Decision Report

Application for works approval

Part V Division 3 of the *Environmental Protection Act 1986*

Works approval number	W6305/2019/1
Works approval holder	Tellus Holdings Ltd
ACN	138 119 829
DWER file number	DER2019/000528
Premises	Sandy Ridge Facility Lot 510 on Deposited Plan 413497 as described in Schedule 1 BOORABBIN WA 6429 Part of Mining Lease M16/540 and Part of General Purpose Lease G16/021 102.5km north of Great Eastern Highway, along Access Reserve 44201
Date of report	20 December 2019
Status of Report	Final

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1. Definitions

Key terms relevant to this decision report and their associated definitions are listed in **Table 1**.

Table 1: Definitions

Term	Definition
Applicant	Tellus Holdings Ltd
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
Category / categories	Categories of prescribed premises as set out in Schedule 1 of the EP Regulations.
Controlled waste	has the definition in Environmental Protection (Controlled Waste) Regulations 2004.
Decision Report	refers to this document.
Delegated Officer	An officer delegated under section 20 of the EP Act.
Department	The department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation As of 1 July 2017, the Department of Environment Regulation (DER), the Office of the Environmental Protection Authority (OEPA) and the Department of Water (DoW) amalgamated to form the Department of Water and Environmental Regulation (DWER). DWER was established under section 35 of the *Public Sector Management Act 1994* and is responsible for the administration of the *Environmental Protection Act 1986* along with other legislation.
Emission	has the same meaning given to that term under the EP Act.
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
Facility	refers to the Sandy Ridge Facility
LLA	*Land Administration Act 1997* (WA)
LLW	Low Level Waste
LSA	Low Specific Activity

Term	Definition
Minister	the Minister responsible for the EP Act and associated regulations
MS	Ministerial Statement
m^3	cubic metres
NEPM	National Environmental Protection Measure
Noise Regulations	*Environmental Protection (Noise) Regulations 1997* (WA)
NORM	Naturally Occurring Radioactive Material
Occupier	has the same meaning given to that term under the EP Act.
PFAS	Per- and polyfluoroalkyl substances
PM	Particulate Matter
PM_{10}	used to describe particulate matter that is smaller than 10 microns (µm) in diameter
Prescribed premises	This has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Primary Activities	as defined in Schedule 2 of the Revised Licence
Radiological Council	means the independent statutory authority appointed under the Radiation Safety Act in Western Australia
RMP	means the Radiation Management Plan "Sandy Ridge Facility, Radiation Management Plan – Temporary Surface Storage of Low Level Radioactive Waste 2019 - #DOCID-88105952-1168" prepared by Tellus Holdings Ltd
Risk Event	As described in *Guidance Statement: Risk Assessment*
SCO	Surface Contaminated Objects
UDR	*Environmental Protection (Unauthorised Discharges) Regulations 2004* (WA)
$\mu g/m^3$	micrograms per cubic metre
µg/L	micrograms per litre
Works Approval Holder	Tellus Holdings Ltd

2. Purpose and scope of assessment

Tellus Holdings Ltd (the Applicant) has applied for a works approval to construct infrastructure associated with early and temporary waste acceptance as part of the Sandy Ridge Facility. The Sandy Ridge Facility (Facility) is an open-cut kaolin mine and complementary waste storage and disposal facility under development, located approximately 75 kilometres (km) north-east of Koolyanobbing in the Shire of Coolgardie, within the Goldfields Region of Western Australia. This application is referred to as Phase 2 of the premises development.

Phase 1 involved the establishment of an open cut mine (mining of kaolinised granite) and associated infrastructure including an accommodation village with wastewater treatment, a domestic waste landfill and ancillary infrastructure. Works Approval W6243/2019/1 was issued for construction of the Phase 1 works.

Phase 2 works are proposed to include preliminary infrastructure associated with Categories 61 (liquid waste facility) and 61A (solid waste facility). The applicant has proposed these Phase 2 works to allow the early acceptance and storage of Class IV and Class V wastes at the premises, while construction of Phase 3 works takes place.

Phase 3 works are proposed to include further infrastructure associated with Category 61 and Category 61A activities, as well as infrastructure associated with Categories 65 (class IV secure landfill site) and 66 (class V intractable landfill site) that are proposed to occur at the premises. These Phase 3 activities are not considered or assessed as part of this works approval application, and are currently under assessment as works approval W6308/2019/1.

3. Application details

The Applicant has applied for a works approval to construct a temporary waste storage area to allow for the acceptance and above ground storage of up to 3,000 tonnes of solid and liquid wastes to the Facility until the primary waste processing and disposal infrastructure is constructed and operational. Liquid waste is proposed to make up no more than 1,000 tonnes of the combined storage total of 3,000 tonnes. Wastes are proposed to be stored for no longer than 12 months from the date of acceptance. The Applicant has applied for a Works Approval for Categories 61 and 61A under Part V of the *Environmental Protection Act 1986* (EP Act).

Table 2 lists the prescribed premises categories that have been applied for and Table 3 lists the documents submitted during the assessment process.

Table 2: Prescribed Premises Categories

Classification of Premises	Description	Approved Premises design capacity or throughput
Category 61	Liquid waste facility: premises on which liquid waste produced on other premises (other than sewerage waste) is stored, reprocessed, treated or irrigated.	Up to 1,000 tonnes for 12 months (temporary waste acceptance period)
Category 61A	Solid waste facility: premises (other than premises within category 67A) on which solid waste produced on other premises is stored, reprocessed, treated, or discharged onto land.	Up to 3,000 tonnes for 12 months (temporary waste acceptance period)

Table 3: Documents and information submitted during the assessment process

Document/information description	Date received
Works Approval Application and Supporting documentation	27 September 2019
Detailed Construction drawings and Technical Specification	21 October 2019

3.1 Category 61 activities

The Applicant is seeking to construct a temporary waste storage area for the acceptance and storage of solid and liquid waste at the premises. Liquid waste acceptance during early waste acceptance and storage under this work approval will be limited to up to 1,000 tonnes of Per- and polyfluoroalkyl substances (PFAS) contaminated liquids (Controlled Waste code M270).

The Applicant advises that liquid waste accepted onto the premises for temporary storage will be verified at the waste generator's site by the Applicant prior to transport to the Facility. The waste will only be accepted for transport if stored in appropriate primary packages (e.g. HDPE drum) within self-bunded storage containers. The storage container bund will have a capacity greater than 110 % of the largest package size stored within the secondary container. All storage containers will have clear legible chemical labels.

Transport containers will be inspected upon arrival at the temporary waste storage area and will only be opened if there are indications (e.g. visual or odour) that during transportation storage packages have been compromised and their contents have the potential to cause harm to people or the environment. Containers will not be opened once they have left the waste generator's site until the Facility is fully operational, except in the unlikely event of a waste discharge or emergency scenario.

Liquid waste containers will be stacked and segregated as per the Sandy Ridge Facility Dangerous Goods license (DGS022452).

3.2 Category 61A activities

The Applicant is also seeking to accept and store up to 3,000 tonnes of solid wastes into the temporary waste storage area. Waste that has the potential to be flammable, chemically unstable or chemically attack storage packages will be not be accepted. Examples of wastes to be accepted in the temporary waste storage area include, but are not limited to:

- Arsenic trioxide.
- Lead contaminated cupels.
- Solid bituminous asbestos wrapped pipes.
- Naturally Occurring Radioactive Material (NORM) waste.

Solid chemical waste is proposed to be stored in primary storage packages (e.g. steel drum, bulka-bag) within secondary storage containers (e.g. sea containers) fitted with tamper prevention devices. All storage packages will have clear readable chemical labels. Only waste that is chemically stable and non-reactive will be accepted.

Waste will be verified at the waste generator's site by the Applicant before being loaded into transport containers and transported to the temporary storage area. Shipping containers will be inspected upon arrival at the temporary waste storage area and will only be opened if there are indications (e.g. visual or odour) that during transportation storage packages have been compromised and their contents have the potential to cause harm to people or the environment. Containers will not be opened once they have left the waste generator's site until

the Facility is fully operational, except in the unlikely event of a waste discharge or emergency scenario.

Solid waste containers will be stacked and segregated in accordance with the Sandy Ridge Dangerous Goods license DGS022452. Solid waste accepted into the temporary waste storage area will be suitable to be directly placed (no further chemical treatment) into the waste cell once the Facility is fully operational.

The acceptance and temporary storage of NORM / Low Level Radioactive Wastes is the subject of a separate approval under the *Radiation Safety Act 1975*. The application to accept and temporarily store NORM is supported by a Radiation Management Plan (RMP). The RMP details the potential environmental and human health hazards associated with that prescribed activity and, describes control measures to avoid and reduce radiation exposure. The WA Radiological Council is the responsible decision-making authority for approval of the RMP and the site registration to accept and temporarily store LLW and NORM.

Radioactive wastes able to be stored on a temporary basis will be limited to solid Low Level Wastes (LLW) classified as Low Specific Activity (LSA) materials or Surface Contaminated Objects (SCO), as defined in the Australian Radiation Protection and Nuclear Safety Agency's (ARPANSA) Code for the Safe Transport of Radioactive Material (RPS C-3). Radioactive waste that has the potential to be flammable, chemically unstable or chemically attack storage packages will be rejected. All radioactive wastes will be managed in accordance with the Applicant's RMP. LSA materials will be stored in sealed drums, inside locked secondary containers. SCO openings are capped, and items are shrink wrapped. Items may be stored in containers depending on size and container availability.

3.3 Proposed Temporary Waste Storage Area Infrastructure

The Applicant is proposing to construct the temporary waste storage area to the north east of the main facility infrastructure area. Both liquid and solid waste containers will be stored within this area. The proposed temporary waste storage area and associated stormwater retention pond are to be constructed from compacted subgrade materials. Permeability test results for the upper soil profile indicate that the permeability of the overlying silty sand, sandy gravel and weakly cemented sand is between 1 x 10^{-6} m/s (0.08 m/day) and 1 x 10^{-5} m/s (0.8 m/day). The permeability of the underlying silcrete is lower than the overlying material (approximately 5 x 10^{-8} m/s).

Surface water flow modelling conducted as part of the Sandy Ridge Facility Public Environment Review indicates that surface water flows are restricted to infrequent storm related flows. Infrastructure associated with the temporary waste storage area includes stormwater diversion drains to prevent overland stormwater flow from entering the storage area, and stormwater bunds that contain stormwater within the storage area and the onsite retention pond. The proposed design of the stormwater retention pond includes the capacity to retain a 1:100, 72 hour rainfall event.

The proposed infrastructure and equipment, as it relates to Category 61 and 61A activities within this application are outlined in Table 4 below, the site layout is shown in Figure 1 and the specific infrastructure areas is shown in Figure 2.

Table 4: Proposed infrastructure and equipment

Ref	Infrastructure or Equipment	Site Layout Plan reference
Acceptance and storage of solid wastes to a temporary waste storage area Acceptance and storage of liquid wastes (limited to Per- and polyfluoroalkyl substances (PFAS) contaminated materials in liquid form (Controlled Waste code M270) to a temporary waste storage area.		
1	East Yard Temporary Waste Storage Area	ID 11 on Figure 2
2	Temporary Waste Storage Area Stormwater Drain	Stormwater "V' Drain on Figure 3
3	Stormwater Retention Pond	ID 33 on Figure 2, Temporary Storage Pond on Figure 3 and Stormwater Pond construction detail on Figure 4
4	Locked Perimeter Fencing (Temporary Fencing Panels)	Marked "Temporary Fence" on Figure 3
5	Earth Bunding and Windrows	Marked "Bund" and "Windrow" on Figure 3

4. Background

The Facility was assessed by way of bilateral assessment between the Environmental Protection Authority and the Australian Government Department of Environment and Energy. Ministerial Statement 1078 (MS 1078) was granted in June 2018 under section 45 of the *Environmental Protection Act 1986* (EP Act). Australian Government approval under the *Environmental Protection and Biodiversity Conservation Act 1999* was granted in January 2019 (EPBC 2015/7478). In February 2019, a minor change to the Facility's development envelope was approved by way of a section 45C amendment under the EP Act.

Once fully constructed, the Facility is proposed to mine kaolin, accept hazardous and intractable chemical and low-level radioactive wastes for treatment, storage and disposal. For this application, the Applicant is seeking a Works Approval under Part V of the EP Act to construct and operate a temporary waste storage area to facilitate the early acceptance of waste during construction of the main infrastructure at the Sandy Ridge Facility.

Works Approval W6243/2019/1 was granted in May 2019 to authorise the commencement of works associated with the open cut kaolin mine, accommodation camp and wastewater treatment plant, as well as a domestic waste landfill and ancillary infrastructure associated with the facility. Registration R2498/2019/1 was granted on 28 November 2019 for the operation of the wastewater treatment plant.

5. Description of associated Facility activities

As detailed above, construction and operational activities at the Sandy Ridge Facility are defined within 3 construction phases, with this application and assessment associated with Phase 2. Phase 1 works involved the establishment of select mining and site infrastructure, and Phase 3 involves the establishment of the main waste processing facility and waste disposal/isolation cells.

Phase 1 (as assessed and approved by works approval W6243/2019/1):

Phase 1 construction works include activities related to Category 12, 85 and 89 activities, as well as ancillary works associated with camp accommodation, water desalination, septic wastewater systems, workshops, washdown and re-fuelling facilities. Mining is proposed to

be carried out using an open cut method, with a large air dome erected over each pit during mining, waste placement and capping. Mined materials (ore and granite) will screened and stockpiled on site for future uses onsite or exported offsite. Screening operations will be conducted in campaigns using mobile equipment.

A wastewater treatment system has been installed at the camp. The plant is registered for operation under R2498/2019/1. The Applicant has constructed the plant for a maximum throughput capacity of 50 m^3/day, with typical throughput during operations expected to be 30 m^3/day. Treated wastewater is discharged to a fenced irrigation area located a minimum of 50 metres north-east of the accommodation village.

A putrescible landfill will be established north-west of the accommodation village. The landfill will initially receive up to 500 tonnes per annual period of putrescible waste generated from the construction camp during construction works, reducing to approximately 250 tonnes per annual period once the mine site is operational and less staff are on site. Waste inputs will consist of putrescible wastes from the kitchen, office and other general operational areas of the facility.

Phase 3 (under assessment as Works approval W6308/2019/1)

Infrastructure associated with the acceptance and geological isolation of wastes associated with Category 65 and Category 66 activities, as well as further waste processing associated with Category 61 and Category 61A activities. These activities are not the subject of this Works Approval.

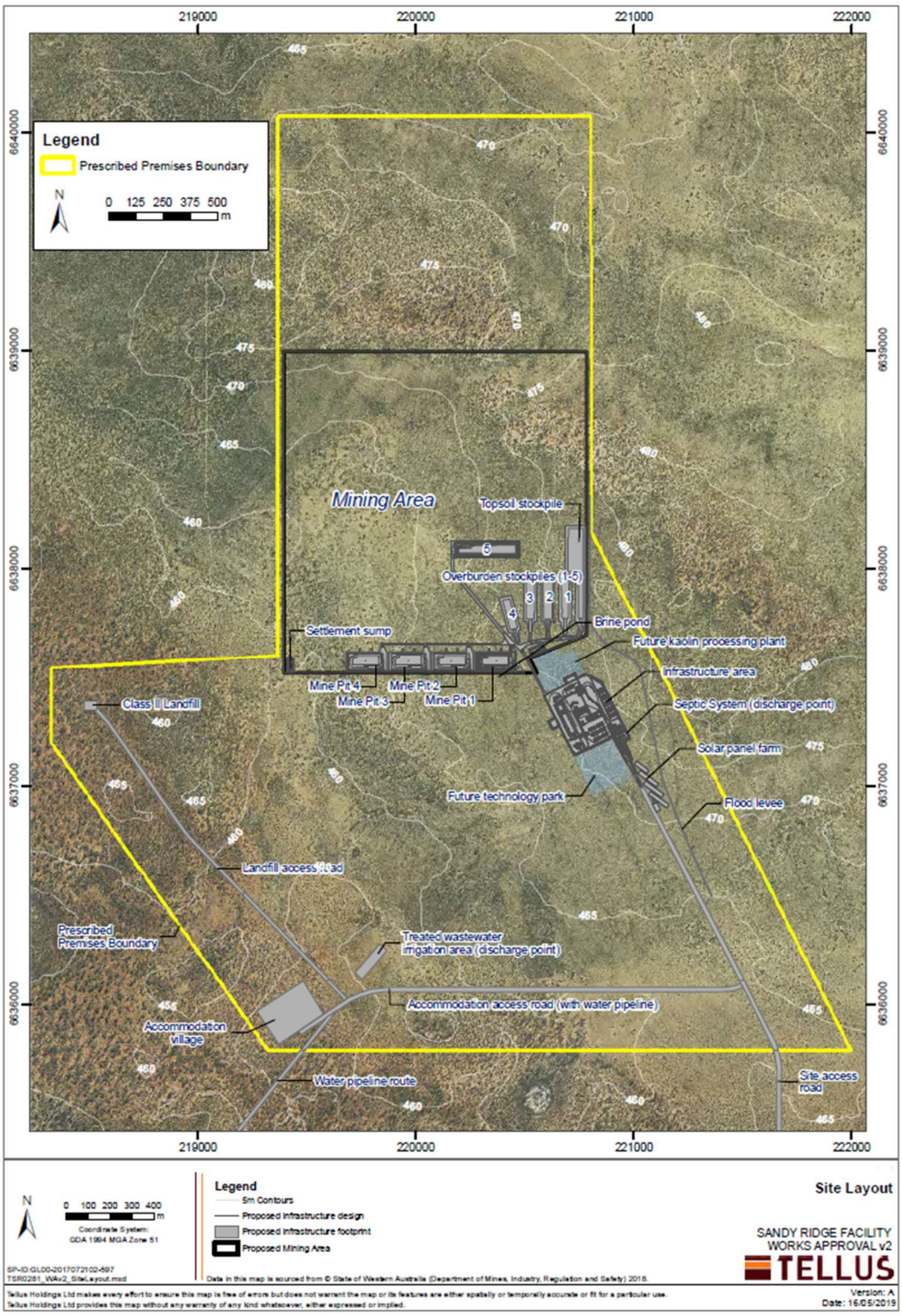


Figure 1: Extended Site Layout Plan
Source: Figure provided by the Applicant

ID	Infrastructure
1	Flood levee
2	Fire Risk Store Area
3	Wheel wash facility
4	Site entry car/bus parking
5	Site entry gates
6	Vehicle inspection area
7	Radiation scanner
8	Main office
9	Go line
10	Emergency vehicle station
11	East yard (solids)
12	RO Plant
13	Water handling facility
14	Container staging unloading
15	Container staging storage area
16	Waste Inspection Facility
17	Fire water facility
18	Storm water retention pond
19	Service water pond
20	Laboratory and office
21	Waste Immobilisation Plant "WIP"
22	Waste Inspection & WIP Dispensing Facility
23	Workshop and Laydown yard
24	Waste immobilisation plant loading
25	100t cement storage silo
26	Graded kaolin bulk hoppers
27	HV and LV washdown facility
28	Power facility
29	HV and LV refueling facility
30	HV and LV mobile plant workshop
31	Solar panel farm
32	Stormwater sump west
33	Stormwater sump north

(1) Subject to separate works approval

(1) Works Approval 2
(Cat 61 & 61A Temporary Storage)

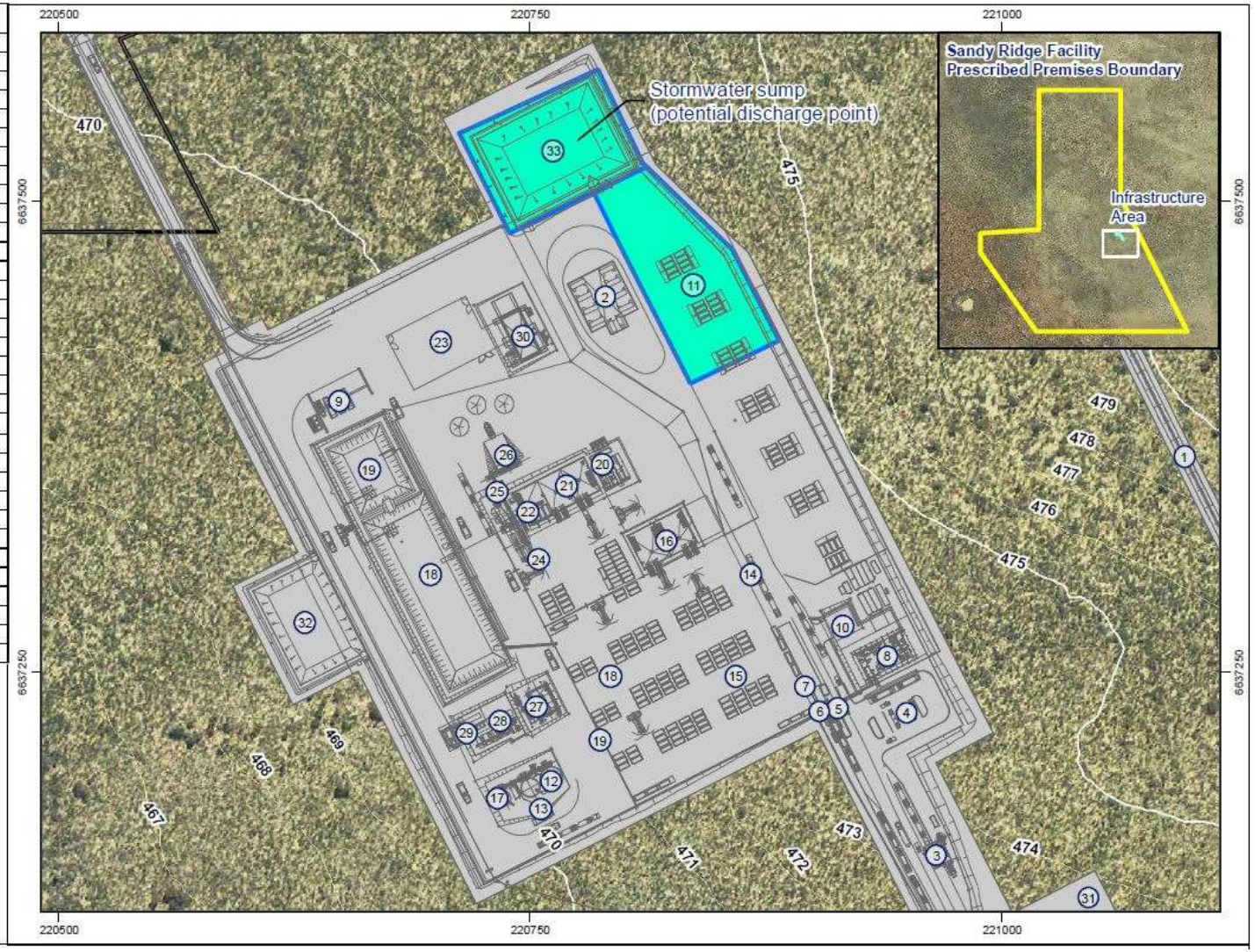


Figure 2: Infrastructure Area
Source: Figure provided by the Applicant

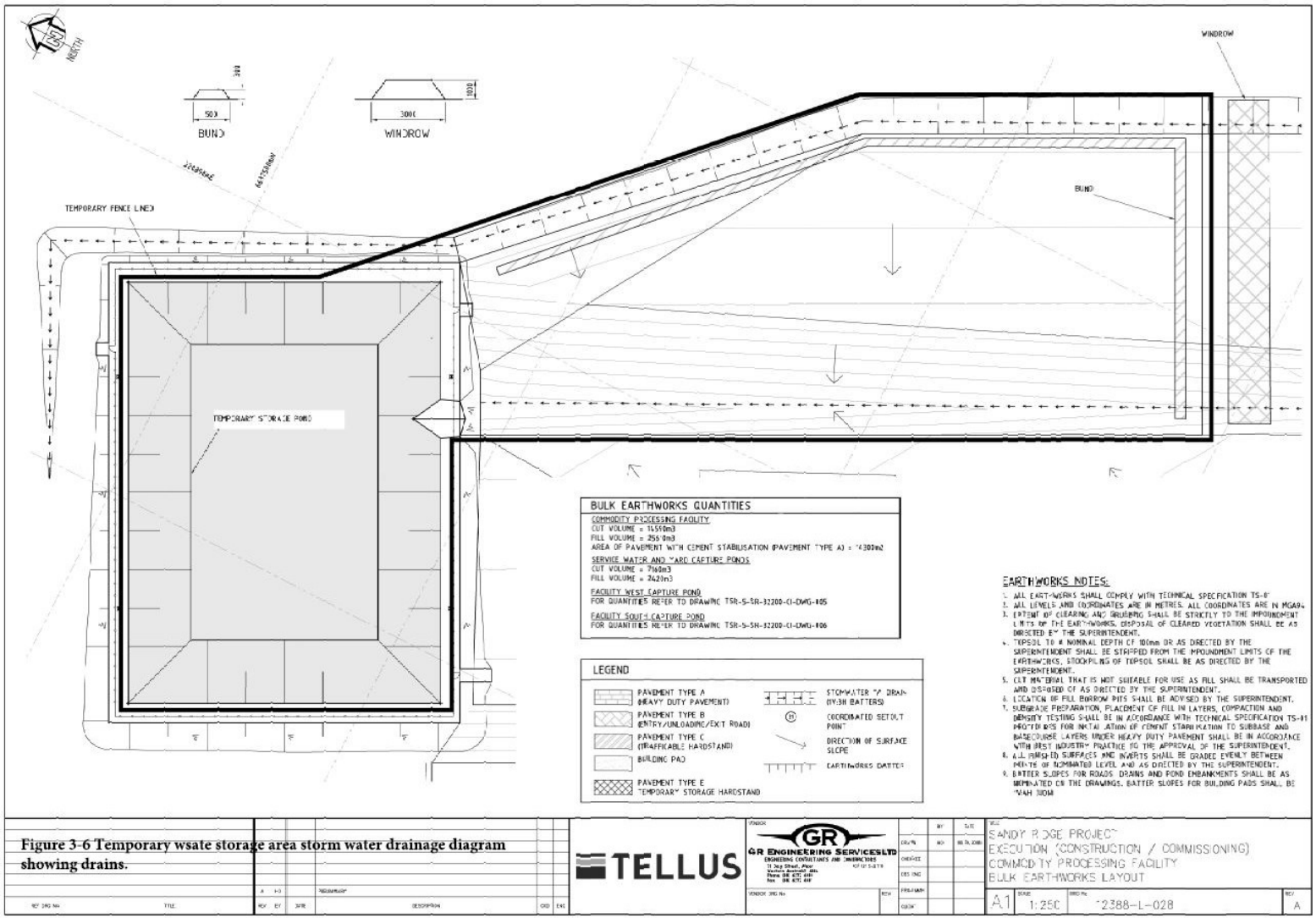


Figure 3-6 Temporary wsate storage area storm water drainage diagram showing drains.

Figure 3: Temporary Waste Storage Area – drainage and bunding detail
Source: Figure provided by the Applicant

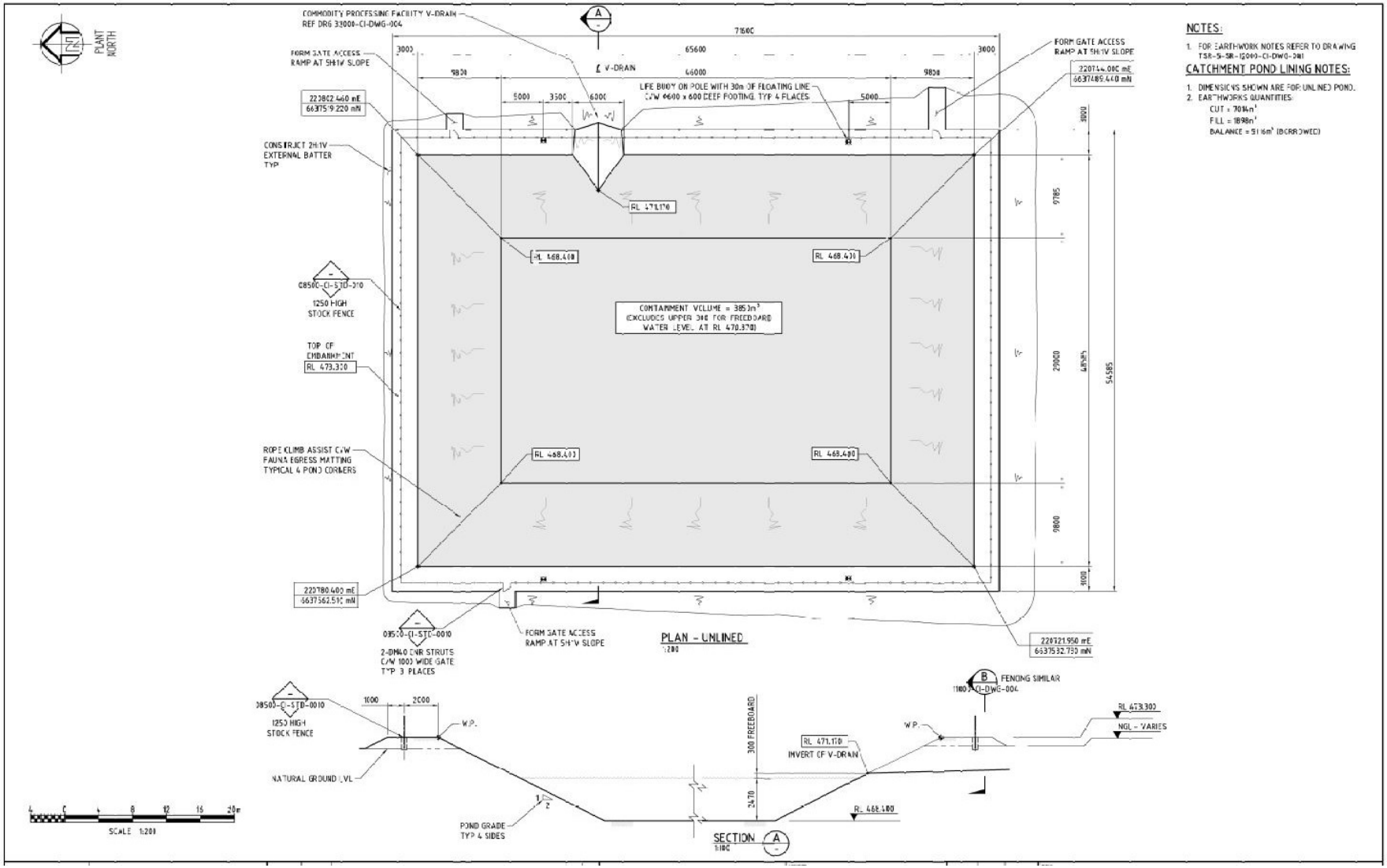


Figure 4: Temporary Waste Storage Area – stormwater pond construction detail
Source: Figure provided by the Applicant

6. Legislative context and other approvals

Approvals relevant to the premises are outlined in the Table 5 below.

Table 5: Summary of emissions and applicant controls

Legislation	Number	Subsidiary	Approval
Environment Protection and Biodiversity Conservation Act 1999 (Cth)	EPBC 2015/7478	Tellus Holdings Ltd	Bilateral assessment by the Commonwealth Department of Environment and Energy (DoEE) completed and approved 7 January 2019. Provides approval for the construction and operation of an open-cut kaolin clay mine, arid near-surface geological waste repository within mine voids, and associated infrastructure for the storage, treatment, recovery and permanent isolation (disposal) of hazardous and intractable wastes (including low level radioactive wastes) subject to conditions. Expires 31 December 2048.
Planning and Development Act 2005	DAP/17/01318	Tellus Holdings Ltd	The Sandy Ridge Development Application was approved by the Joint Development Assessment Panel on 3 April 2019 This approval requires works to be substantially commenced within 5 years of approval (i.e. 2 April 2024).
Mining Act 1978 (WA)	Mining Proposal Reg ID: 75521 for G16/21, L15/361, L15/362, L16/119, L16/121 and M16/540	Tellus Holdings Ltd	Mining Proposal and Mine Closure Plan approved June 2019. Tenure granted for mining lease M16/540 13 August 2018, expires 12 August 2039.
Mines Safety and Inspections Regulations 1995 (WA)	PM-666-293959	Tellus Holdings Ltd	Project Management Plan is approved, with no expiry date.
Land Administration Act 1997	Lot 510 on Deposited plan 413497 (Land) whole volume 3169 Folio 365	Tellus Holdings Ltd	Lease agreement granted for open cut Kaolin mine and intractable waste facility purposes. Crown Lease granted 26 November 2019
Radiation Safety Act 1975 (WA)	Registration ID: RS 210/2018 30289	Tellus Holdings Ltd	Site Registration and licence to accept and store low level radioactive waste. Expiry date 17 October 2022.

Legislation	Number	Subsidiary	Approval
Rights in Water and Irrigation Act 1914	GWL202536	Tellus Holdings Ltd	Section 26D licence to construct monitoring and abstraction bores within the Goldfields Groundwater Management Area. Section 5C Licence to Take up to 0.18 GL per annum from Carina bore (in L16/121) within the Goldfields Groundwater Management Area. Expires 7 March 2029.
Dangerous Goods Safety Act 2004	DGS022452	Tellus Holdings Ltd	Dangerous Goods Site Licence. Expires 27 September 2023.
Bushfires Act 1954	N/A	Tellus Holdings Ltd	The Sandy Ridge Development Application and its supporting Bushfire Management Plan was approved by Joint Development Assessment Panel on 3 April 2019 The Bushfire Management Plan is linked to the Development Approval which requires works to be substantially commenced within 5 years of approval (i.e. 2 April 2024).
Part IV of the EP Act (WA)	Statement Number 1078	Tellus Holdings Ltd	Agreement that the proposal may be implemented. Additional details in section 5.1. The Ministerial Statement has no expiry date.
Part V of the EP Act (WA)	W6243/2019/1	Tellus Holdings Ltd	Works associated with Phase 1 activities, including Category 12, 64 and 85.

6.1 Part IV of the EP Act

The Applicant has received approval under Part IV of the EP Act in June 2018, through Ministerial Statement 1078 to implement a dual open cut kaolin clay mine and a near-surface geological waste repository accepting Class IV and Class V waste, approximately 75 kilometres north east of Koolyanobbing.

The elements specifically authorised by MS 1078 (not all of which relate to this application) are:

- Mine pits/waste cells (including clearing up to 202.3 hectares of native vegetation within a 1,061 hectare development envelope);
- Associated infrastructure (including clearing up to 73.75 hectares of native vegetation within a 1,061 hectare development envelope);
- Class IV & V waste accepted at gate (up to 100,000 tonnes per annum);
- Temporary waste storage on surface (up to 15,000 tonnes);
- Maximum temporary storage time (up to 12 months);
- Waste (including treated waste) disposed to waste cells (up to 280,000 tonnes per annum);
- Water abstraction (up to 0.18 gigalitres per annum); and
- Access roads, pipeline corridors, stormwater sumps and a flood levee.

The proposal is subject to a number of conditions including a requirement to implement and

maintain a waste management system, develop and implement a leachate monitoring and management plan, undertake independent audits, ensure impacts to soil quality are minimised, avoid and manage impacts to flora and fauna, develop a decommissioning plan and provide a financial assurance.

The assessment conducted by the Environmental Protection Agency (EPA) (Report 1611) concluded that the relevant EP Act principles and environmental objectives for terrestrial environment quality, flora and vegetation, human health, terrestrial fauna and inland waters environmental quality can be met (subject to conditions) and that the application is environmentally acceptable.

6.2 Contaminated Sites

At the time of assessing this Works Approval application, the proposed Facility was not reported or registered as a Contaminated Site.

6.3 Other relevant approvals

6.3.1 Planning approvals

The Midwest/Wheatbelt Joint Development Assessment Panel accepted and approved DAP/17/01318 for the proposed Facility on 3 April 2019. The assessment panel accepted that the DAP Application reference DAP/17/01318 is appropriate for consideration as a "Waste Disposal Facility" land use and compatible with the objectives of the zoning table in accordance with Local Planning Scheme No 5 of the Shire of Coolgardie.

The assessment panel also approved the DAP Application reference DAP/17/01318 and accompanying plans in accordance with Clause 68 of the *Planning and Development (Local Planning Schemes) Regulations 2015* and the provisions of the Shire of Coolgardie Local Planning Scheme No.5 subject to conditions.

Due to the dual nature of the proposed Facility to undertake mining operations and the acceptance and disposal of waste simultaneously on the same land, tenure granted under both the *Mining Act 1978* (WA) and *Land Administration Act 1997* (WA) (LLA) is required for the construction and operation of the proposal.

The Applicant was granted land tenure under the LAA (Crown Lease) on 26 November 2019. It is noted that the Crown Lease stipulates that the Lessee must not accept any waste at the Leased Premises until a Financial Assurance Arrangement has been entered into.

6.3.2 Department of Mines, Industry Regulation and Safety

The Department of Mines, Industry Regulation and Safety granted approval for a Mining Proposal and Mine Closure Plan associated with the Facility on 4 June 2019 (Mining Proposal Registration ID: 75521). This proposal relates to mining activities associated with the project, outside those specifically related to this application.

Further, the Applicant has received a Dangerous Goods Site Licence (DGS022452) for the Facility on 27/09/2018 under the *Dangerous Goods Safety Act 2004*.

6.3.3 *Radiation Safety Act 1975*

The Applicant has been granted a registration under the *Radiation Safety Act 1975* for the temporary surface storage of low level radioactive wastes. This registration limits surface storage in accordance with the Applicant's Radiation Management Plan.

6.3.4 *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*

On 23 September 2015, the Department of Environment determined under section 75 of the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) the construction of the Sandy Ridge Facility to be a controlled action to be assessed under the Bilateral Agreement with Western Australia (Agreement between the Commonwealth of Australia and Western Australia under section 45 of the EPBC Act relating to Environmental Impact). The relevant matters of national environmental significance considered for the Sandy Ridge Facility included s21 and 22A – Nuclear action.

In January 2019, the Department of Environment and Energy granted approval for the Facility (EPBC Reference No.: 2015/7478) under section 133 of the EPBC Act.

Key conditions within EPBC/2015/7478, (not all of which relate to this application) include:

- Submission and implementation of a deep groundwater monitoring and management plan;
- Implementation of the PFAS National Environmental Management Plan (NEMP);
- Surface and floodwater management; and
- Waste placement within cells not to include disposal by the borehole method (also called BOSS method)

The following exert is taken from the PFAS National Environment Management Plan (page 21):

Although not comprehensive, the following apply to storage PFAS-contaminated materials:

- *Materials should be stored, handled and transferred in a proper and efficient manner so as to minimise the likelihood of any leakage, spillage, or release to stormwater, surface water, land or air.*
- *Unloading, loading and any internal transfer of liquids should be undertaken in a manner that minimises the possibility of spillage and occur on an area that is impervious to liquid, and sufficiently graded and bunded to retain any spillage or leakage, including any firewater.*
- *Unloading of solids should be carried out in a manner that minimises the creation of dust, and minimises or prevents emissions by any other manner.*
- *Smaller containers (e.g. not exceeding 15 litres) should be stored in a secondary containment.*
- *Containers should be stored a sufficient distance from bund walls, unless splash shields or baffles of compatible, non-combustible materials, effective to prevent leakage or spillage, are installed that prevent any release beyond the bund wall.*
- *Packages and bulk containers should be stored and handled so that they cannot fall and cause spillage outside of the containment.*
- *Wherever practicable, a roof or solid cover should be placed over bunded areas.*

The following guidance is also provided in the PFAS NEMP for the storage of PFAS contaminated materials:

Storage should be planned and implemented in accordance with a risk-based approach designed to minimise the potential for the storage facility to release PFAS into the environment, while addressing operational requirements for differing durations of storage.

Waste concentrated liquid PFAS-containing materials should be stored in appropriate vessels such as covered intermediate bulk containers (IBCs) in bunded areas. The bunds or bunded tanks must be impermeable and sufficiently sized for a major spill, including capacity for stormwater runoff, to completely contain the movement of PFAS (i.e. as a barrier).

Storage of PFAS-contaminated materials should be undertaken in such a way that contamination must not migrate into the surrounding soil or water and all runoff should be monitored for PFAS. This can often mean storage within a sealed and bunded area, where the material is in a suitable container or appropriately covered to minimise rainfall penetration and prevent runoff.

Along with ongoing monitoring (refer to Ongoing management of containment facilities, below), the condition of storage containers and the bunded area need to be monitored. Cracks or leaks in materials such as concrete may be difficult to detect and the integrity of bunding should never be assumed. If leaks are detected, further assessment and action should be taken.

7. Exclusions

Activities relating to Category 12, 64 and 85 as previously assessed under Works Approval W6243/2019/1 are not re-considered as part of this application.

Activities relating to Category 65 and 66, as well as additional infrastructure works associated with Category 61 and 61A will be the subject of a separate works approval application and assessment (W6308/2019/1).

8. Emission sources, receptors and pathways

8.1 Emissions

The potential for emissions to impact on sensitive receptors has been assessed in accordance with the Department's Risk Framework. The key emissions during premises construction which have been considered in this report are; noise and dust emissions and fugitive spills from construction activities including the construction of infrastructure, equipment placement and the use and movement of vehicles and machinery.

The Applicant has proposed measures to assist in controlling these emissions, where necessary. The control measures are outlined in Section 8.4 below and have been considered when undertaking the risk assessment detailed in Section 9.

Following completion and compliance with this works approval, and in accordance with DWER Industry Guide to Licencing, the Applicant has requested time limited operations be considered to allow waste acceptance to the temporary waste storage area. A risk assessment for the operational phase has been included in this Decision Report with regard to time limited operations. A prescribed premises licence for Category 61 and 61A issued under Part V of the EP Act will be required to authorise emissions associated with the ongoing operation of the premises.

The key emissions considered in during premises time limited operation are; noise, dust, wastewater, waste and leachate from activities including waste acceptance, handling and storage.

8.2 Environmental Siting

8.2.1 Potential receptors and environmental aspects

Risk is assessed as a combination of emission sources, the proximity and sensitivity of receptors to those emission sources and any pathways that can allow the emission to reach and potentially harm the receptor. Figure 5 and Table 6 below provides a summary of human and environmental receptors in proximity to the premises which have a potential to be impacted from site activities.

The risk assessment in Section 9 considers only relevant receptors in the context of emissions and potential pathways.

Table 6: Description and distance to receptors

Human receptors	**Distance from activity or prescribed premises**
Mount Walton Intractable Waste Disposal Facility (IWDF) (Facilities to cater for five permanent personnel, however the premises has been under care and maintenance since 2008 and no permanent workforce is located here at the time of assessment)	Approximately 5 km east of the Premises.
Ex-Juardi pastoral station homestead	Approximately 50 km south of the Premises.
Carina Mine Camp (under care and maintenance at the time of assessment, with two caretakers in residence)	Approximately 52 km south of the Premises.
Town of Koolyanobbing	Approximately 75 km south-east of the Premises.
Environmental receptors	**Distance from activity / prescribed premises**
Important wetlands – Western Australia	There are no Important wetlands are located within 20 km of the premises (based on available GIS dataset – Geomorphic Wetlands and Wetland (DIWA)).
Geomorphic Wetlands	There are no geomorphic wetlands within 20 km of the premises (based on available GIS dataset – Geomorphic Wetlands).
RAMSAR Wetlands	There are no RAMSAR wetlands within 20 km of the Premises.
Non-Perennial Surface Water Bodies	DWER GIS data indicate two minor non-perennial waterbodies associated with Lake Raeside, one approximately 50 m south of the proposed premises boundary and one approximately 450 m west of the proposed premises boundary (based on available GIS dataset – Hydrography WA 250K – Surface Waterbodies). These waterbodies are located approximately 2.5 km and 1.4 km respectively from the proposed infrastructure area and temporary waste storage area.

Parks and Wildlife Managed Lands and Waters	The Mount Manning Range Nature Reserve is located approximately 9.8 km north-west of the Premises. The Mount Manning – Helena and Aurora Ranges Conservation Park is located approximately 19.8 km west of the Premises. The Boorabbin National Park is located approximately 100 km south of the Premises.
Threatened Ecological Communities and Priority Ecological Communities	The Finnerty Range/Mt Dimer/Yendilberin Hills Vegetation Complexes (Banded Ironstone Formation) are located approximately 12.5 km to the south west of the Premises.
Threatened/Priority Flora	6 threatened/priority flora are located within a 10 km radius of the Premises, the closest being approximately 3 km from the Premises boundary.
Threatened/Priority Flora – as identified in the Public Environment Review	*Calytrix creswellii* – listed as Priority 3 by the DBCA - recorded within the mine infrastructure area. *Banksia arborea* – listed as Priority 4 by the DBCA - recorded within the groundwater abstraction area.
Threatened/Priority Fauna	*Leipoa ocellata* is mapped within premises boundary.

On the basis of distance from the proposed activites, the majority of these receptors are not considered to be signficant in realtion to the risk assessment for the construction and time limited operation of the temporary waste storage area. Receptors considered as relevant for the assessment of risks associated with the scope of this assessment are:

- Human receptors at the Mount Walton Intractable Waste Disposal Facility;
- Threatened Priority Flora and Fauna and the ecosystem with which they are associated; and
- Non-perennial surafce water bodies.

It is noted that potential impacts to Threatened/Priority fauna and flora were also considered and assessed under Ministerial Statement 1078. MS1078 includes conditions relevant for potential impacts to flora and fauna associated with the Facility.

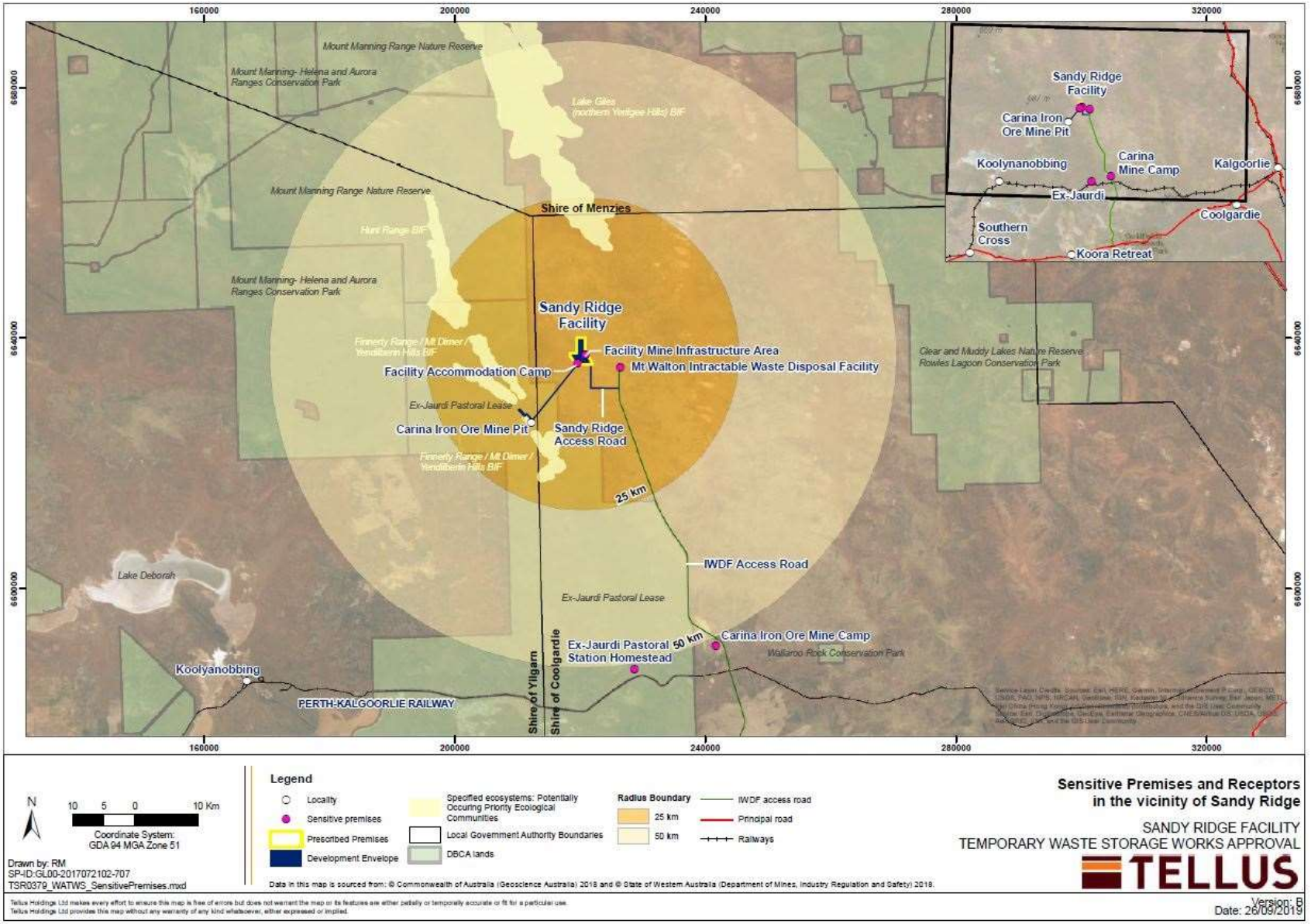


Figure 5: Distance to receptors
Source: Figure provided by the Applicant

8.2.1 Geology

The proposed facility is located within the Archean Yilgarn Craton that comprises an area of approximately 657,000 km2. The bulk of the craton is thought to have formed between 3,000 and 2,600 million years ago, with some gneissic terranes exceeding 3,000 million years in age (Anand and Butt, 2010, as referenced within the Sandy Ridge PER 2016). The surface of the Yilgarn Craton, the Yilgarn Plateau, has low relief and, on a regional scale, likely represents a Proterozoic erosion surface modified by weathering, partial erosion, and sedimentation, resulting in a complex regolith (Anand and Butt, 2010, as referenced within the Sandy Ridge PER 2016). Broad landforms are understood to have been in place for about 250 million years and the Yilgarn Craton has been tectonically stable for approximately 2,500 million years.

The local geology is well understood due to mineral exploration drilling across the exploration tenement. In geological terms the proposed development envelope is a deeply weathered granitoid terrane that generally comprises four main lithologies. From the surface these are:

- Colluvial sand and gravel with mottled zone laterite – comprising mostly yellow brown quartz sand overlying pisolitic-ironstone gravel and/or nodular red-brown clayey sand (lateritic mottled zone).
- Silcrete – comprising kaolinitic clay and silica to form a hard cap over underlying lithologies. The base of the silcrete generally merges gradationally into the underlying kaolinitic clay profile and as a result the silcrete can be quite variable in terms of overall thickness. The silcrete has most likely been hardened as the result of a secondary chemical process that effectively has re-cemented the kaolinitic clay profile from its upper surface.
- Kaolinitic clay – comprises soft white kaolin weathered from pre-existing granitoids. Drilling indicates the clay profile may be absent in certain areas where silcrete stretches to the granitoid basement, but generally is more than 15 m thick and up to a maximum of nearly 40 m thick. The clay is quite uniformly white with little fracturing and only exhibits minor iron staining in the few fracture zones present.
- Granitoid basement – comprises a fine to medium grained light coloured granite containing pegmatite and quartz veins. The basement topography varies widely to less than 5 m from the surface to greater than 45 m below the surface.

A typical cross section profile of the geology at the proposed Sandy Ridge Facility is shown in Figure 6.

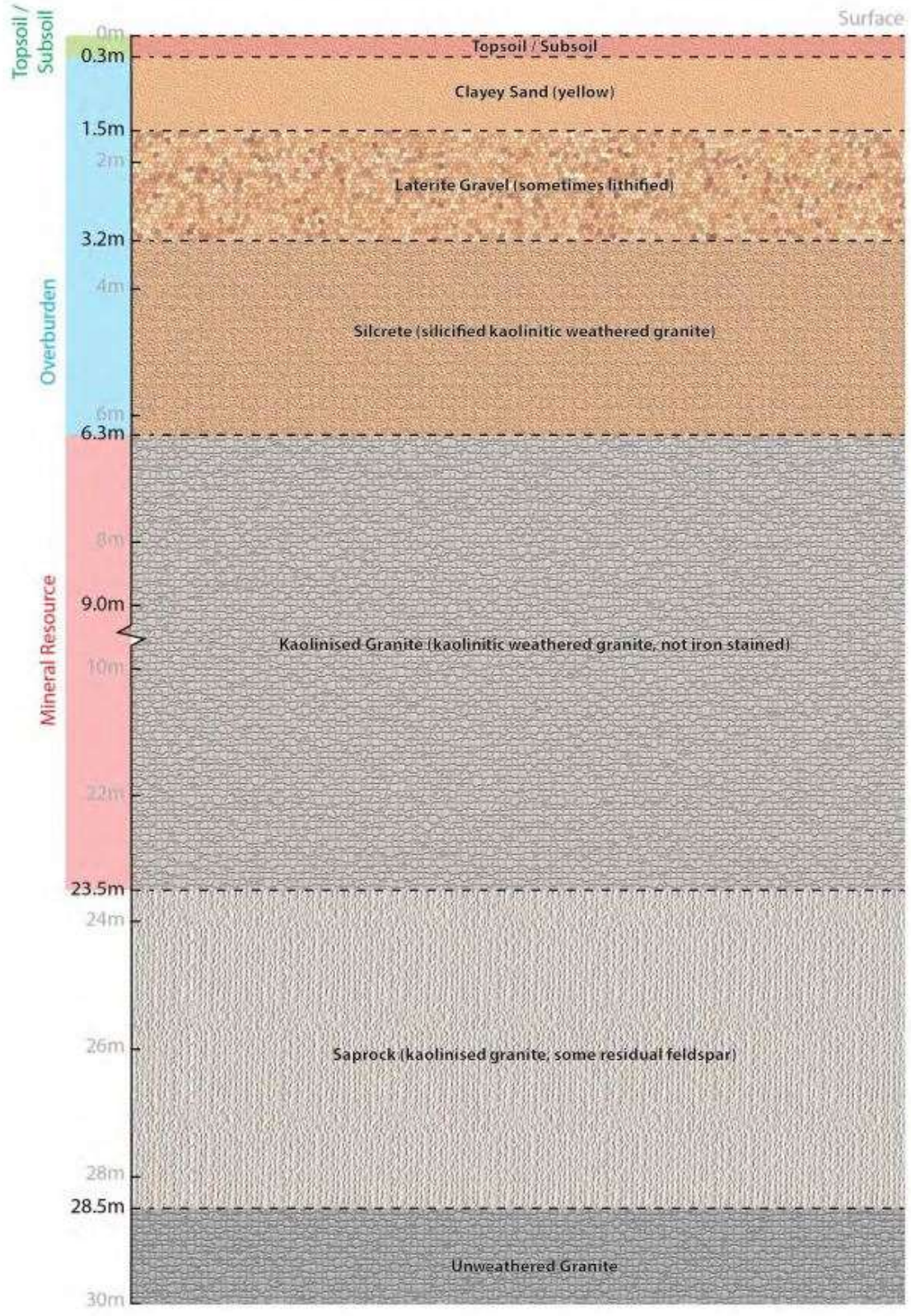


Figure 6 – Typical geological profile at the Sandy Ridge Facility.
Source: Sandy Ridge Public Environment Review 2016

8.2.2 Soil

The proposed facility is located within the Norseman (266) soil landscape mapping zone, within the Kalgoorlie Province as defined by Tille (Sandy Ridge Public Environment Review 2016). The soils of the Norseman zone are described as calcareous loamy earths, yellow sandy and loamy earths, red loamy earths, deep red sands and salt lake soils.

In situ geotechnical investigations undertaken by Douglas Partners (for the Applicant) applied Hazen's formula to laboratory testing of the soil types above the silcrete layer to estimate permeability. Permeability values of between 1 x 10^{-6} m/s (0.08 m/day) and 1 x 10^{-5} m/s (0.8 m/day) are suggested for the slightly silty sand, sandy gravel and weakly cemented sand.

Below the upper slightly silty sand, sandy gravel and weakly cemented sand soil layers, test pitting conducted within the proposed infrastructure areas determined a compacted gravel and silcrete layers at depths up to 1.5 m below ground level. Figure 7 provides indicative test pitting results for test pits dug within the infrastructure area of the Facility.

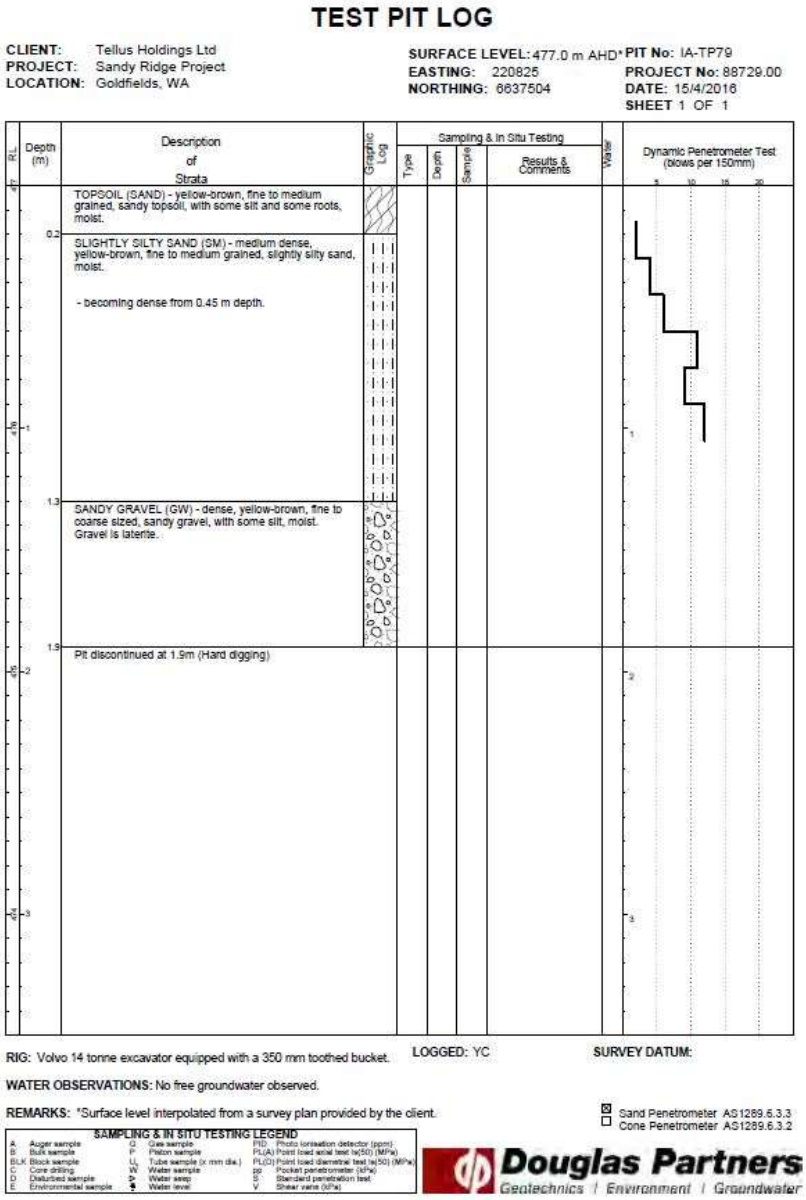
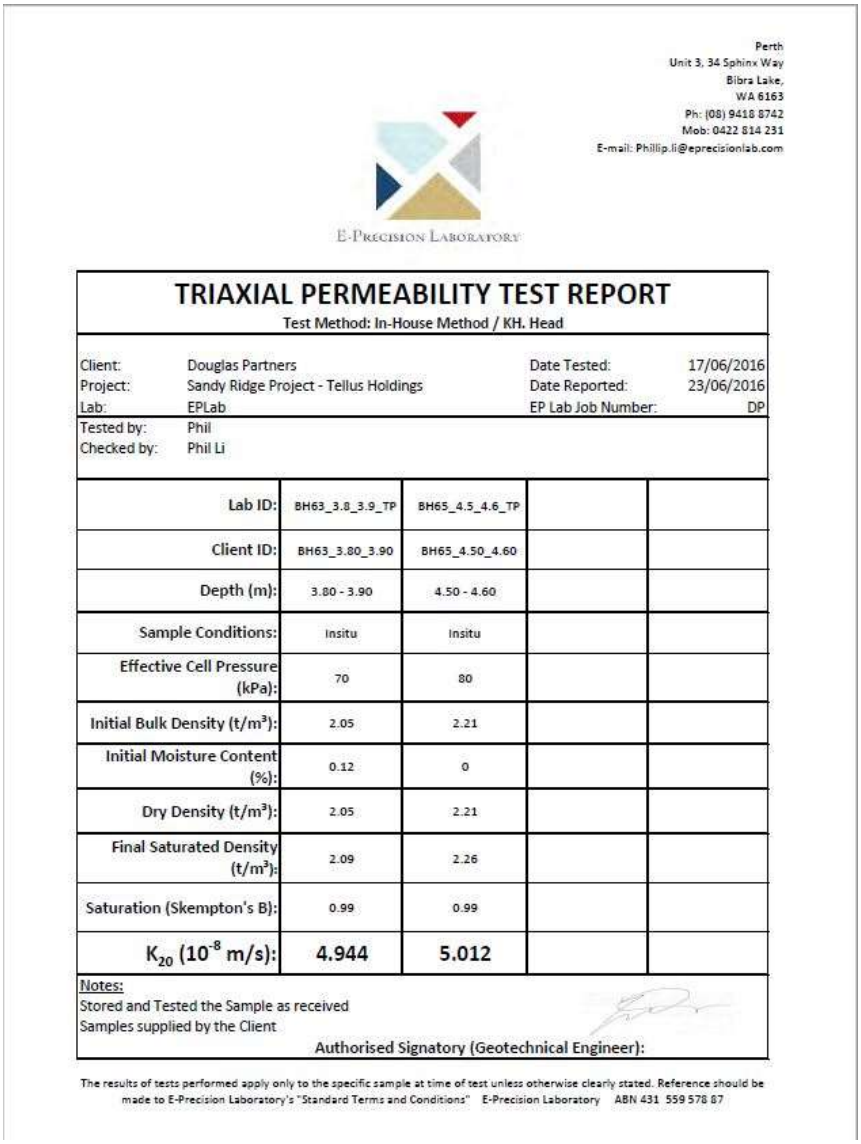


Figure 7 – Typical test pit log within infrastructure area at the Sandy Ridge Facility.
Source: Figure provided by the Applicant

Permeability results for silcrete taken from bore holes onsite indicated a silcrete permeability of 4.944 x 10^{-8} m/s and 5.012 x 10^{-8} m/s, as shown in Figure 8.



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E-Precision Laboratory

TRIAXIAL PERMEABILITY TEST REPORT

Test Method: In-House Method / KH. Head

Client:	Douglas Partners		Date Tested:	17/06/2016
Project:	Sandy Ridge Project - Tellus Holdings		Date Reported:	23/06/2016
Lab:	EPLab		EP Lab Job Number:	DP
Tested by:	Phil			
Checked by:	Phil Li			

Lab ID:	BH63_3.8_3.9_TP	BH65_4.5_4.6_TP		
Client ID:	BH63_3.80_3.90	BH65_4.50_4.60		
Depth (m):	3.80 - 3.90	4.50 - 4.60		
Sample Conditions:	Insitu	Insitu		
Effective Cell Pressure (kPa):	70	80		
Initial Bulk Density (t/m³):	2.05	2.21		
Initial Moisture Content (%):	0.12	0		
Dry Density (t/m³):	2.05	2.21		
Final Saturated Density (t/m³):	2.09	2.26		
Saturation (Skempton's B):	0.99	0.99		
K_{20} (10^{-8} m/s):	4.944	5.012		

Notes:
Stored and Tested the Sample as received
Samples supplied by the Client

Authorised Signatory (Geotechnical Engineer):

The results of tests performed apply only to the specific sample at time of test unless otherwise clearly stated. Reference should be made to E-Precision Laboratory's "Standard Terms and Conditions" E-Precision Laboratory ABN 431 559 578 87

Figure 8 – Silcrete permeability test results.
Source: Provided by the Applicant

8.2.3 Hydrogeological Setting

The Premises is located on the Yilgarn Craton and is underlain by granitic rocks of Archaean age. These rocks have been extensively weathered and drilling on site by the Applicant indicates that fresh bedrock is overlain by a clayey weathered profile which varies from 26 to 31 metres in thickness. The drilling indicated that only minor amounts of groundwater were likely to occur in partially weathered rock (saprock) near the base of the weathered profile. No continuous groundwater table was identified during the drilling of boreholes at depths between 21 to 49 metres below ground level.

Groundwater was only definitively intersected in two of the seven investigations bores that were drilled by Rockwater at the Sandy Ridge site. Groundwater at the site is saline and has a

total dissolved solids (TDS) content of about 6000-6500 mg/L.

There are no registered groundwater users (or bores) in the local area, with the exception of bores, constructed for environmental monitoring purposes, at the Intractable Waste Disposal Facility at Mount Walton East 5.5 km east of the development envelope. The closest water supply bores are located at the Mount Dimer gold mine, 23 km from the Facility.

Where groundwater has been encountered, it occurs in natural traps in the deepest parts of the basement surface. Desktop and field research undertaken by the Applicant between 2014 and 2019 indicates:

- There is no surface recharge of groundwater in the survey area combined with a significant horizon of low permeability in the kaolinite and saprock horizons (Geo9, 2019);
- No continuous groundwater aquifer was intersected during targeted groundwater investigations (Rockwater, 2015);
- No groundwater aquifer has been intersected during exploration drilling. This included 216 holes with depths ranging from 12.0–47.5 metres below ground level (m BGL) across the proposed development envelope;
- Very small quantities of groundwater were airlifted from two bores (SRMB150 (0.03 L/s) and SRMB152 (<0.01 L/s)). The low airlift yield and low permeability indicate that the water-bearing zones containing the groundwater do not constitute an aquifer (Rockwater, 2015);
- Analysis of resource samples collected during mining exploration activities indicate that for weathered granite deeper than 6 m BGL, moisture content is typically between 10% and 12% by weight. This suggests the soil is very dry, the area has limited recharge, the depth to the water table is inferred to be well below the weathered granite, and the material is free draining (i.e. water flows vertically under a unit gradient due to gravity) (CyMod, 2016);
- Since monitoring began in 1995, no groundwater has been detected in monitoring bores at the IWDF. The bores vary in depths of between 24 m and 41 m BGL, (Department of Finance, 2014);
- The absence of groundwater in the weathered, kaolinised granite on top of the fresh granite suggests any deep water infiltration would subsequently migrate into very low permeability fresh granite and would be stored in localized, low yield, fractured rock aquifers;
- No evidence of a shallow groundwater table (i.e. in soils above the silcrete and kaolin), due to annual evaporation rates (greater than 2400 mm (BoM, 2015b)) exceeding the average annual rainfall amount of 250 mm.

8.2.4 Surface water and Topography

The area is characterised as semi-arid, with little rainfall occurring over the site. The Applicant conducted a hydrological study which included a desktop review of regional hydrogeology and field investigations. There are no channels or creeks in the development envelope, however within the larger proposed premises boundary, DWER GIS data indicate two minor non-perennial channels associated with Lake Raeside. DWER GIS data also indicates two non-perennial water bodies associated with Lake Raeside, one approximately 50 m south of the proposed premises boundary and one approximately 450 m west of the proposed premises boundary.

These surface water bodies represent localised drainage depressions, with the western water body indicatively upstream of the Facility (approximately 2.5 km from the proposed temporary waste storage area), while the southern water body is indicatively downstream of the Facility (approximately 1.4 km from the temporary waste storage area).

Surface water management was considered to be required only during short term flows associated with infrequent high rainfall events (Rockwater 2016 as referenced within the Sandy Ridge PER 2016). Surface water and hydrological modelling for these rainfall events included an assessment for peak discharge rainfall events (modelling of Intensity Rainfall Duration (IFD) rainfall curves) as well as catchment runoff hydraulic calculations. Calculated Average Recurrence Interval rainfall events are presented in Table 7 below.

Table 7: Total rainfall including probable maximum precipitation (extracted from Sandy Ridge PER)

Duration	ARI/total rainfall (mm)									
	2	5	10	20	50	100	200	500	1000	2000
24	40	57	70	87	113	136	155	180	201	222
48	47	68	83	104	135	163	186	216	241	266
72	50	72	89	111	146	176	200	232	258	285

8.3 Pathways

8.3.1 Wind direction and strength

As dust and noise are considered potential emissions, the prevailing wind direction has been considered. Using information available on the Bureau of Meteorology's website, the proposed Facility is located between two weather stations, Southern Cross Airfield (No. 012320) and Menzies (012052). Wind data available for the Menzies station provides an historic dataset (1957 to 1996), while the Southern Cross Airport weather station provides data from 1996 to 2019. The Menzies weather station is located approximately 115 km north east of the proposed premises and the Southern Cross Airport weather station is located approximately 117 km south west from the proposed premises boundary.

Based on the climate data for the Menzies station (Jan 1957 to Dec 1996), winter morning winds are generally north-easterly and north-westerly, while the prevailing afternoon wind direction in winter is north-westerly. In the summer months, historic wind data at Menzies indicates prevailing south-easterly and north-easterly winds in the morning, and south-easterly in the afternoon. Mean 9am wind speed during the summer months is 19 km/h, while in the winter months 14 km/h.

Based on the climate data for the Southern Cross Airfield station (Oct 1996 to Aug 2019), the prevailing wind direction in winter months is northerly in the morning to west/north–westerlies in the afternoon, and in summer months the prevailing wind direction is generally easterly in the morning and variable in the afternoon. Mean 9am wind speed during the summer months is 22 km/h, while in the winter months 13 km/h.

8.3.2 Geology, surface water and groundwater

As wastewater and potentially contaminated stormwater are considered potential emissions and discharges during operation, the geology of the region, surface waters and depth to groundwater have been considered. The Premises is located on predominately flat to gently undulating sand plain over weathered granite. The region is semi-arid and any surface water flow is intermittent, resulting in no permanent creeks, rivers or lakes in the vicinity of the Premises. Catchment runoff modelling conducted by the Applicant determined 14 catchments within the development envelop, as shown within Figure 9. Flow durations were assessed to be short, with expected peak flows within the vicinity of the infrastructure area ranging from 1.6 m^3/s to 5.5 m^3/s (for an 100 year ARI event) and 7 m^3/s to 20 m^3/s for the probable maximum rainfall event (2000 year event).

With the absence of any permanent surface water bodies, and no predominant surface water

flow direction due to the flat surface, overland flow of stormwater from the area of the proposed activities is considered to be restricted to movement within natural depressions and channels within the Premises boundary and, in the event of higher volume flows potentially to the non-perennial surface water body located 1.4 km south of the temporary waste storage area.

The typical geology of the area has been described in Section 8.2.1. On the basis of the low permeability of soil and subsoil materials, the weathered profiles is considered to have low permeability and therefore, there is not considered to provide a pathway for leachate migration to groundwater at the premises.

The relevant pathways that have been considered in the risk assessment table in Section 9 are:

- Air and wind dispersion
- Direct discharge to soil
- Surface water overland flow

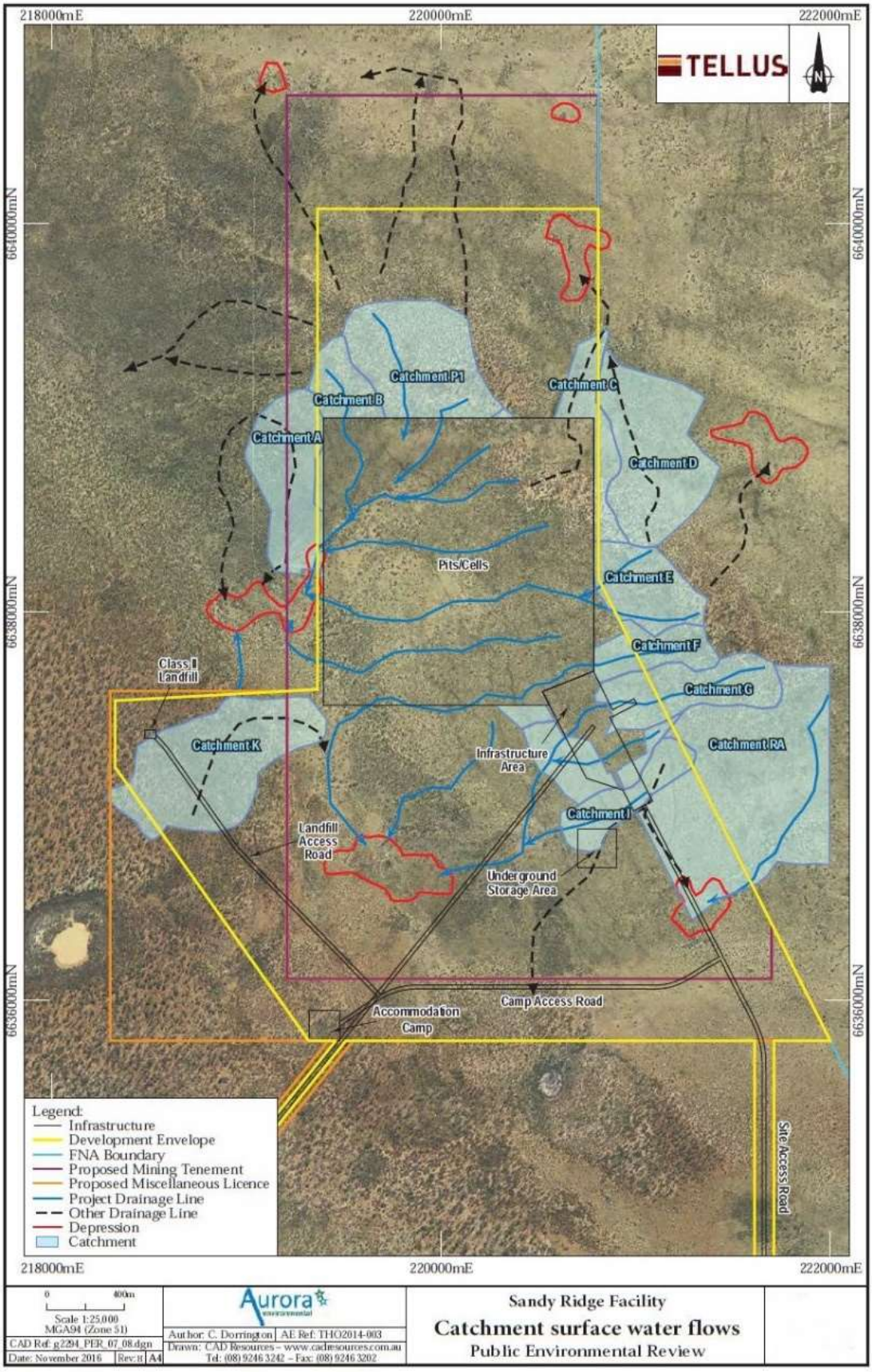

Figure 9 – Premises catchment surface water flows.
Source: Sandy Ridge Public Environment Review

8.4 Applicant controls

The Applicant has proposed the following management measures and controls as part of the application:

Table 8: Summary of emissions and applicant controls

Source	Emission (as identified above)	Proposed controls
Earthworks, construction of infrastructure, movement of plant and vehicles	Dust	Dust suppression water trucks throughout the site. Site traffic speed limited.
	Noise	Location of the premises a significant distance from receptors. Plant and equipment to meet Australian Standards and be regularly serviced.
	Breach of containment releasing hydrocarbons	Fuel stored and managed in accordance with the Dangerous Goods Safety (Storage and Handling of Non explosives) Regulations 2007 and Australian Standard 1940-:2017 - The storage and handling of flammable and combustible liquids.
Temporary Storage of Waste	Waste and Leachate	Maximum of 3,000 tonnes of waste on site, inclusive of up to 1,000 tonnes of liquid waste. Solid wastes stored within sealed containers or drums, which a then stored within secondary sealed containers (e.g. sea container). Liquid wastes stored within sealed drums within secondary, self bunded sealed containers. Liquid waste storage container bund capacity 110% of largest IBC/drum. No opening of waste containers unless indication of leak. Secondary storage containers stored on compacted hardstand. Hardstand constructed of compacted subgrade. Wastes that are flammable, chemically unstable or corrosive (to storage containers) not accepted. No mixing of wastes within secondary storage containers. Detailed Waste Acceptance Procedure, Waste Acceptance Criteria and Hazardous Material Response Safe Work Procedure developed. Waste separation and segregation as per Dangerous Goods requirements. Storage not exceeding 12 months. Lockable fence surrounding storage yard. Emergency and spill response equipment present onsite. Daily inspections.

Source	Emission (as identified above)	Proposed controls
	Odour	Location of the premises a significant distance from receptors. Solid wastes stored within sealed containers or drums, which a then stored within secondary sealed containers. Liquid wastes stored within sealed drums within secondary, self bunded sealed containers.
	Potentially Contaminated Stormwater	Stormwater diversion drain installed up gradient of storage area. Earth bunding installed around storage are to contain storm water flows. Stormwater collected within waste storage area draining to an earthen stormwater pond. Stormwater pond designed to retain 1:100, 72 hour rainfall event.
	Radiation	Subject to separate approval under *Radiation Safety Act 1975*. Waste acceptance procedures and Radiation Management Plan (RMP). Facility Operational Safety Case.
	Fire/smoke emissions	Waste segregation and storage in accordance with Dangerous Goods storage requirements. Flammable, chemically unstable or corrosive (to storage container) waste not accepted onsite. Waste acceptance procedures.

9. Risk assessment

The identification of the sources, pathways and receptors to determine Risk Events are set out in Tables 9 and 10 below, consistent with the *Guidance Statement: Risk Assessments*. Risk ratings have been assessed for each key emission source and take into account potential source-pathway-receptor linkages.

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission. Where there is no actual or likely pathway and/or no receptor, the emission will not be considered as a Risk Event. In addition, where an emission has an actual or likely pathway and a receptor which may be adversely impacted, but that emission is regulated through other mechanisms such as Part IV of the EP Act, that emission will not be risk assessed further.

The mitigation measures / controls proposed by the Applicant have been considered in determining the risk rating. Emissions during construction and operation have been assessed separately to allow clear delineation of activity phases.

The works approval that accompanies this report authorises construction and time-limited operations. A licence is required to operate the premises following the time-limited operational phase authorised under the works approval. The conditions in the issued Works Approval, as outlined in Table 9 and 10, have been determined in accordance with the *Guidance Statement: Setting Conditions*.

9.1 Risk assessment – construction

Table 9: Identification of emissions, pathway and receptors during construction

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Construction of infrastructure and positioning of equipment Movement of vehicles	Dust	Air/windborne pathway causing impacts to health and amenity of closest human receptors (Temporary workers of Mount Walton IWDF 5 km away).	As described in section 8.4	Slight	Unlikely	Low	Based on the distance to relevant receptors, the Delegated Officer considers that the applicant controls are acceptable for the mitigation of dust and noise emissions.	The general provisions of the EP Act are considered sufficient in regulating dust emissions
	Noise and vibration		As described in section 8.4					The general provisions of the EP Act and the *Environmental Protection (Noise) Regulations 1997* are considered sufficient in regulating noise emissions
Fuel storage and chemical use	Breach of containment releasing hydrocarbons	Overland flow causing impact to soil quality and surface water.	As described in section 8.4	Slight	Unlikely	Low	Based on the distance to relevant receptors and the low volume of fuel and chemicals stored onsite during construction, the Delegated Officer considers that the applicant controls are acceptable for the mitigating potential hydrocarbon or chemical discharges.	The general provisions of the EP Act and the *Environmental Protection (Unauthorised Discharges) Regulations 2004* are considered sufficient in regulating potential hydrocarbon discharges.

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the Department's Guidance Statement: Risk Assessments (February 2017)

8.2 Risk assessment – operation

Table 20: Identification of emissions, pathway and receptors under time-limited operation and during full operation

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities*	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Solid Waste acceptance and handling (during unloading) Vehicle movements	Dust	Air/windborne pathway causing impacts to health and amenity of closest human receptors (Temporary workers of Mount Walton IWDF 5 km away).	As described in section 8.4	Slight	Unlikely	Low	Based on the distance to relevant receptors, the Delegated Officer considers that the applicant controls are acceptable for the mitigation of dust emissions.	The general provisions of the EP Act are considered sufficient in regulating dust emissions
	Noise	Air/windborne pathway causing impacts to health and amenity of closest human receptors (Temporary workers of Mount Walton IWDF 5 km away).	As described in section 8.4	Slight	Unlikely	Low	Based on the distance to relevant receptors, the Delegated Officer considers that the applicant controls are acceptable for the mitigation of noise emissions.	The general provisions of the EP Act and the *Environmental Protection (Noise) Regulations 1997* are considered sufficient in regulating noise emissions
	Odour	Air/windborne pathway causing impacts to health and amenity of closest human receptors (Temporary workers of Mount Walton IWDF 5 km away).	As described in section 8.4	Slight	Unlikely	Low	Based on the distance to relevant receptors, the Delegated Officer considers that the applicant controls are acceptable for the mitigation of odour emissions.	The general provisions of the EP Act are considered sufficient in regulating odour emissions

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities*	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Solid waste acceptance and handling (during unloading)	Breach of containment causing discharge to land	Direct discharge pathway to soil causing contamination. Impacts to surrounding ecosystems, vegetation growth and the health of fauna.	As described in section 8.4	Minor	Unlikely	Medium	On the basis of the applicant controls including proposed procedures for waste acceptance and emergency response, the Delegated Officer considers that the applicant controls are acceptable for the mitigating impacts associated with breaches of solid waste containment. The Applicant specified controls will be included in the Works Approval as regulatory controls.	Works approvals conditions are included to ensure the appropriate spill response equipment is located onsite and any spilled solid wastes are contained and cleaned up. Works Approval conditions included: Condition 8 – *Time limited Operations* Conditions 10, 11 and 12 – *Waste acceptance and procedures* Conditions 14, 15, 16 and 17 – *Waste containers* Condition 20 to 22 – *Spill response and equipment*
	Radiation	Air/windborne pathway causing impacts to health and amenity of closest human receptors (Temporary workers of Mount Walton IWDF 5 km away). Air/windborne pathway causing impacts to surrounding ecosystems. Direct discharge pathway to soil causing impacts to surrounding ecosystems.	As described in section 8.4	Moderate	Unlikely	Medium	On the basis of the Radiation Council approval of applicant controls including proposed procedures for waste acceptance, the Delegated Officer considers that the applicant controls are acceptable for the mitigating impacts associated within radiation emissions. The Applicant specified controls will be included in the Works Approval as regulatory controls.	The Delegated Officer notes that the acceptance and storage of NORM and LLW wastes is subject to the approval of the Radiological Council, in addition to regulation under Part V of the EP Act. Works approvals conditions are included to ensure the acceptance, handling and storage of these wastes in accordance with Radiological Council approval. Works Approval conditions included: Conditions 10, 11 and 12 – *Waste acceptance and procedures* Conditions 14, 15, 16 and 17 – *Waste containers*

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities*	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Solid waste storage	Breach of containment causing discharge to land	Direct discharge pathway to soil causing contamination. Impacts to surrounding ecosystems, vegetation growth and the health of fauna.	As described in section 8.4	Minor	Rare	Low	On the basis of the applicant controls including design of the hardstand and retention pond, and proposed procedures for waste acceptance and emergency response, the Delegated Officer considers that the applicant controls are acceptable for the mitigating impacts associated with breaches of waste containment during temporary storage.	Works approvals conditions are included to ensure the appropriate waste storage and handling, as well as condition appropriate spill response equipment is located onsite and any spilled solid wastes are contained and cleaned up. Works approval conditions included: Condition 1 to 4 – *Waste storage infrastructure* Conditions 6 and 7 – *Environmental Compliance Reporting* Condition 8 – *Time limited Operations* Condition 9 – *Infrastructure maintenance* Condition 12 – *Waste procedures* Conditions 14, 15, 16 and 17 – *Waste containers* Condition 18 – *onsite security* Condition 19 – *Daily inspections* Condition 20 to 22 – *Spill response and equipment* Conditions 24 to 26 – *Stormwater management*

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities*	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Solid waste storage	Wastewater (Contaminated stormwater)	Overland runoff causing soil contamination. Impacts to surrounding ecosystems, vegetation growth and the health of fauna.	As described in section 8.4	Minor	Unlikely	Medium	On the basis of the applicant controls including design of the hardstand and retention pond, and proposed procedures for waste acceptance and emergency response, the Delegated Officer considers that the applicant controls are acceptable for the mitigating impacts associate with overland runoff of potentially contaminated stormwater The Applicant specified controls will be included in the Works Approval as regulatory controls.	The Applicant proposed controls will be included as conditions within the Works Approval to ensure stormwater flows are controlled within and outside the temporary waste storage area to mitigate impacts associated with contaminated stormwater runoff. Works approvals conditions are also included to ensure the appropriate spill response equipment is located onsite and any spilled solid wastes are contained and cleaned up. Works Approval conditions included: Condition 1 to 4 – *Waste storage infrastructure* Conditions 6 and 7 – *Environmental Compliance Reporting* Condition 9 – *Infrastructure maintenance* Conditions 14, 15, 16 and 17 – *Waste containers* Condition 19 – *Daily inspections* Condition 20 to 22 – *Spill response and equipment* Conditions 24 to 26 – *Stormwater management*

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities*	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Incompatible solid waste storage or flammable wastes	Fire/smoke emissions including particulates and air emissions containing toxic elements released in the event of a fire or explosion.	Air/windborne pathway causing impacts to health and amenity of closest human receptors (Temporary workers of Mount Walton IWDF 5 km away).	As described in section 8.4	Minor	Unlikely	Medium	On the basis of the proposed applicant controls including procedures for waste acceptance and storage in accordance with DMIRS approval, the Delegated Officer considers that the applicant controls are acceptable for the mitigating impacts associated with potential smoke emissions. The Applicant specified controls will be included in the Works Approval as regulatory controls.	The Delegated Officer notes that the storage of dangerous goods is subject to the approval of the Department of Mines, Industry Regulation and Safety. Works approvals conditions are included to ensure the acceptance, handling and storage of these wastes in accordance with Dangerous Goods approval. Works Approval conditions included: Condition 16 – W*aste storage*
Liquid waste acceptance and handling (during unloading) Vehicle movements	Dust	Air/windborne pathway causing impacts to health and amenity of closest human receptors (Temporary workers of Mount Walton IWDF 5 km away).	As described in section 8.4	Slight	Unlikely	Low	Based on the distance to relevant receptors and the Delegated Officer considered that the applicant controls are acceptable for the mitigation of dust emissions.	The general provisions of the EP Act are considered sufficient in regulating dust emissions.
	Noise	Air/windborne pathway causing impacts to health and amenity of closest human receptors (Temporary workers of Mount Walton IWDF 5 km away).	As described in section 8.4	Slight	Unlikely	Low	Based on the distance to relevant receptors and the Delegated Officer considered that the applicant controls are acceptable for the mitigation of noise emissions.	The general provisions of the EP Act and the *Environmental Protection (Noise) Regulations 1997* are considered sufficient in regulating noise emissions.

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities*	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Liquid waste acceptance and handling	Odour	Air/windborne pathway causing impacts to health and amenity of closest human receptors (Temporary workers of Mount Walton IWDF 5 km away).	As described in section 8.4	Slight	Unlikely	Low	Based on the distance to relevant receptors and the Delegated Officer considered that the applicant controls are acceptable for the mitigation of odour emissions.	The general provisions of the EP Act are considered sufficient in regulating odour emissions

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities*	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Liquid waste acceptance and handling (during unloading)	Breach of containment causing discharge to land	Direct discharge pathway to soil causing contamination. Impacts to surrounding ecosystems, vegetation growth and the health of fauna.	As described in section 8.4	Minor	Unlikely	Medium	The Delegated Officer has considered this risk event on the basis that the storage containers for liquid waste provide sufficient bunding, in that the PFAS contaminated liquid wastes are be stored within primary storage packages (drums/IBC's) inside bunded secondary storage containers. Based on the proposed waste storage controls and the design of the hardstand and drainage infrastructure, the Applicant's proposed waste acceptance and spill response controls are considered to be sufficient at mitigating the risk of soil and ground contamination associated with the handling of liquid wastes on the premises. The Applicant specified controls should be included in the Works Approval as regulatory controls.	Works approvals conditions are included to ensure the appropriate spill response equipment is located onsite and any spilled liquid wastes are contained and cleaned up. Works Approval conditions included: Condition 1 to 4 – *Waste storage infrastructure* Condition 12 – *Waste procedures* Conditions 14, 15, 16 and 17 – *Waste containers* Condition 19 – *Daily inspections* Condition 20 to 22 – *Spill response and equipment* Conditions 24 to 26 – *Stormwater management*

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities*	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Liquid waste storage	Breach of containment causing discharge to land	Direct discharge pathway to soil causing contamination. Impacts to surrounding ecosystems, vegetation growth and the health of fauna.	As described in section 8.4	Minor	Unlikely	Medium	The Delegated Officer has assessed this risk event with consideration of the temporary nature of liquid waste storage (up to 12 months). The Applicant's proposed waste acceptance, storage and spill response controls are considered to be sufficient at mitigating the risk of soil and ground contamination associated with the storage of liquid wastes on the premises. The Applicant specified controls should be included in the Works Approval as regulatory controls The Delegated Officer notes that potential future amendments to the national PFAS NEMP may result in additional storage and waste processing considerations for PFAS contaminated liquid wastes. These considerations may be required during the future construction phases for the Facility and/or assessment of risk for the licence for Category 61 activities.	The Delegated Officer considers the Applicant proposed waste storage containers meets the minimum requirements of the PFAS NEMP, in that the PFAS contaminated wastes are be stored within primary storage packages (drums/IBC's) inside bunded secondary storage containers. Works approvals conditions are included to ensure liquid wastes accepted and stored on the premises remain within bunded containment. Works approval conditions are also included to ensure necessary security, inspection, spill response and cleanup controls to ensure spills are contained and cleaned up. Works approval conditions included: Condition 1 to 4 – *Waste storage infrastructure* Conditions 6 and 7 – *Environmental Compliance Reporting* Condition 9 – *Infrastructure maintenance* Conditions 14, 15, 16 and 17 – *Waste containers* Condition 19 – *Daily inspections* Condition 20 to 22 – *Spill response and equipment* Conditions 24 to 26 – *Stormwater management*
	Wastewater (Contaminated stormwater)	Overland runoff causing impacts to onsite flora, surface water from potentially contaminated soil into the environment	As described in section 8.4	Minor	Unlikely	Medium		

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the Department's Guidance Statement: Risk Assessments (February 2017)

10. Consultation

Table 31: Summary of consultation

Consultation	Comments received	DWER response
Application advertised on DWER website (21/10/2019)	No comments received	N/A
Application advertised in the West Australian (28/10/2019)	No comments received	N/A
Local Government Authority (Shire of Coolgardie) advised of proposal on 25/10/2019	No comments received	N/A
Shire of Yilgarn advised of proposal on 25/10/2019	No comments received	N/A
Department of Planning, Lands and Heritage advised of proposal on 25/10/2019	Response received 31/10/2018 advising no approvals are required under the *Aboriginal Heritage Act 1972*, and that the Applicant should refer to the State's Aboriginal heritage Due Diligence Guidelines.	Noted
Department of Mines, Industry Regulation and Safety advised of proposal on 25/10/2019	Response received 08/11/2019 advising that: • DMIRS assessed a mining proposal from Tellus for the extraction of clay material at the Sandy Ridge Facility which was approved 04 June 2019; and • While DMIRS only assessed the clay mining operation, it is noted that the post-mining land-use for the clay pits is to act as waste cells for the deposition of Class IV and Class V waste.	Noted
Department of Mines, Industry Regulation and Safety – Critical Risks and Dangerous Goods advised of proposal on 04/11/2019	Response received 26/11/2019 advising that: • Sandy Ridge currently has a valid dangerous good licence (DGS022452); • To be granted a licence, specific criteria are required to be met in relation to planning the construction of appropriate storage facilities for dangerous goods; and • The design drawings provided are consistent with suitable packaged dangerous goods storage.	Noted

Consultation	Comments received	DWER response
Radiological Council advised of proposal 25/10/2019	Response received 20/11/2019 advising that: • Activities proposed to be undertaken on the premises require registration for the temporary surface storage of low level radioactive waste; • This registration has now been approved, with a condition applied limiting the site to surface storage in accordance with the company's Radiation Management Plan; and • The Applicant has been advised that prior to the commencement of any additional stages of the operation beyond surface storage, further approvals and authorisation will be required from the Council.	Noted
Applicant referred draft documents (04/12/2019)	Response received 08/12/2019 advising that: • Tellus Holdings Ltd have no objections to the draft conditions; and • The letter and draft instrument included minor administrative errors with regards to Mining Tenement details	The Delegated Officers notes the administrative error and has updated the Works approval with the correct details.

11. Conclusion

Based on the assessment in this decision report, the Delegated Officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

Tracey Hassell

Digitally signed by Tracey Hassell
Date: 2019.12.20 10:14:24 +08'00'

Tracey Hassell
A/MANAGER WASTE INDUSTRIES

An officer delegated by the CEO under section 20 of the EP Act

Appendix 1: Key documents

Document title	Availability
Works Approval/Licence (W6305/2019/1) application form and supporting documentation (September, 2019)	DWER records (DWERDT206662)
The Proposed Sandy Ridge Facility - Public Environment Review, Final Report December 2016	Accessed at www.tellusholdings.com
Report and recommendations of the Environmental Protection Authority, Sandy Ridge Project (Report 1611, December 2017).	Accessed at www.epa.wa.gov.au
PFAS National Environmental Management Plan, January 2018	Accessed at www.epa.vic.gov.au
DER, July 2015. *Guidance Statement: Regulatory principles.* Department of Environment Regulation, Perth.	accessed at www.dwer.wa.gov.au
DER, October 2015. *Guidance Statement: Setting conditions.* Department of Environment Regulation, Perth.	
DER, August 2016. *Guidance Statement: Licence duration.* Department of Environment Regulation, Perth.	
DER, February 2017 *Guidance Statement: Risk Assessments*. Department of Environment Regulation, Perth.	
DER, February 2017. *Guidance Statement: Decision Making*. Department of Environment Regulation, Perth.	
DWER, June 2019. *Guideline: Industry Regulation Guide to Licensing*. Department of Water and Environmental Regulation, Perth.	