records

Documents that are subject to control include design drawings, specifications, and contract documents. A document distribution list/matrix will be developed and agreed by the relevant construction management groups to ensure all interested parties receive all necessary controlled documents. Documentation and data shall be maintained to ensure that:

- They can be readily located.
- They are periodically reviewed for their adequacy by competent personnel and revised as necessary.
- Current versions of relevant documents and data are available to project personnel.
- Obsolete documents and data are promptly removed from all points of issue and points of use or otherwise assured against unintended use.
- Archival documents and data retained for legal or knowledge preservation purposes or both, are suitably identified.

# 5. Environmental Risk Assessment and Management

## 5.1 Preliminary Risk Assessment

A preliminary (pre-mitigation) environmental risk assessment was undertaken to determine the potential impacts of construction. The risk assessment was undertaken in terms of the likelihood and consequence of each occurring, using the criteria in Table 3 and Table 4, respectively.

### Table 3. Likelihood

| Qualitative Measure of Likelihood | Description of Likelihood |
|---|---|
| **Highly likely** | Is expected to occur in most circumstances. |
| **Likely** | Will probably occur during the life of the project. |
| **Possible** | Might occur during the life of the project. |
| **Unlikely** | Could occur but considered unlikely or doubtful. |
| **Rare** | May occur in exceptional circumstances. |

### Table 4. Consequence

| Qualitative Measure of Consequences | Description of Consequence |
|---|---|
| **Minor** | Minor incident of environmental damage that can be reversed. |
| **Moderate** | Isolated but substantial instances of environmental damage that could be reversed with intensive efforts. |
| **High** | Substantial instances of environmental damage that could be reversed with intensive efforts. |
| **Major** | Major loss of environmental amenity and real danger of continuing. |
| **Critical** | Severe widespread loss of environmental amenity and irrecoverable environmental damage. |

The risk assessment matrix (Table 5) was then used to determine the environmental risk rating for the proposed action. In each case, a score of 1 to 5 was applied for the likelihood and consequence of impact, with the sum of the scores used to determine the environmental risk. The resulting risk ratings are described in Table 6.

### Table 5. Risk Assessment Matrix

| Likelihood | Consequence | | | | |
|---|---|---|---|---|---|
| | **Minor** | **Moderate** | **High** | **Major** | **Critical** |
| **Highly Likely** | Medium | High | High | Extreme | Extreme |
| **Likely** | Low | Medium | High | High | Extreme |
| **Possible** | Low | Medium | Medium | High | Extreme |

| Likelihood | Consequence | | | | |
|---|---|---|---|---|---|
| | Minor | Moderate | High | Major | Critical |
| Unlikely | Low | Low | Medium | High | High |
| Rare | Low | Low | Low | Medium) | High |

### Table 6. Risk Rating

| Risk Rating | Description |
|---|---|
| Low | Risks that are below the risk acceptance threshold and do not require active management. Certain risks could require additional monitoring. |
| Moderate | Risks that lie on the risk acceptance threshold and require active monitoring. The implementation of additional measures could be used to reduce the risk further. |
| High | Risks that exceed the risk acceptance threshold and require proactive management. Includes risk for which proactive actions have been taken, but further risk reduction is impractical. |
| Extreme | Risks that will are not acceptable. |

### Table 7. Preliminary Risk Rating (Without Mitigation)

| Hazard | Activity | Likelihood | Consequence | Preliminary Risk Rating |
|---|---|---|---|---|
| Unauthorised clearing | Any unauthorised clearing, rolling, pruning or damage to native vegetation. | Possible | High | Medium |
| Fauna injury or death | Direct interaction by mobile plant or vehicles | Possible | High | Medium |
| | Entrapment in open excavations | Possible | High | Medium |
| Wind/air dispersal of noise and dust | Plant and vehicle movements, desilting of assets. | Possible | Minor | Low |
| | Clearing activities. | Possible | Minor | Low |
| | Desilting/excavation in drier periods. | Likely | Minor | Low |
| Water and soil contamination | Spills during storage and/or movement of plant equipment and vehicles. | Possible | High | Medium |
| Spread of soil pathogens and weeds | Introduction or spread of soil pathogens and weeds. | Possible | Moderate | Medium |
| Inappropriate waste management | Incorrect storage and/or disposal of waste resulting in contamination or amenity impacts. | Possible | Moderate | Medium |

## 5.2 Environmental Management Measures

Environmental management, monitoring and contingency measures for construction are outlined in the following subsections. Daily inspections of the work area are required to assess compliance with management requirements, with outcomes to be noted in daily field notes.

### 5.2.1 Fencing, Access and Traffic Management

#### *Access and Signage*

To ensure and maintain public safety, the contractor will ensure that the construction site is appropriately restricted to the public at all times during construction. This will include the installation of physical barriers such as temporary fencing around the worksite to stop pedestrians from walking into the site. Signage will also be erected on site fencing in clear view to inform the public with a message of 'Construction Site – Keep Out' or similar.

The contractor will supply, install and maintain regulatory, warning and advisory signage at the Site. The signage will include:

- Construction warning signs.
- Directional signs.
- Traffic management signs.

All installed signage will be maintained for the duration of the works.

#### *Traffic Management*

Traffic will be managed in accordance with an approved Traffic Management Plan (TMP) as required by the Shire of Cue.

Materials will be transported and delivered within designated access and laydown areas. Loads of material arriving to and leaving the Site shall be secured to prevent spillage and minimise dust generation. Vehicles and plant shall arrive to Site in a clean state to avoid the spread of material containing weed seed or soil pathogens.

Vehicles may only access the sire via designated roads for entering and existing from and to Great Northern Highway. Vehicles will be parked on Site, within designated areas within the construction footprint.

#### *Vehicle and Machinery Details*

The following vehicles are planned to be used during construction:

- 1 x Excavator/back-hoe
- 1 x Dozer.
- 1 x Compactor.
- 1 x 8-tonne tipper truck.
- 1 x Crane.

Should additional vehicles and plant equipment be required, they should be included in a finalised vehicle list.

### 5.2.2 Unauthorised Clearing

Clearing must not commence at the Site until:

- DWER have formally advised that a permit is not required for the proposed clearing, or
- DWER have advised that a permit is required, and a native vegetation clearing permit is issued in accordance with Part V Division 2 of the EP Act.

Under the EP Act, clearing means any act or activity that causes the killing or destruction of, removal of, severing or ringbarking of trunks or stems of, or any other substantial damage to some or all of the native vegetation in an area.

No clearing, rolling, pruning, or damage to native vegetation is to be conducted outside of the approved clearing area shown on Figure 1 (0.88 ha). This clearing boundary must be physically demarcated using temporary fencing or flagging tape and provided to clearing personnel in digital form.

In addition, no debris, or cut/fill material will be stockpiled in the vicinity of native vegetation to be retained.

### 5.2.3 Fauna Death or Injury

The contractor shall take all reasonable actions to protect any wildlife on the Site or in its proximity. Measures shall include:

- Low vehicle speeds shall be assigned and enforced within the Site. Staff, contractors, and visitors must be aware of their surroundings whilst operating vehicles and plant and take all precautions to avoid fauna vehicle strike.
- Pre-clearance walkthrough to identify and displace any fauna present prior to clearing. Walkthrough to be undertaken in the morning prior to clearing commencing. Refugia sites shall be checked to minimise the risk of fauna presence within the clearing boundary.
- Clearing must be undertaken progressively from Great Northern Highway moving towards retained vegetation to allow maximum opportunity for any fauna present to move into adjacent vegetation.
- Visual inspection of all work areas for animals, including trenches, excavations, toolboxes, and machinery prior to the commencement and opportunistically prior to commencing activities to ensure that no wildlife is present or enters a working zone,
- Where possible, any stockpiled debris should be removed before night to prevent fauna from roosting in the debris.

- Ensure that all installations, toolboxes, and machinery are capped, closed, and sealed at the end of each shift to prevent animal entry.
- Food waste should be minimised. All waste bins used during construction should be fully enclosed and if necessary, secured over night to avoid wildlife scavenging
- Workers shall not physically interact or interfere with an animal on site but allow animals to move from the works area and preferably the Site. If the animal does not leave the working area, Vertiv or the contractor shall engage a trained Animal Handler to relocate the animal from the Site.
- If a distressed or injured animals is encountered, the Site supervisors will contact a suitably licenced fauna handler or contact wildlife helpline on (08) 9474 9055.
- A register shall be created and maintained for all fauna removed, deaths or injuries. The register must identify:
    - Date/time and location.
    - Type and number of fauna.
    - Status (e.g., dead/alive/injured).
    - Method of removal.
    - Location of removal.
    - Details of the reporter and removalist (name, contact registration/licence details).
- Any fauna deaths and injuries that occur within the construction site are considered an environmental incident and are to be reported to the Superintendent within 24 hrs of incident identification.
- Dogs, cats and other domestic pets must not to be brought onto the Site.

### 5.2.4 Wind and Air Dispersal - Noise, Vibration and Dust

#### *Noise and Vibration*

The contractor will ensure that all machinery, equipment, plant and vehicles proposed to be used during any construction works shall comply with Worksafe Western Australia requirements for noise abatement. The operation of such machinery, equipment, plant and vehicles shall be certified to be within the limits of the following:

- *Environmental Protection (Noise) Regulations 1997.*
- Environmental noise practices set out in Section 4 of *AS 2436-2010: Guide to Noise and Vibration Control on Construction, Maintenance and Demolition Sites.*

- Local Government Authority noise ordinance.

To further minimise potential impacts due to noise emissions, construction activities will only occur during daylight hours.

#### *Dust*

Dust emissions may be generated due to plant and machinery operations, vehicle movements on roads and access tracks with residual materials, and wind erosion of exposed non-hardstand areas and stockpiled materials. During construction works appropriate dust management procedures will be implemented by Vertiv to prevent dust generation, such as the application of stockpile covers, and minimise dust generation and visible dust including the use of water sprays from a water cart and/or by hand to dampen materials in exposed areas to suppress dust or using a suppressant such as dustex or hydromulch. Only water and other approved suppressants from approved sources will be used for dust suppression.

The following dust control targets will be enforced at the site:

- All areas of disturbed land should be stabilised to ensure that the disturbed area exposed at any time is kept to a practical minimum to prevent exceedance of dust standards.
- The Site Manager shall maintain close control of works with dust creating potential.
- At the completion of site works and before vacating the site, the Site Manager should ensure that the construction site is stable with minimal risk of dust lift-off or sediment run-off.
- A target of zero visible dust at the boundary of the site to be enforced through continuous supervision of activities by the Site Manager.

Visual dust monitoring during construction works will be carried out on a regular basis by the Site Manager and controlled on an as-required basis in accordance with the above management commitments. Vertiv will maintain a register of complaints for dust, and report these immediately to the Project Manager. Should complaints relating to dust be received, an assessment of dust levels will be undertaken and the management procedures in place will be reviewed.

### 5.2.5 Water and Soil Contamination

The Site is not identified as a contaminated Site, and no PASS or AASS is likely to be encountered. Further, no dewatering is proposed, with excavation to a maximum depth of 700 mm bgl. Contamination of water or soil may, however, result from accidental spills.

#### *Spill Avoidance and Mitigation*

All plant and equipment are to be supplied in good working condition and subject to regular service and maintenance. Any major servicing and maintenance of plant and equipment is to be undertaken offsite; however, minor maintenance activities may be required with approval from the Site Supervisor. Any onsite

maintenance must be undertaken within a bunded area. All plant and equipment shall be stored on leak-proof trays to capture any oil/fuel spills.

Combustible, flammable and/or corrosive liquids are to be stored in accordance with relevant Australian Standards, including:

- *AS 1940: The Storage and Handling of Flammable and Combustible Liquids.*
- *AS 3780: The Storage and Handling of Corrosive Substances.*

Any chemicals must be stored in sealed containers well above ground level to prevent leakage in the event of flooding or cyclones.

Spill kits must be readily available at the Site, specifically during maintenance or refuelling activities (if any) or chemical transfer/storage.

Daily visual inspection of all bunded chemical storage and plant/equipment maintenance areas shall be undertaken during the project works to ensure chemical spills (if any) are identified, reported and remediated as soon as practicable to prevent environmental impacts.

### 5.2.6 Soil Pathogens and Weeds

The Site is highly modified and degraded to completely degraded. However, to prevent the spread of soil pathogens, weeds and pests, the following standard management process are to be implemented.

#### *Vehicle Inspection*

All machinery will be cleaned and inspected for soil or plant material prior to entry on Site. Movement of vehicles will be restricted to the construction footprint.

#### *Material Importation*

Any imported material (e.g. fill) is to be sourced and certified as clean, uncontaminated, free from weeds and disease, and geotechnically suitable for the proposed works. The relevant certification shall be provided by suppliers of the import material. The source of any material shall be approved by the Site Manager (or suitable delegate) prior to being imported to site. The contractor shall inspect and sign the delivery dockets for all accepted materials.

#### *Stockpiling of Vegetation and Topsoil*

Machinery will push material into stockpiles as required for storage purposes and to load materials for transport away from Site.

Designated stockpile areas will be established in an appropriate area for stockpiling of cleared vegetation. No debris or cut/fill material are to be stockpiled in the vicinity of native vegetation to be retained.

Stockpiles should be monitored for weed growth, with corrective actions to control weed growth by appropriate methods.

In the event that stockpiled material could spread due to adverse weather, the stockpile will be covered with a secured geotextile or similar cover to mitigate the risk of spread and erosion. If used, mechanical equipment shall not be permitted to operate directly on the geotextile.

### 5.2.7 Waste Management

Waste generated onsite will be either transported directly offsite, placed in a dedicated skip bin, or stockpiled on a designated location approved by the Site Manager for future disposals. Waste shall be stored within fenced areas that are located as far away as practicable from drainage lines to prevent input of debris, fill, rubbish, and other deleterious material into the stormwater system.

The contractor will ensure all waste produced during the project is managed to minimise impacts on the environment and personnel. All personnel will adhere to good housekeeping standards and general waste and recyclable waste will be segregated onsite in clearly marked waste bins that are covered and managed to minimise odours and pests.

All waste materials, rubbish or litter, including petroleum hydrocarbon contaminated soil and any noxious, toxic or otherwise hazardous materials shall be removed from the construction area to disposal points nominated by the contractor. Solid waste material will be stored in bins with lids. Any liquid and hazardous material is stored in drums within appropriately bunded areas and will be collected by specialised contractors.

Areas occupied by the project will be left free of waste materials at the completion of construction works. Vertiv will ensure that all liquid and solid waste materials generated and/or stored at the site shall not have any adverse impacts upon the surrounding environment. Vertiv will ensure that all waste materials generated during construction are disposed of regularly.

The contractor shall only use licensed waste disposal facilities, meeting regulatory requirements.

### 5.2.8 Emergency Management

An emergency management plan will be prepared for the Site and communicated to all staff and personnel.

Weather forecasts will be checked daily prior to commencing work. ABR Radio, the Emergency WA website or Department of Fire and Emergency Services (DFES) Facebook account will be monitored to stay up to date with severe weather and bushfire warnings.

Environmental emergency response is intrinsically linked to health and safety, as major environmental incidents often result in significant health and safety issues.

Emergency incidents include the following:

- Identification and/or disturbance of significant suspicious materials during excavation that may be otherwise contaminated.
- Discharge of uncontrolled fill, sediment, or water on or offsite.
- Fuel spill.
- Chemical spill.

The standard emergency response procedure is summarised as follows:

- The Site Manager will immediately notify the Project Manager and HSEQ Manager of any incidents requiring emergency response. An assessment of the incident will then be undertaken.
- Affected areas will be approached from up-wind and by trained staff wearing appropriate PPE.
- Minimise the extent of any potential impacts to sensitive environmental/human receptors. This will include the following:
    - Switching off or shutting down any equipment or infrastructure to prevent further environmental impact.
    - The containment of impact (wetting down, covering or otherwise immobilising).
    - The prevention of impacts entering conduits or sensitive environments (e.g., cordoning off exposed stockpiles).
    - Temporary re-establishment of control structures.
    - Collection of samples and information necessary to adequately determine the extent of the problem.
- Minimise the extent of damage to plant, property and infrastructure through prompt clean-up.
- Once the immediate danger has passed, the assessment of remedial options can be undertaken by the contractor, Shire of Cue, DBCA and/or DWER with input from a specialist consultant (if required).

Any area of the Site that requires emergency response will be cordoned off or otherwise isolated from access until it is deemed safe, and remediation efforts have cleaned up any impacts.

In the event that a notifiable OHS incident occurs, the contractor will be responsible for notifying WorkSafe. DWER, DBCA, and/or the Shire of Cue may also be informed as required.

## 5.3 Post-Mitigation Risk Assessment

Table 8 summarises the environmental management measures to be implemented for the duration of construction, with applicable corrective actions.

The post-mitigation likelihood, consequence, and residual risk rating is provided in Table 9.

## Table 8. Environmental Management Measures and Residual Risk

| Hazard | Activity | Management Action | Corrective Action(s) | Residual Risk |
|---|---|---|---|---|
| **Unauthorised Clearing** | Any unauthorised clearing, rolling, pruning or damage to native vegetation. | Ensure that areas approved for clearing and ground disturbance are communicated to all personnel (GPS coordinates and hard copy) prior to clearing commencing.<br>Clearing boundaries marked on Site using temporary fencing or flagging tape at no greater than 20 m intervals.<br>Clearly demarcate tracks suitable for vehicles to ensure there is no unauthorised off-road movement. Vehicles and machinery must use only designated tracks and road within the area to be cleared.<br>Clearing should not be undertaken where adverse weather conditions would result in significant topsoil losses to wind or water erosion. | If any unauthorised clearing is identified, works will stop immediately and extent of clearing will be determined.<br>Any unauthorised clearing must be reported to DWER within 24 hours. DWER will advise of corrective actions.<br>Personnel responsible for any non-compliance to undertake refresher training as soon as possible.<br>If flagging or temporary fencing is damaged or rendered ineffective, it must be rectified as soon as possible. | Medium |
| **Fauna Injury or Death** | Direct interaction with mobile plant or vehicles. | Undertake pre-clearance walk throughs to identify and displace any fauna present prior to clearing. The walk throughs shall be undertaken in the morning prior to clearing commencing. Refugia sites shall be checked to minimise the risk of fauna presence within the clearing boundary.<br>Clearing will be undertaken progressively from Great Northern Highway moving towards the retained vegetation to allow maximum opportunity for any fauna present to move into adjacent vegetation. | If a sick or injured animal is found, the Environmental Supervisor shall be contacted who will attend to the scene. Sick or injured wildlife shall be taken to an approved wildlife rehabilitation centre.<br>In the event that fauna relocation is required (e.g. removing from trenches/excavations to avoid harm to the animal), the action shall be undertaken by a trained and licenced person under the BC Act. | Medium |

| Hazard | Activity | Management Action | Corrective Action(s) | Residual Risk |
|---|---|---|---|---|
| | Entrapment in open excavations. | Install fauna egress no steeper than 2:1 on any open excavation/trench to minimise the risk of fauna becoming trapped. If a trench is more than 100 m long, egress (e.g. ramps or nets) must be installed every 100 m<br><br>Undertake twice daily trench/excavation inspections for entrapped fauna within 3 hours of sunrise and between 3-6 pm. Open lengths of trenches must not exceed the length that can be inspected and cleared within the required timeframes.<br><br>Install fauna egress in any open water storage areas, and any water in open trenches shall be pumped out in the event of significant rainfall.<br><br>Ensure open excavations are covered, fenced, or bunded to prevent injury to fauna. | Maintain a fauna interaction register to capture observations, interactions with, and injury to fauna.<br>In the event of fauna mortality or injury, review the cause and update management protocols as necessary. | Medium |
| **Wind and Air Dispersal of Noise and Dust** | Plant and vehicle movements and clearing activities. | Conduct all operations in accordance with the Environmental Protection (Noise) Regulations 1997, Australian Standard 2436-1981: Guide to noise control on construction, maintenance and demolition sites, and all relevant occupational health and safety standards<br><br>Ensure that equipment is fitted with appropriate noise reduction devices (where necessary) to comply with regulatory requirements.<br><br>All truck loads to be covered to minimise dust generation and spillages.<br><br>Dust suppression activities (using water trucks) to be used on unsealed roads and access | Record any non-compliance and raise at pre-start or toolbox meetings.<br>Relevant personnel to be directed to take refresher training if required.<br>In the event of unacceptable dust emissions, review the source and revise Site procedures accordingly. | Low |

| Hazard | Activity | Management Action | Corrective Action(s) | Residual Risk |
|---|---|---|---|---|
| | | tracks, cleared areas, and other locations of high dust risk where dust generation is visible. | | |
| **Contamination and Spills** | Spills during storage and/or movement of plant equipment and vehicles | Design, install, and manage surface water diversion structures to enable non-contaminated water to be directed around disturbed and construction areas.<br><br>Ensure that potentially contaminated storm water (e.g. runoff that contains hydrocarbons) is not discharged to the environment, and that any contaminated water is captured in sediment basins or bunds and is settled out or treated prior to discharge to the environment.<br><br>Ensure that no works or structures cause obstructions to the free flow of drainage lines in rainfall events.<br><br>Ensure that equipment servicing is undertaken in designated areas that have been confirmed as being acceptable by the Environmental Supervisor. | Spill kits must be readily available at the Site, specifically during maintenance or refuelling activities (if any) or chemical transfer/storage.<br>Incident report to be completed.<br>Notify DWER, DBCA, Shire of Cue as required. | Low |
| **Weed and Soil Pathogens** | Introduction and/or spread of soil pathogens and weeds through vehicle and plant movement. | Ensure all machinery and vehicles that arrive on site have been thoroughly cleaned down and are free of all soil, debris, and vegetative material.<br><br>Provide boot and vehicle wash down facilities in areas where the transport of weeds and/or pathogens is identified as a risk.<br><br>Ensure vehicles and footwear are free of soil and vegetative material before entering or exiting the site (i.e. direct to wash down area before entering or exiting the site) | Vehicles or equipment that arrives on site not in clean condition shall be turned away from Site or re-directed to clean down bays.<br>Hand weeding to be undertaken if required. | Low |

| Hazard | Activity | Management Action | Corrective Action(s) | Residual Risk |
|---|---|---|---|---|
| | | Ensure plants, soil, or fill brought into the site are from certified weed-free sources. | | |
| **Waste Management** | Incorrect storage and/or disposal of waste resulting in contamination or amenity impacts. | Waste to be collected in a dedicated skip bin (or similar) and removed from Site periodically. | Record any non-compliance and raise at pre-start or toolbox meetings.<br>Waste to be collected and removed from Site as soon as possible. | Low |

## Table 9. Residual Risk Rating

| Hazard | Activity | Likelihood | Consequence | Preliminary Risk Rating |
|---|---|---|---|---|
| **Unauthorised clearing** | Any unauthorised clearing, rolling, pruning or damage to native vegetation. | Unlikely | High | Medium |
| **Fauna injury or death** | Direct interaction by mobile plant or vehicles | Unlikely | High | Medium |
| | Entrapment in open excavations | Unlikely | High | Medium |
| **Wind/air dispersal of noise and dust** | Plant and vehicle movements, desilting of assets. | Unlikely | Minor | Low |
| | Clearing activities. | Unlikely | Minor | Low |
| | Desilting/excavation in drier periods. | Possible | Minor | Low |
| **Water and soil contamination** | Spills during storage and/or movement of plant equipment and vehicles. | Unlikely | High | Medium |
| **Spread of soil pathogens and weeds** | Introduction or spread of soil pathogens and weeds. | Unlikely | Moderate | Low |
| **Inappropriate waste management** | Incorrect storage and/or disposal of waste resulting in contamination or amenity impacts. | Unlikely | Moderate | Low |

# 6. References

Beard, J. S., Beeston, G. R., Harvey, J. M. Hopkins, A. J. M. and Shepherd D.P. (2013). The vegetation of Western Australia at the 1:3 000 000 scale Explanatory Memoir Second Edition In: Conservation Science Western Australia, Vol 9. https://library.dpird.wa.gov.au/context/gis_maps/article/1027/type/native/viewcontent

Cadastre (Polygon) (LGATE-217), https://catalogue.data.wa.gov.au/dataset/cadastre-polygon

Department of Biodiversity Conservation and Attractions (2017). DBCA Statewide Vegetation Statistics. https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics. Accessed online 24/05/2024

Department of Biodiversity Conservation and Attractions, DBCA - Legislated Lands and Waters (DBCA-011), https://catalogue.data.wa.gov.au/dataset/dbca-legislated-lands-and-waters. Access Online 23/05/2024.

Department of Biodiversity Conservation and Attractions, Directory of Important Wetlands in Australia – Western Australia (DBCA-045), https://catalogue.data.wa.gov.au/dataset/directory-of-important-wetlands-in-western-australia. Access Online 23/05/2024.

Department of Biodiversity Conservation and Attractions, Ramsar Sites (DBCA-010), https://catalogue.data.wa.gov.au/dataset/ramsar-sites. Access Online 23/05/2024.

Department of Biodiversity Conservation and Attractions, Regional Parks (DBCA-026), https://catalogue.data.wa.gov.au/dataset/regional-parks. Access Online 23/05/2024.

Department of Biodiversity Conservation and Attractions, Threatened Ecological Communities (DBCA-038), https://catalogue.data.wa.gov.au/dataset/threatened-ecological-communities. Access Online 23/05/2024.

Department of Biodiversity Conservation and Attractions, Threatened and Priority Fauna (DBCA-037), https://catalogue.data.wa.gov.au/dataset/threatened-and-priority-fauna. Access Online 23/05/2024.

Department of Biodiversity Conservation and Attractions, Threatened and Priority Flora (DBCA-036), https://catalogue.data.wa.gov.au/dataset/threatened-and-priority-flora. Access Online 23/05/2024.

Department of Environment (2013) Matters of National Environmental Significance- Significant Impact Guidelines 1.1: Environmental Protection and Biodiversity Conservation Act 1999. [Online 2020] https://www.environment.gov.au/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance

Department of Environment Regulation (2014). A Guide to the Assessment of Application to Clear Native Vegetation; under Part V Division 2 of the Environmental Protection Act 1986. Department of Environment Regulation, December 2014

Department of Environmental Regulation (2015a). Identification and Investigation of Acid Sulfate Soils and Acidic Landscapes. Acid Sulfate Soils Guideline Series.

Department of Environmental Regulation (2015b). Treatment and management of soil and water in acid sulfate soils landscapes. Acid Sulfate Soils Guideline Series.

Department of Parks and Wildlife (2017). Priority ecological communities for Western Australia Version 27, 30 June 2017. Department of Parks and Wildlife, WA. https://www.dpaw.wa.gov.au/images/documents/plants-animals/threatened-species/Listings/priority_ecological_communities_list.pdf

Department of Planning, Lands and Heritage (DPLH) (2019). Aboriginal Heritage Places (DPLH-001). https://catalogue.data.wa.gov.au/dataset/aboriginal-heritage-places

Department of Planning, Lands and Heritage (DPLH) (2019). Aboriginal Heritage Places (DPLH-001). https://catalogue.data.wa.gov.au/dataset/aboriginal-heritage-places

Department of Primary Industries and Regional Development (2018), Soil Landscape Mapping - Rangelands (DPIRD-063). https://catalogue.data.wa.gov.au/dataset/soil-landscape-mapping-rangelands. Access Online 23/05/2024.

Department of Primary Industry and Regional Development (DPIRD) (2017). NRInfo for Western Australia. Government of Western Australia. https://www.agric.wa.gov.au/resource-assessment/nrinfo-natural-resource-information-western-australia

Department of the Environment (2015). Species Profile and Threats Database, Department of the Environment, Canberra. Threatened Species and Ecological Communities of National Environmental Significance. https://data.gov.au/data/dataset/threatened-species-state-lists. Access Online 23/05/2024.

Department of the Environment and Energy (2016) Australia's 15 National Biodiversity Hotspots. Department of the Environment and Energy https://www.environment.gov.au/biodiversity/conservation/hotspots/national-biodiversity-hotspots

Department of Water and Environmental Regulation (2014), acid Sulphate Soil Risk Map, Pilbara Coastline (DWER-053). https://catalogue.data.wa.gov.au/dataset/acid-sulfate-soil-risk-map-pilbara-coastline-dwer-053. Accessed online 24/05/2024.

Department of Water and Environmental Regulation (2017), Acid Sulfate Soil Risk Map 50k (DWER-049). https://catalogue.data.wa.gov.au/dataset/acid-sulfate-soil-risk-map-50k-dwer-049. Accessed online 24/05/2024.

Department of Water and Environmental Regulation (2017), Acid Sulfate Soil Risk Map 100K (DWER-048). https://catalogue.data.wa.gov.au/dataset/acid-sulfate-soil-risk-map-100k-dwer-048. Accessed online 24/05/2024.

Department of Water and Environmental Regulation (2018), Contaminated Sites Database (DWER-059). https://catalogue.data.wa.gov.au/dataset/contaminated-reported-sites-dwer-059. Access Online 23/05/2024.

Department of Water and Environmental Regulation (2018). Clearing Regulations – Environmentally Sensitive Areas (DWER-046). https://catalogue.data.wa.gov.au/dataset/clearing-regulations-environmentally-sensitive-areas-dwer-046. Accessed online 24/05/2024.

Department of Water and Environmental Regulation (DWER) (2022). Contaminated Sites Database (DWER-059). Retrieved on 4 January 2024 from https://catalogue.data.wa.gov.au/dataset/contaminated-reported-sites-dwer-059.

Department of Water and Environmental Regulation. (2018). Hydrography, Linear (Hierarchy) (DWER-031). https://catalogue.data.wa.gov.au/dataset/hydrography-linear-hierarchy. Accessed online 24/05/2024.

Department of Water and Environmental Regulation. (2018). Hydrographic Catchments – Catchments – (DWER-028). https://catalogue.data.wa.gov.au/dataset/hydrographic-catchments-catchments. Accessed Online 24/05/2024.

Department of Water and Environmental Regulation. (2018). Public Drinking Water Source Areas (DWER-033). https://catalogue.data.wa.gov.au/dataset/public-drinking-water-source-areas. Accessed Online 24/05/2024.

Department of Water and Environmental Regulation. (2018). RIWI Act, Rivers (DWER-036). https://catalogue.data.wa.gov.au/dataset/riwi-act-rivers. Accessed online 24/05/2024.

Department of Water and Environmental Regulation. (2018). RIWI Act, Groundwater Areas (DWER-034). https://catalogue.data.wa.gov.au/dataset/riwi-act-groundwater-areas. Accessed online 24/05/2024

Department of Water and Environmental Regulation. (2019). WRIMS – Groundwater Resources (DWER-084). https://catalogue.data.wa.gov.au/dataset/wrims-groundwater-resources. Accessed online 24/05/2024.

Invertebrate Solutions. (2020) Desktop assessment for Short Range Endemic invertebrates for the Dalgaranga Gold Project Gascoyne Resources Ltd, Murchison, Western Australia. March, 2020. https://ftp.dwer.wa.gov.au/permit/7240/Appendix%209_Invertebrate%20Solutions%202020%20-%20Desktop%20assessment.pdf

Rix., M. G., Huey, J. A., Cooper, S. J. B., Austin, A. D., and Harvey, M. S. (2018). Conservation systematics of the shield-backed trapdoor spiders of the nigrum-group (Mygalomorphae, Idiopidae, Idiosoma): integrative taxonomy reveals a diverse and threatened fauna from south-western Australia. Zookeys, 156:1-121. https://doi.org/10.3897/zookeys.756.24397.

Van Vreeswyk, A.M, Leighton, KA, Payne, AL and Henning, P. (2004). An inventory and condition survey of the Pilbara region, Western Australia. Department of Agriculture, Western Australia, Perth. Technical Bulletin 92