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Tellus Holdings Ltd

Sandy Ridge MS1234 Alignment and Waste Storage Amendments

Licence Amendment Supporting Document

Report
Version 0
November 2025

Prepared by KASA Consulting for:

TELLUS

VERSION HISTORY

Version	Description	Author	Reviewed By	Date
0	Final	[redacted]	[redacted]	05-Nov-2025

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APPLICATION FORM COMPLETION CHECKLIST

COMPLETION MATRIX

The matrix below explains what sections are required to be completed for different types of applications.

Application form section	Amendment	Refer to Section
Part 1: Application type	•	Section 1
Part 2: Applicant details	•	Section 2
Part 3: Premises details	Δ	Section 3, Figure 1-2
Part 4: Proposed activities	•	Section 4
Part 5: Index of Biodiversity Surveys for Assessment and Index of Marine Surveys for Assessment	If required.	N/A – regulated under Part IV.
Part 6: Other DWER approvals	•	Section 1.5.1
Part 7: Other approvals and consultation	•	Section 1.5.2
Part 8: Applicant history	Δ	N/A
Part 9: Emissions, discharges, and waste	Δ	Section 4.7.5
Part 10: Siting and location	Δ	Section 3
Part 11: Submission of any other relevant information	If required.	This document.
Part 12: Category checklist(s)	•	N/A
Part 13: Proposed fee calculation	•	Section 10
Part 14: Commercially sensitive or confidential information	•	N/A
Part 15: Submission of application	•	-
Part 16: Declaration and signature	•	Refer Application Form.
Attachment 1A: Proof of occupier status	N/A	-
Attachment 1B: ASIC company extract	N/A	-
Attachment 1C: Authorisation to act as a representative of the occupier	•	N/A
Attachment 2: Premises map/s	Δ	Figure 1-1, Figure 1-2
Attachment 3A: Environmental commissioning plan	If required	N/A
Attachment 3B: Proposed activities	Δ	Refer Part 4 above.
Attachment 3C: Map of area proposed to be cleared (only applicable if clearing is proposed)	•	N/A
Attachment 3D: Additional information for clearing assessment	If required.	N/A
Attachment 4: Marine surveys (only applicable if marine surveys included in application)	•	N/A
Attachment 5: Other approvals and consultation documentation	Δ	Refer Part 7 above.
Attachment 6A: Emissions and discharges	If required.	Refer Part 9 above.
Attachment 6B: Waste acceptance	If required.	Refer Part 9 above.
Attachment 7: Siting and location	Δ	Refer Part 10 above.
Attachment 8: Additional information submitted	If required.	This document.
Attachment 9: Category-specific checklist(s)	If required.	Refer Part 12 above.
Attachment 10: Proposed fee calculation	•	Refer Part 13 above.
Attachment 11: Request for exemption from publication	If required.	N/A

Key:

- • Must be completed / submitted.
- Δ To the extent changed / required in relation to the amendment.
- **N/A** Not required with application but may be requested subsequently, depending on DWER records.
- **If required** Sections for applicants to determine.

GLOSSARY

Term	Definition
AHD	Australian Height Datum
ARI	Annual Recurrence Interval
AWS	Automated Weather Station
BC Act	*Biodiversity Conservation Act 2016*
BoM	Bureau of Meteorology
CWAC	Chemical Waste Acceptance Criteria
CWAP	Chemical Waste Acceptance Procedure
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DE	Development Envelope
DGMMP	Deep Groundwater Monitoring and Management Plan
DIWA	Directory of Important Wetlands in Australia
DMA	Decision-Making Authority
DOH	Department of Health
DSRS	Disused Sealed Radioactive Sources
DWER	Department of Water and Environmental Regulation
EIL	Ecological Investigation Level
EMP	Environmental Management Plan
EP Act	*Environmental Protection Act 1986*
EPA	Environmental Protection Authority
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
ERD	Environmental Review Document
Facility, the	Sandy Ridge Facility
FVMP	Flora and Vegetation Management Plan
GIS	Geographical Information Systems
GWL	Groundwater Licence
IBC	Intermediate Bulk Containers
IFD	Intensity Frequency Duration
IWDF	Mount Walton Intractable Waste Disposal Facility
LLW	Low-level Radioactive Waste
LMMP	Leachate Monitoring and Management Plan
mbgl	Metres below ground level
MS	Ministerial Statement
MSIA	*Mines Safety and Inspection Act 1994*
NEMP 3.0	National Environmental Management Plan, version 3.0
NORM	Naturally Occurring Radioactive Material
PDWSA	Public Drinking Water Source Areas
PEC	Priority Ecological Community
PFAS	Per- and Poly-fluoroalkyl Substances
PMP	Probable Maximum Precipitation
RAMSAR	Ramsar Convention on Wetlands of International Importance
RIWI Act	*Rights in Water and Irrigation Act 1914*
RSA	*Radiation Safety Act 1975*
RWAC	Radiological Waste Acceptance Criteria
RWAP	Radiological Waste Acceptance Procedure

Term	Definition
SRE	Short-range Endemic
t	tonnes
TEC	Threatened Ecological Community
Tellus	Tellus Holdings Ltd
tpa	tonnes per annum
WA	Western Australia
WIP	Waste Immobilisation Plant
WNP	Waste Neutralisation Plant

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1 INTRODUCTION

1.1 Background

Tellus Holdings Ltd (Tellus) is a public unlisted company based in Perth, Western Australia (WA). Tellus owns and operate the Sandy Ridge Facility (the Facility), located approximately 75 km northeast of Koolyanobbing, and approximately 240 km north-west of Kalgoorlie. The Facility is located in the Shire of Coolgardie, within the Goldfields Region of WA, refer Figure 1-1.

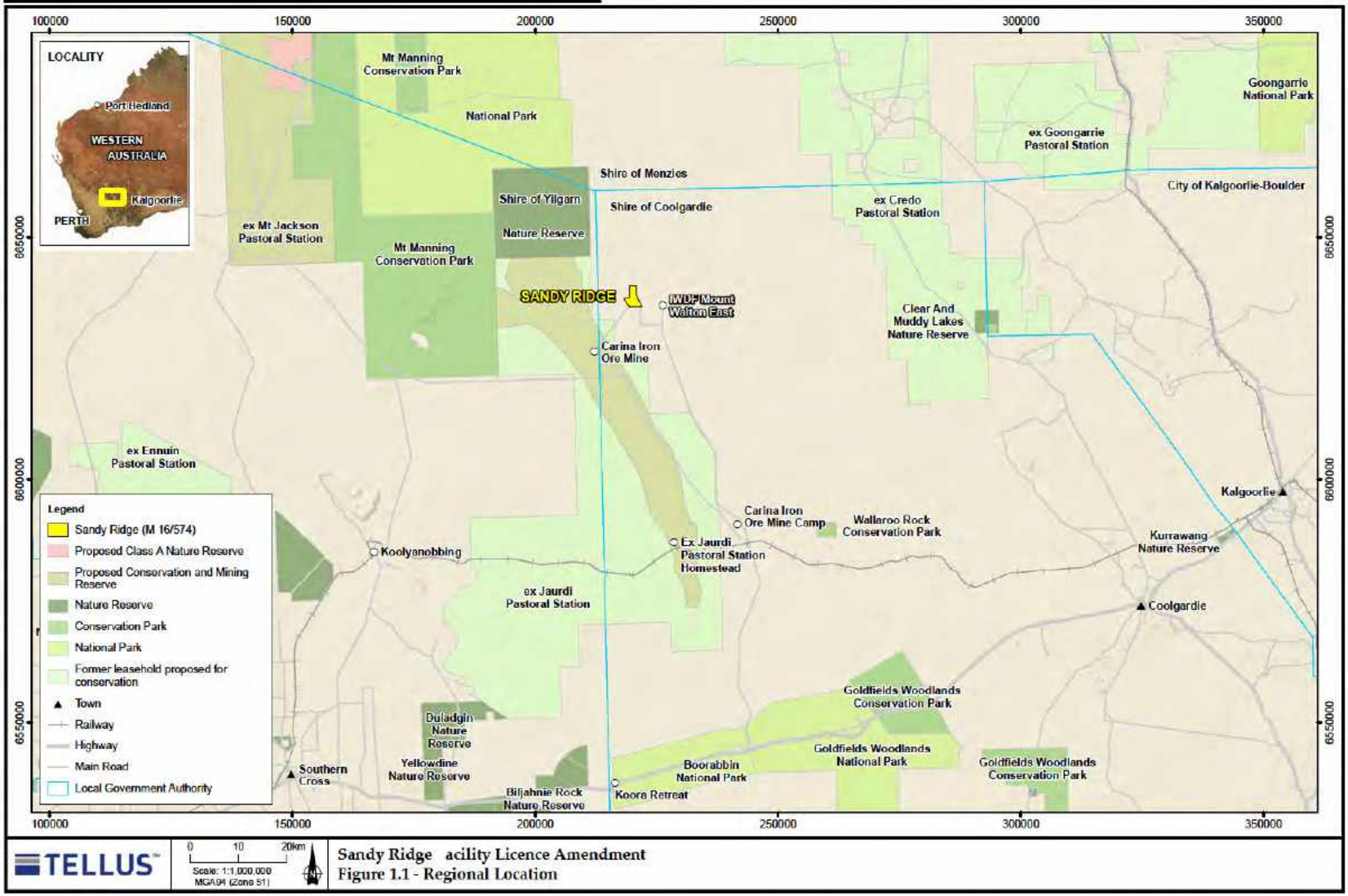
The Facility comprises a dual open cut kaolin clay mine and a near-surface geological waste storage and disposal facility, which accepts Class IV and Class V waste. The proposed premises layout is shown in Figure 1-2.

The Facility was granted Ministerial Approval via Ministerial Statement (MS) 1078 on 27 June 2018, under Part IV of the *Environmental Protection Act 1986* (EP Act). The addition of groundwater infrastructure adjacent to the nearby Carina Iron Ore Mine was approved under Section 45C of the EP Act.

In 2021, Tellus referred a Proposal to the EPA to align the tonnage of waste received at the gate of the Facility with the approved tonnage of waste permitted for permanent isolation. The intent was to provide Tellus with more operational flexibility to respond to solid waste holders' needs at times when lower quantities of liquid waste and higher quantities of solid waste is brought to the Sandy Ridge gate. The Proposal also included a modified design to the cell cap to further improve the function of the cell cap to remove any potential connection between the stored wastes and surface water (rainfall).

The EPA assessed the Proposal and approval was granted via MS1234 on 13 December 2024.

Wastes are only accepted at the Facility in accordance with strict Waste Acceptance Criteria and Waste Acceptance Procedures. Waste materials are isolated in accordance with a Waste Zoning Guide to ensure neighbouring wastes are compatible and present low human health and environmental risks.



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Sandy Ridge acility Licence Amendment
Figure 1.1 - Regional Location

Sandy Ridge Facili y Licen e Amendment
Figure 1.2 - Premises Layout

1.2 Prescribed Premises Categories

Schedule 1 prescribed premises categories applicable to the Sandy Ridge Facility are listed in Table 1-1 below.

Table 1-1: Schedule 1 Prescribed Premises Categories

Category No.	Description of Category	Approved Design Capacity
61	Liquid Waste Facility: premises on which liquid waste produced on other premises (other than sewerage waste) is stored, reprocessed, treated or irrigated.	100,000 tonnes (combined) per annual period
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.	
65	Class IV secure landfill site: premises (other than clean fill premises) on which waste of a type permitted for disposal for this category of prescribed premises, in accordance with the Landfill Waste Classification and Waste Definitions 1996, is accepted for burial.	280,000 tonnes (combined) per annual period
66	Class V intractable landfill site: premises (other than clean fill premises) on which waste of a type permitted for disposal for this category of prescribed premises, in accordance with the Landfill Waste Classification and Waste Definitions 1996, is accepted for burial.	

1.3 Purpose of Report

This document has been prepared to support a Licence Amendment to:

1. Align Licence L9240/2020/1 with new Ministerial conditions under MS1234 to:
   a.) Align Licence validity with the Project Life approved under MS1234 (25 years from 13 December 2024).
   b.) Permit 280,000 tonnes per annum (tpa) of Class IV and V waste to be accepted at the Facility gate, in accordance with MS1234.
   c.) Remove duplication of regulation for low-level radioactive waste (LLW), where this issue can be appropriately managed under Part IV of the EP Act and the *Radiation Safety Act 1975* (RSA).
2. Allow for bulky wastes (e.g., railway sleepers and pipework) to be stored uncovered / in the open, prior to permanent disposal to waste cells.
3. Allow the area under the waste cell air domes to be utilised as temporary working storage areas once a cell has been filled to final waste level.
4. Amend per- and poly-fluoroalkyl substances (PFAS) storage in accordance with the PFAS National Environmental Management Plan, version 3.0 (NEMP 3.0) to:
   a.) Permit, when operations require, storage of excess PFAS liquid waste in the Main Storage Area.
   b.) Remove the maximum PFAS concentration (50 mg/kg) limit in consideration of Section 14.6 of the NEMP 3.0.
5. Minor amendments and corrections to the existing licence (refer Section 9).

No design or construction modifications to existing infrastructure and equipment are proposed, no changes to general procedures for waste management are proposed, and no clearing of vegetation is proposed.

Tellus therefore considers that all changes are manageable through current operational controls as prescribed under the licence, MS1234, associated environmental management plans (EMPs), which will be updated in November 2025 to reflect the proposed capacity changes, and other regulatory instruments and legislation such as the RSA.

Detailed discussion of the proposed activities, as listed above, is provided in Section 4.

1.4 Need for the Proposed Amendments

The proposed licence amendments outlined in Section 1.3 above are intended to:

- Align Licence validity with the Project Life approved under MS1234.
- Achieve consistency in regulatory obligations across the Facility's legal instruments (i.e., MS1234, Site Registration and L9240/2020/1);
- Align tonnage of waste received at Sandy Ridge (currently 100,000 tpa) with the quantity of waste permitted to be disposed in approved storage cells (up to 280,000 tpa);
- Identify and remove duplication of obligations across legal instruments and agency regulation, while ensuring key risks are adequately controlled;
- Identify current regulatory constraints that limit practical implementation of Sandy Ridge operations but do not improve environmental outcomes nor further the mitigation of environmental risks;
- Achieve a consistently high level of licence compliance across Sandy Ridge operations; and
- Ensure Key Environmental Risks continue to be mitigated.

1.5 Approvals and Consultation

1.5.1 Regulatory Framework

Table 1-2 describes the applicable legislation under which the Project is regulated.

Table 1-2: Environmental Legislative Framework

Relevant Legislation	Instrument
Environmental Protection Act 1986 (Part IV)	Ministerial Statement 1234
Environmental Protection Act 1986 (Part V)	DWER Licence L9240/2020/1
Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)	EPBC2015/7478
Mining Act 1978 (Mining Act)	REGID 113526 and 115243
Mines Safety and Inspection Act 1994 (MSIA)	PM-666-293959
Radiation Safety Act 1975 (RSA)	Site Registration under section 28 (RS 210/2018 30289[1]) Disposal Permits (under section 34)
Nuclear Non-proliferation Safeguards	ASNO Permit PN261
Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007	DGSO22452
Rights in Water and Irrigation Act 1914 (RIWI Act)	CAW202537(1) and GWL202536(1)
Land Administration Act 1997	Crown Lease O289974

1.5.2 Stakeholder Consultation

Tellus is committed to an open, transparent and comprehensive engagement programme for the proposed amendments.

The scope and scale of the stakeholder engagement for this proposal have been commensurate with Tellus' consideration of the nature and significance of the proposed amendments and the potential environmental risks. Accordingly, whilst no specific community engagement has been initiated since the extensive consultation during the Part IV assessment, Tellus has taken the opportunity to consult with key regulatory stakeholders, primarily the Department of Water and Environmental Regulation (DWER), during the preparation of this licence amendment application.

Table 1-3 summarises the key engagements undertaken for this proposal to date.

[1] An application for renewal of RS 210/2018 30289 has been submitted to and acknowledged by the Department of Health (DoH).

Table 1-3: Stakeholder Engagement

Date	Attendees	Description of Engagement	Key Outcomes
13/08/2024	• DWER – [redacted] • Tellus – [redacted] • KASA – [redacted]	MS Teams meeting. Tellus/KASA presented a summary of the status of activities and infrastructure at the premises primarily focussing on the APCr infrastructure given its urgency. KASA summarised its opinion on the applicability of Section 53(1)(b) where the current licence permits the import and disposal of flyash material.	DWER advised that the APCr infrastructure and waste type had not been assessed and therefore an approval was required prior to its ongoing operation. DWER recommended a Scoping Meeting to discuss the nature and content of a licence amendment application.
15/08/2024	• DWER – [redacted] • Tellus – [redacted] • KASA – [redacted]	Scoping Meeting on licence amendment application. Tellus/KASA presented an overview of the need for and description of the APCr proposal. Tellus advised its intention to separate this application for the APCr infrastructure from other elements in question.	• DWER confirmed that the proposed level of detail and information appeared to be appropriate to support the application for the licence amendment. DWER recommended the following additional information would be useful to include: – Confirmation of Controlled Waste Code for APCr. – Include table of key infrastructure proposed/installed. – Include Compliance Document level of detail to verify installation of infrastructure and design controls are in place including As-Built drawings, plans and photographs. – Include Table of current conditions that are applicable to maintaining regulatory control of emissions and discharges from the proposal. • DWER concurred that splitting the APCr infrastructure and activity from other infrastructure as separate proposals would reduce overall assessment complexity and timeframes.

Date	Attendees	Description of Engagement	Key Outcomes
			• DWER advised that licence amendment applications need not be advertised publicly. • DWER may consult with Part IV to confirm the proposal is not constrained under the Ministerial Statement. • Application should be emailed to info@dwer.wa.gov.au. • DWER contact in Ms Crawford's leave of absence: Adam Green, Stephen Checker, Sarah Cross.
01/10/2025	• DWER – [redacted] • Tellus – [redacted] • KASA – [redacted]	Scoping Meeting on licence amendment application. Tellus/KASA presented an overview of the amended scope of the proposed licence amendments, including: 1. Alignment of Licence L9240/2020/1 with MS1234. 2. Allowing bulky wastes to be stored uncovered / in the open, prior to permanent disposal to waste cells. 3. Allowing the area under the waste cell air domes to be utilised as temporary working storage areas. 4. Amendment of PFAS storage in accordance with the NEMP 3.0.	• DWER confirmed that the proposed level of detail and information appeared to be appropriate to support the application for the licence amendment. DWER recommended the following additional information would be useful to consider: – Additional leachate testing to support removal of the 50mg/kg limit. – Assess the potential risks of export of contaminants from exposure of bulky wastes to the elements resulting in contaminated runoff and consider the need for additional controls, e.g., lining of East Yard Stormwater Pond. Tellus has assessed the potential for groundwater contamination and determined that existing design and construction controls are adequate given the limited environmental pathways and sensitive receptors. Additional operational controls are discussed in Sections 5.1.2 and 8.

2 APPLICANT DETAILS

2.1 Contact Details

Table 2-1: Applicant Details

Name:	Tellus Holdings Ltd
ACN:	138 119 829
ABN:	97 138 119 829
Office Address:	[redacted]

Table 2-2: Authorised Representatives

Authorised Person:	[redacted]
Contact Person:	[redacted]

2.2 Occupier Status

2.2.1 Mining Act Tenure

Tellus holds all tenements for the Project area, comprising M16/540, M16/574, M15/1864, M15/1865, M15/1866, M15/1867, G16/021, L15/394, L15/399, L15/400, L16/121, L16/124, L16/125, L16/127, L16/129, and L77/310.

For the purposes of this application, all infrastructure associated with the proposed amendments remains located on M16/574.

2.2.2 Land Administration Act Tenure

As the mining and waste disposal aspects will occur simultaneously on the same land, Tellus requires co-existing tenure for each of its mining and non-mining activities.

To implement the waste disposal aspect at the Facility, Tellus has acquired a Crown Lease (O289974) and easements under the *Land Administration Act 1997*. Crown easements are over linear infrastructure giving Tellus the right to operate the water pipeline and access roads within these easements.

At the end of the term of the Crown Lease, the Mining Tenure will be relinquished, and land is expected to revert to Crown-managed land, most likely in the form of a Crown Reserve.

3 SITING AND LOCATION

The Proposal is located approximately 75 km north-east of Koolyanobbing, WA (Figure 1-1). Access to the Sandy Ridge Facility is via a 95 km length of the Mt Walton Intractable Waste Disposal Facility (IWDF) Access Road that extends northward from Great Eastern Highway; branching off from the IWDF access road is a 4.5 km westwards section and a 5.3 km northwards section which completes the site access road into the Facility.

3.1 Sensitive Receptors

There are no sensitive human receptors within 5 km of the proposed mining area. The nearest operation is the IWDF located approximately 5.5 km to the east, which operates on a campaign basis and does not have permanent residents. The nearest permanent mining camp is the Carina Iron Ore Mine Accommodation Village located approximately 52 km to the south of the mining area and outside the influence of any direct or indirect environmental impacts.

Table 3-1 below outlines the sensitive receptors and sensitive land uses in the vicinity of the site.

Table 3-1: Nearby Environmentally Sensitive Receptors and Aspects

Type / Classification	Description	Distance and Direction to Boundary	Proposed Controls to Prevent or Mitigate Adverse Impacts
Environmental Sensitive Receptors and Aspects			
Parks and Wildlife Managed Lands and Waters	Mount Manning Range Nature Reserve	Approximately 9.8 km north-west of the premises	N/A. These receptors are outside the influence of any direct or indirect environmental impacts from Sandy Ridge. No changes to existing infrastructure, equipment or general procedures are proposed and no clearing of vegetation is proposed. Tellus considers all changes are manageable through current operational controls as prescribed under the licence, MS1234 and associated EMPs.
	The Mount Manning – Helena and Aurora Ranges Conservation Park	Approximately 19.8 km west of the premises.	
	Boorabbin National Park	Approximately 100 km south of the premises	
Threatened Ecological Communities (TECs) and Priority Ecological Communities (PECs)	The Finnerty Range / Mt Dimer / Yendilberin Hills Vegetation Complexes (Banded Ironstone Formation) Priority Ecological Community	Recorded in water abstraction area 12.5 km south-west of the premises	No changes to existing infrastructure, equipment or general procedures are proposed and no clearing of vegetation is proposed. Tellus considers all changes are manageable through current operational controls as prescribed under the licence, MS1234 and associated EMPs.
Threatened and/or Priority Flora	11 priority flora species listed within the MS1234 Development Envelope (DE): • *Cryptandra exserta* – Priority 1 • *Phebalium appressum* – Priority 1 • *Hyalosperma stoveae* – Priority 2 • *Acacia crenulata* – Priority 3 • *Calytrix creswellii* – Priority 3 • *Cryptandra crispula* – Priority 3 • *Drosera eremaea* – Priority 3 • *Labichea eremaea* – Priority 3 • *Melichrus sp.* Bungalbin Hill (F.H. & M.P. Mollemans 3069) – Priority 3 • *Banksia arborea* – Priority 4 • *Eucalyptus formanii* subsp. *circulata* – Priority 4	Recorded within MS1234 DE	
Threatened and/or Priority Fauna	*Leipoa ocellata* historic mounds mapped within premises boundary. *Aspidites ramsayi* (P1–DBCA) opportunistic sightings.	Within premises boundary	

Type / Classification	Description	Distance and Direction to Boundary	Proposed Controls to Prevent or Mitigate Adverse Impacts
Aboriginal and other heritage sites	Granite Hill Well (Well No. 19), Place ID: 17563.	Approximately 2 km east of the IWDF Access Road	No clearing of vegetation or additional land disturbance beyond the approved disturbance envelope is proposed. No direct or additional impacts on known heritage sites are anticipated.
	Bullabulling Rock Water Catchment and Dams, Place ID: 3933.	Approximately 2 km west of the intersection of IWDF Access Road and Great Eastern Highway	
Public drinking water source areas	N/A	N/A	N/A. There are no Public Drinking Water Source Areas (PDWSA) within 20 km of the premises (based on DataWA GIS dataset *Public Drinking Water Source Areas (DWER-033)*).
Rivers, lakes, oceans, and other bodies of surface water, etc.	N/A	N/A	N/A. No major watercourses / water bodies mapped within 20 km of the premises (based on available GIS dataset *Hydrography WA 250K – Surface Waterbodies*).
Important Wetlands – Western Australia	N/A	N/A	N/A. 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	N/A	N/A	N/A. There are no geomorphic wetlands within 20 km of the premises (based on available GIS dataset *Geomorphic Wetlands*).
RAMSAR Wetlands	N/A	N/A	N/A. 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*).	Located approximately 2.5 km and 1.4 km respectively from the proposed infrastructure area and temporary waste storage area.	No changes to existing infrastructure, equipment or general procedures are proposed. Tellus considers all changes are manageable through current operational controls as prescribed under the licence, MS1234 and associated EMPs.
Acid sulphate soils	N/A	N/A	N/A. Acid sulphate soils generally occur in low-lying coastal plains within water-logged, groundwater-dependent and high water table environments.

Type / Classification	Description	Distance and Direction to Boundary	Proposed Controls to Prevent or Mitigate Adverse Impacts
Other			
Human Receptors	Mount Walton Intractable Waste Disposal Facility (IWDF)	Approximately 5 km east of the premises	The IWDF includes facilities to cater for five permanent personnel; however, the IWDF operates on a campaign basis and does not have a permanent workforce or permanent residents. The premises has been under care and maintenance since 2008.
Human Receptors	Ex-Jaurdi Pastoral Station Homestead	Approximately 50 km south of the premises	N/A. Located approximately 50 km to the south of the Facility, this receptor is outside the influence of any direct or indirect environmental impacts from Sandy Ridge.
Human Receptors	Carina Mine Camp	Approximately 52 km south of the premises	N/A. The Carina Mine Camp is under care and maintenance, with two caretakers in residence. Located approximately 52 km to the south of the Facility, this receptor is outside the influence of any direct or indirect environmental impacts from Sandy Ridge.
Human Receptors	Town of Koolyanobbing	Approximately 75 km south-east of the premises	N/A. Located approximately 75 km to the south-east of the Facility, this receptor is outside the influence of any direct or indirect environmental impacts from Sandy Ridge.

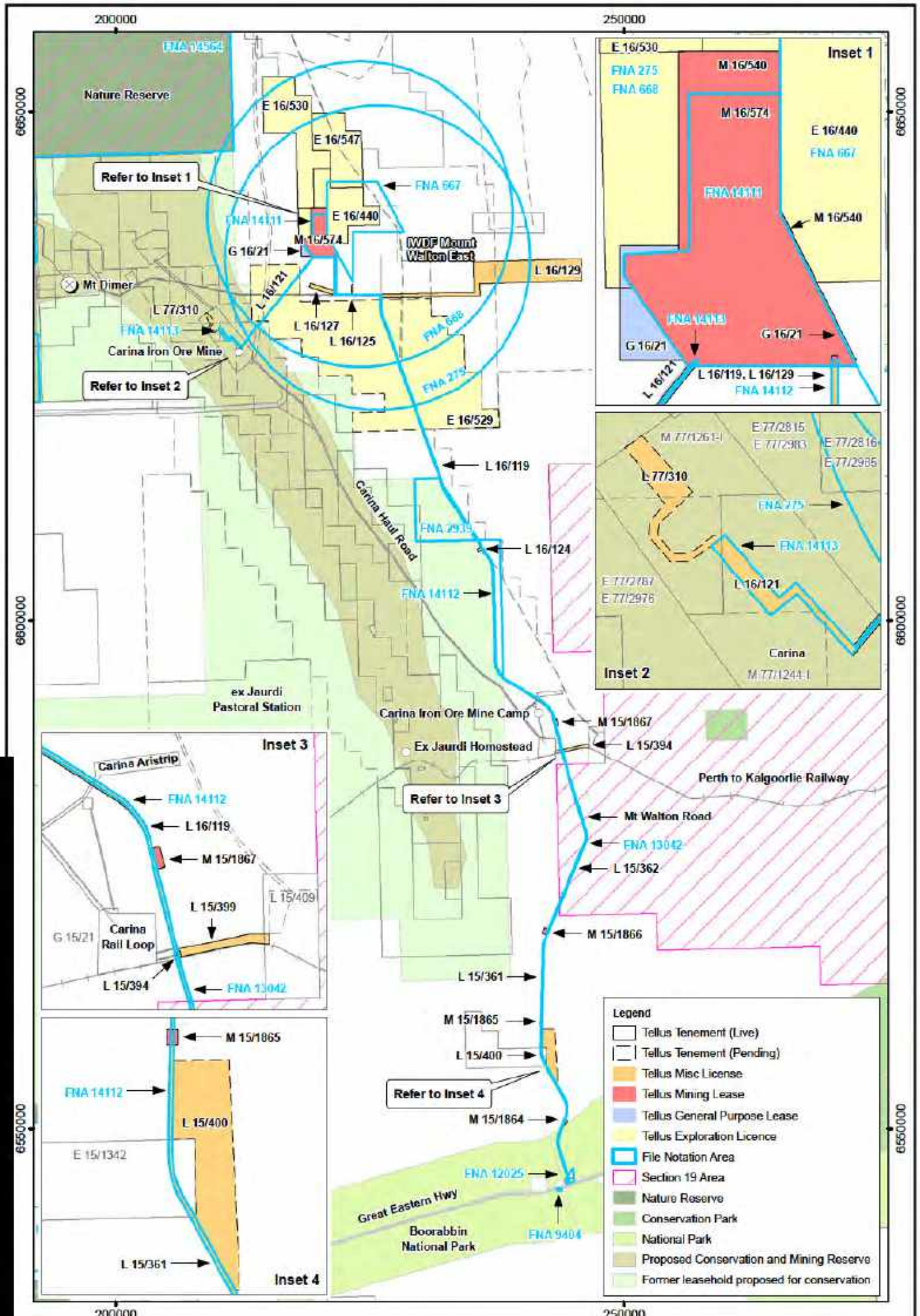

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Figure 3.1 - Surrounding Land Use and Nearby Sensitive Areas

3.2 Climate

The Sandy Ridge Facility experiences a semi-arid climate characterised by cool winters and very hot summers.

The closest Bureau of Meteorology (BoM) weather station to the prescribed premises boundary is located at Menzies, approximately 110 km to the northeast; however, the closest BoM weather station with a reliable long-term (>30 years) dataset and similar landscape is located at Leonora station, approximately 200 km north-east of the Site.

Average temperatures at the BoM Leonora station range from 18.4°C to 37.0°C during summer, with a maximum temperature of up to 49.0°C recorded. During winter, the temperature typically varies from 6.1°C to 21.8°C, with mean minimum of 9.0°C.

In May 2015, an Automated Weather Station (AWS) was installed at the Facility to record wind speed, wind direction, relative humidity, air temperature and precipitation. Using climate data taken from the AWS for the monitoring period May 2015 to June 2021, annual precipitation at Sandy Ridge averages approximately 292 mm with the largest rainfall events tending to be in summer (January and February) and in winter (June and July) (Northstar Air Quality, 2021).

Sporadic rainfall events (which may be intense) result in local runoff, and infiltration of rainfall into surface soils. However, during subsequent dry periods, evaporation, and evapotranspiration removes this rainfall infiltration from the top few metres of soil, which results in little, if any, net recharge.

In summer, the prevailing wind direction is from the north-east to south-east. The wind speeds range between 0.1 m/s to 10.3 m/s with an average of 3.9 m/s. The north-east to south-east pattern continues through autumn and wind speeds decrease in velocity to range between 0.01 m/s to 8.8 m/s with an average 3.0 m/s. In winter, the wind directions are characterised by lower frequency of south-west winds and increasing wind from the north-west. The winter wind speed ranges from less than 0.01 m/s to 10.9 m/s and averages 2.8 m/s. Spring wind speeds transition to the north-east to south-east direction increase in velocity to range between 0.06 m/s to 17.6 m/s with an average of 3.5 m/s.

3.3 Regional Geology

The Facility lies within the Archean Yilgarn Craton that comprises an area of approximately 657,000 km^2 and forms one of the largest intact segments of the Archean crust on Earth (CRM, 2017). The bulk of the Craton considered 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).

The surface of the Yilgarn Craton, the Yilgarn Plateau, has low relief and on a regional scale, probably represents a Proterozoic erosion surface. This extremely old surface has subsequently been modified by weathering, partial erosion and sedimentation, resulting in a complex regolith (a combination of weathered rock, soil, and other unconsolidated or cemented material that forms a younger blanket over unweathered bedrock) (Anand and Butt, 2010). Broad landforms have been in place for about 250 million years and the Yilgarn Craton has been tectonically stable for approximately 2,500 million years.

The geology underlying the Facility is described as a weathered granite profile. The lithology profile reports sand / laterite at the surface grading into silcrete, mottled kaolin and white kaolin. Beneath the white kaolin is a saprock zone which is underlain by the fresh granite (CRM, 2017).

3.4 Topography

The Facility falls within the Kalgoorlie Province defined by Tille (2006) which is characterised by very low relief undulating plains and low rises (Figure 3-4). Small rocky hills and ridges can be found on the granitic terrain. The plains can host salt lakes, claypans, and some silcrete duricrusts.

The Facility location is typical of the landscape which occurs over deeply weathered granite rocks. The topography ranges from about 460 m above sea level to 490 m above sea level and generally rises slightly from west to east.

The Kalgoorlie Province is described as consisting of an extensive plateau of low relief that includes:

- Flat to undulating plains with small valleys (occasionally broken by low narrow rocky hills, ridges, tors, and bosses) mostly found on granitic terrain.
- Broad, flat to undulating, shallow valley plains are below these undulating plains and are formed on Quaternary alluvium and colluvium.
- Gently sloping to undulating plateau areas on granites and gneisses are situated higher in the landscape. These have long gentle slopes and, in places, abrupt erosional scarps.
- Rocky ranges, hills and ridges on the greenstone, along with some undulating to low hilly country.
- Level to gently undulating sandplains and gravelly sandplains are mostly found over lateritic residuals and granitic basement.

The Yendilberin Hills which fall within the rocky ranges, hills and ridges of the greenstone category comprise a narrow, approximately northwest to southwest-trending rocky ridge to the west of the proposed prescribed premises boundary, with a maximum elevation of 523 m AHD at Mount Walton (approximately 16 km south of the Facility boundary (i.e., mining tenement), and approximately 8 km southeast of the Carina Pit and water pipeline route).

The Facility boundary predominantly consists of flat to gently undulating sand plains over weathered granite. There are no salt lakes in the Facility boundary and the southern end of the water pipeline route near Carina Pit enters the Yendilberin Hills.

3.5 Soils

The Facility is located within the Norseman (266) soil landscape mapping zone, within the Kalgoorlie Province as defined by Tille (2006). The soils of the Norseman zone are described as calcareous loamy earths, yellow sandy and loamy earths, red loamy earths, red deep sands and salt lake soils.

Landloch Pty Ltd (2015a) undertook a baseline soil assessment at the Facility and along the proposed access road route in 2015. Field assessments identified two major soil types within the MS1234 DE; Deep Yellow Sand and Red Sandy Duplexes (Figure 3-3).

The Deep Yellow Sand is associated with the higher relief areas of low sandy dune systems of the MS1234 DE. The pH of the Deep Yellow Sand was strongly acidic, with pH ranging from 4.2 to 4.9.

The Red Sandy Duplex is associated with the lower-lying areas of the MS1234 DE, potentially broad areas of drainage, and consequently are areas of potential erosion. The Red Sandy Duplexes were found at shallow depths (<0.3 m below ground level) over a tightly packed laterite ferricrete. The pH of the Red Sandy Duplex was neutral at the surface (pH 7.0) to alkaline at depth (pH 8.9). Based on the number of Red Sandy Duplexes samples analysed the average pH was 7.6.

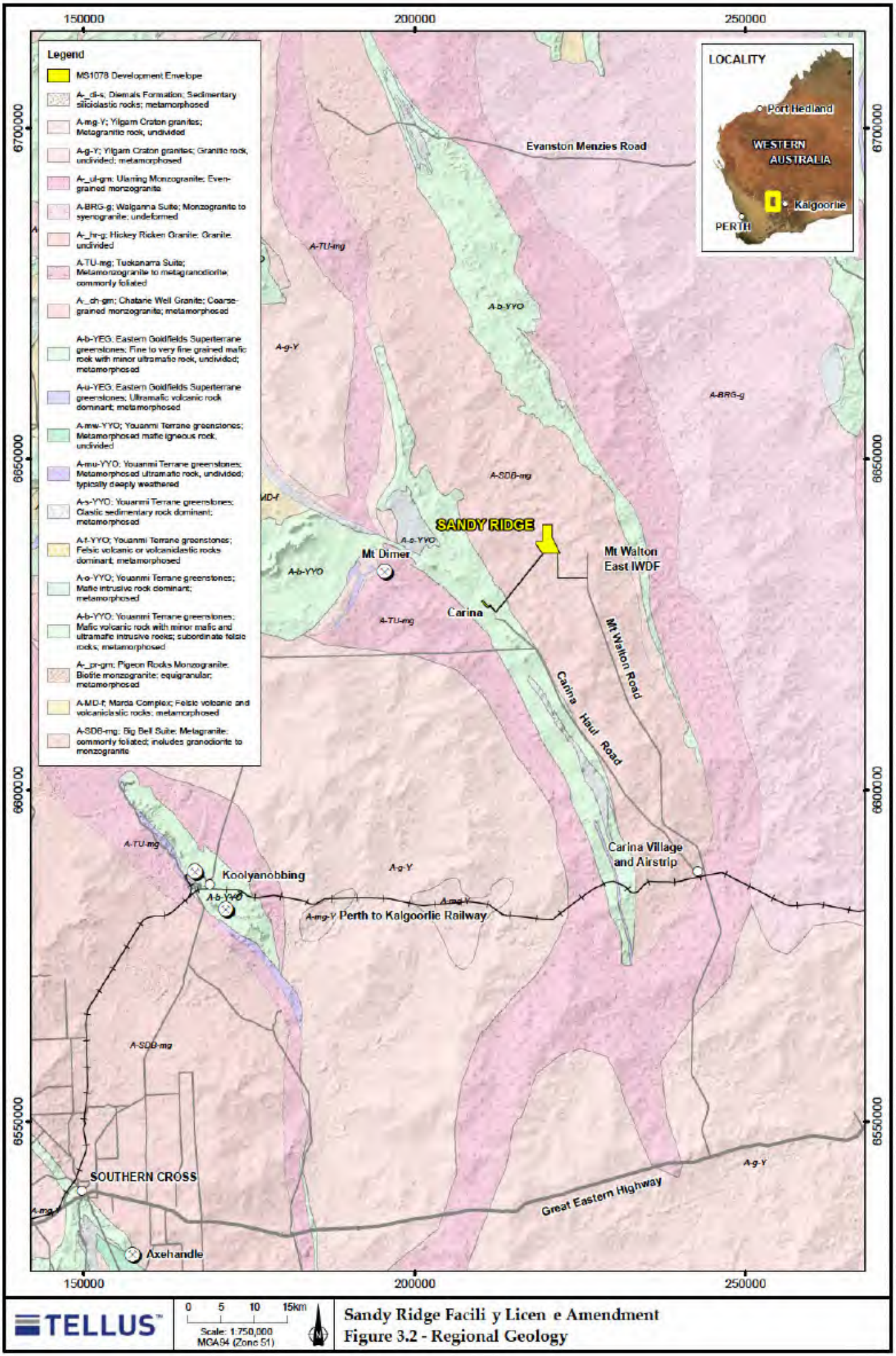
The field assessment results correlated well with the soil landscape mapping (Tille, 2006). It should be noted that Landloch (2015a) used a preliminary project design to estimate material volumes. Soil characterisation results reported in Landloch (2015a) remain unchanged.

A baseline soil audit (Landloch Pty Ltd, 2020) was undertaken for the Facility, Mt Walton Access Road and Sandy Ridge Facility Access Road in line with Condition 6 of the Crown Lease. Soil sampling for this baseline audit was completed in two campaigns; the first in April 2019 that focussed on the land within the Crown Lease boundary in the vicinity of the Facility, and the second campaign in January 2020 that focussed on the Mt Walton Access Road and the Sandy Ridge Facility Access Road (Landloch Pty Ltd, 2020). Soil samples were collected and tested for heavy metals, radionuclides, asbestos, PFAS and PCBs.

In summary (Landloch Pty Ltd, 2020):

- The soil sampling program indicated no health investigation level exceedances. There were records of elevated background chromium and nickel results when compared against the Ecological Investigation Levels-1 (EIL) guidelines. This is likely to represent the natural variability of the weathered geology. No results exceeded commercial/industrial EILs or urban residential and public open space EILs.
- The likelihood of asbestos exposure at the Facility is considered low as all asbestos tests returned values below the laboratory limit of reporting (<0.1 g/kg).
- All PCB concentrations reported below the limit of reporting (0.2 mg/kg) and could be considered uncontaminated with PCBs.
- The maximum value of the sum of perfluorohexanesulfonic acid and perfluorooctanesulfonic acid for all samples was 0.0012 mg/kg, with the majority of samples reporting values below the limit of reporting (0.0004 mg/kg). All samples had perfluorooctanoic acid values below the limit of reporting (0.0002 mg/kg).
- All radionuclide activities were very low, being typically at or below the limit of reporting, and indicate that naturally occurring radioactive material in the soils is an order of magnitude below levels that may trigger threshold radioactive exposure dose rates (Tellus Holdings Ltd, 2022a).

Soil monitoring is undertaken on an ongoing basis to assess operational impacts, as defined in the approved Leachate Monitoring and Management Plan (LMMP). The LMMP includes provision for a 3-yearly soil monitoring campaign, during which samples are taken from high risk areas to test for potential contamination. The next monitoring campaign is scheduled for January 2026.


150000
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250000
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6650000
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Legend
M51078 Development Envelope
A-_di-s; Diemals Formation; Sedimentary siliciclastic rocks; metamorphosed
A-mg-Y; Yilgarn Craton granites; Metagranite rock, undivided
A-g-Y; Yilgarn Craton granites; Granitic rock, undivided; metamorphosed
A-_ul-gm; Ularring Monzogranite; Even-grained monzogranite
A-BRG-g; Walganna Suite; Monzogranite to syenogranite; undeformed
A-_hr-g; Hickey Ricken Granite; Granite, undivided
A-TU-mg; Tuckanarra Suite; Metamonzogranite to metagranodiorite, commonly foliated
A-_ch-gm; Chatarie Well Granite; Coarse-grained monzogranite; metamorphosed
A-b-YEG; Eastern Goldfields Superterrane greenstones; Fine to very fine grained mafic rock with minor ultramafic rock, undivided; metamorphosed
A-u-YEG; Eastern Goldfields Superterrane greenstones; Ultramafic volcanic rock dominant; metamorphosed
A-mw-YYO; Youanmi Terrane greenstones; Metamorphosed mafic igneous rock, undivided
A-mu-YYO; Youanmi Terrane greenstones; Metamorphosed ultramafic rock, undivided; typically deeply weathered
A-s-YYO; Youanmi Terrane greenstones; Clastic sedimentary rock dominant; metamorphosed
A-f-YYO; Youanmi Terrane greenstones; Felsic volcanic or volcaniclastic rocks dominant; metamorphosed
A-o-YYO; Youanmi Terrane greenstones; Mafic intrusive rock dominant; metamorphosed
A-b-YYO; Youanmi Terrane greenstones; Mafic volcanic rock with minor mafic and ultramafic intrusive rocks; subordinate felsic rocks; metamorphosed
A-_pr-gm; Pigeon Rocks Monzogranite; Biotite monzogranite; equigranular; metamorphosed
A-MD-f; Marda Complex; Felsic volcanic and volcaniclastic rocks; metamorphosed
A-SDB-mg; Big Bell Suite; Metagranite; commonly foliated; includes granodiorite to monzogranite
LOCALITY
Port Hedland
WESTERN AUSTRALIA
Kalgoorlie
PERTH
Evanston Menzies Road
A-TU-mg
A-b-YYO
A-g-Y
A-BRG-g
A-SDB-mg
MD-f
SANDY RIDGE
Mt Dimer
Mt Walton East IWDF
Carina
A-s-YYO
A-o-YYO
A-TU-mg
Mt Walton Road
Carina Haul Road
Carina Village and Airstrip
A-TU-mg
Koolyanobbing
A-g-Y
A-b-YYO
A-mg-Y
A-mg-Y
Perth to Kalgoorlie Railway
A-SDB-mg
SOUTHERN CROSS
A-g-Y
A-mg-Y
Great Eastern Highway
Axehandle
150000
200000
250000
TELLUS
0 5 10 15km
Scale: 1:750,000
MGA94 (Zone 51)
N
Sandy Ridge Facili y Licen e Amendment
Figure 3.2 - Regional Geology

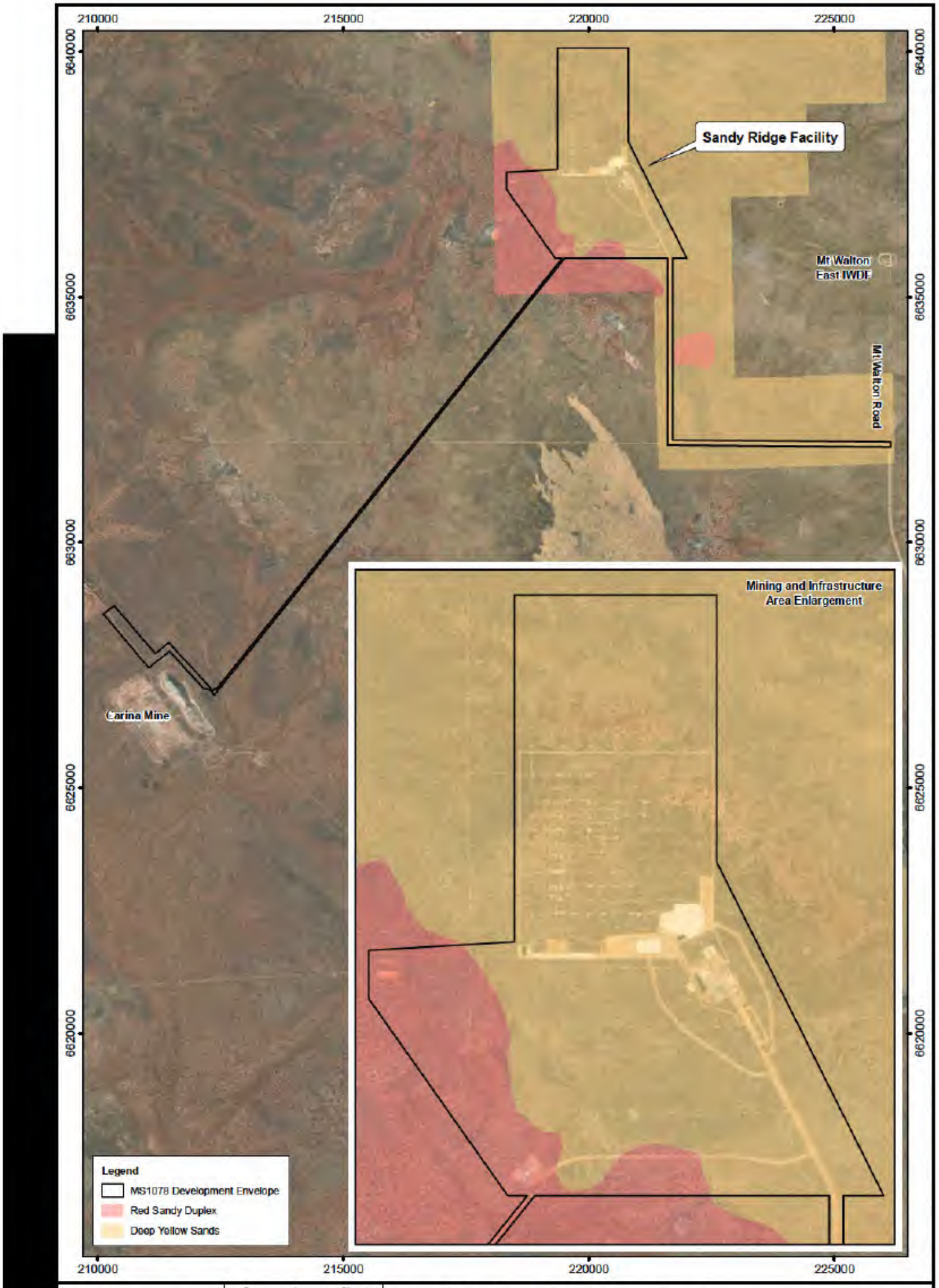

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Figure 3.3 - Project Area Soil Types

3.6 Water Resources

Studies, assessments, plans and procedures were commissioned to describe the hydrologic and hydrogeologic setting of the Facility to inform both the 2016 and 2023 PERs, as summarised in Table 3-2 below.

Table 3-2: Summary of Inland Water Studies and Assessments

Studies and Assessments	Details
Hydrogeological Studies for the Sandy Ridge Project (Rockwater Pty Ltd, 2015)	Hydrogeological study of the development envelope which included a desktop review of regional hydrogeology; previous hydrogeological and geotechnical drilling results from other investigations in the vicinity of the DE; field investigation and falling head permeability tests of seven bores.
Sandy Ridge Kaolinite Project Surface Water Assessment and Management Plan (Rockwater 2016a) Sandy Ridge Kaolinite Project Surface Water Assessment and Management Plan: Addendum (Rockwater 2016b and Rockwater 2017)	Hydrological study of the DE which included demarcation of the catchment areas and waterways likely to impact on the cell area, infrastructure area and access road; hydrological analysis of relevant catchment areas; examination of historical rainfall records for nearby weather stations to assess the maximum total rainfall and ARI; completion of a surface water hydraulic analysis in order to assess the extent, depths and velocities of natural flow paths likely to impact the cell area, infrastructure area and access road.
Sustainability Assessment of Carina Mine as a Water Source (Rockwater 2016a; 2016b)	Sustainability Assessment of Carina Mine as a water source to assess the impacts on water quality of sourcing water from the Carina mine over 25 years; assess the viability of using the Carina mine as a water source for 25 years.
Assessment of Long-term Recharge to Encapsulated Waste Isolation Cells – Sandy Ridge Project (CyMod, 2016) Hydrogeology Update for the Sandy Ridge Project (CyMod, 2021) Hydrogeological Update for the Sandy Ridge Project (Cymod Systems, 2022)	Assessment of Long-term Recharge to Encapsulated Waste Isolation Cells (CyMod 2016) was carried out to undertake selected unsaturated flow modelling to quantify the likely magnitude of infiltration and seepage of water through the repository. In June 2021, CyMod completed an update to the hydrogeology of Sandy Ridge considering recent data collection and the 2019 hydrogeological investigations undertaken by Geo 9 (2019).
Sandy Ridge Kaolinite Project Surface Water Assessment and Management Plan (Rockwater Pty Ltd, 2022)	Review of the 2016 report to confirm that there were no changes to the hydrological assessment.

3.6.1 Water Access

Tellus has executed an access agreement with Polaris Metals Pty Ltd (a wholly owned subsidiary of Mineral Resources Limited) related to groundwater abstraction and monitoring. Miscellaneous licence L16/121 intersects with Polaris' M77/1244-I and M77/1261-I.

3.6.2 Hydrology

There are no channels or creeks occurring within the MS1234 DE. Runoff generated at the Site is a result of infrequent high rainfall events. Most rainfalls are reported in summer, often the result of remnant cyclones. Despite the occasional high intensity rainfall event, rainfall events in this region are irregular, and extensive periods with no significant rainfall are reported. Average areal evapotranspiration at the site is 300 mm per annum, based on 30 years of data from 1961 to 1990 (BoM, 2016). Both evaporation and evapotranspiration averages exceed the annual rainfall received at the Facility by approximately eight-fold .

The Probable Maximum Precipitation (PMP) for the area was computed using the CRC FORGE method and the results tabulated in Table 3-3. The rainfall analysis comprised both the computation of the Intensity Frequency Duration (IFD) information and the total rainfalls for a range of Annual Recurrence Intervals (ARI) up to the PMP of 1- in-2000 years. The IFD information is required to estimate the peak flows for catchments at the mining and plant areas, and along the access road (Rockwater Pty Ltd, 2016b).

Table 3-3: ARI / Total Rainfall (mm) including PMP at Sandy Ridge Mining Area

Duration	2	5	10	20	50	100	200	500	1,000	2,000
24 hrs	40	57	70	87	113	136	155	180	201	222
48 hrs	47	68	83	104	135	163	186	216	241	266
72 hrs	50	72	89	111	146	176	200	232	258	285

The computed total rainfall is supplemented with the historical rainfall record from meteorological stations at Menzies, approximately 110 km north-east of the Project area on Goldfields Highway, and Ora Banda, approximately halfway between Kalgoorlie and Sandy Ridge. The largest three-day (72 hour) total rainfalls for these two stations are presented in Table 3-4 (Rockwater Pty Ltd, 2016b).

Table 3-4: Total Maximum 72-hour Rainfalls at Menzies and Ora Banda Stations

Date	Menzies (mm)	Ora Banda (mm)
25/02/1995	81.0	41.6
26/02/1995	31.4	5.8
27/02/1995	168.4	142.4
Total	280.8	189.8
21/02/1948	4.1	0.0
22/02/1948	121.9	177.3
23/02/1948	85.6	76.7
Total	211.6	254.0

The two largest recorded total rainfalls over 72 hours occurred in 1948 and 1995 at both Menzies and Ora Banda. They would suggest that the computed IFD underestimates the rainfall intensities. However, close inspection of the rainfall data for these stations shows that these two events are extreme – as much as twice as large as the next closest event. Therefore, statistically these events would be closer to the PMP.

The total rainfall for a range of ARI and the maximum recorded rainfalls need to be compared with infiltration losses. Infiltration rates for sandy soils can be up to 720 mm/day and are typically about 500 mm/day for sandy, loamy soil. The Sandy Ridge mining area has predominantly deep (up to 3 m) sandy soil; possibly with some small clay pans where infiltration rates could be between 24 and 120 mm/day. With sandy loam soil the highest recorded rainfalls should infiltrate within 12 hours, or if not, soon after.

3.6.2.1 Water Catchments and Surface Water Resources

The Facility is within a landscape which is generally flat and has a slightly undulating surface ranging in elevation from 460 m AHD to 490 m AHD, sloping toward the west. The Site has low relief that consists of flat to gently undulating plains and low rises and is typical of landscapes in the WA Goldfields region.

If unmanaged, sheet flows from within the mine infrastructure area could directly impact the mining area. Drains to capture and direct surface water away from cells and toward sumps in the mining area have been installed. Operational bunding approximately 0.5 m high has also been put in place around open cells to prevent surface water flowing into the existing cell or future cells from overland sheet flows. To date, no ingress of surface water has entered Cell 1.

Regional topography and inferred catchment zones are shown in Figure 3-4. Inferred surface water flow paths demonstrate that there are no surface waterbodies (waterways, wetlands or estuaries) within or in the vicinity of the water abstraction area. As shown in Figure 3-5, there are no major flow paths in the planned mining area, and therefore active surface water management is only required for short-term flows during and following the infrequent high-rainfall events. These flows will be from small local catchments which drain residual runoff after infiltration losses, to low-lying depressions.

Generally surface water will only be retained for short periods in the depressions due to continual infiltration. Water could pond for longer periods if the depressions have a clay base but, the likelihood of this occurring is rare due to the deep red and yellow sands across the mining area. In addition, there will be evaporation of water in depressions, with average pan evaporation taking approximately three days to exceed precipitation after a major rainfall event (once clouds have lifted).

With regard to the proposed amendments to L9240/2020/1, no additional infrastructure associated with water abstraction, pipeline delivery and road access are applicable; new or additional potential impacts to natural surface water drainage or downstream ecosystems are therefore not anticipated.

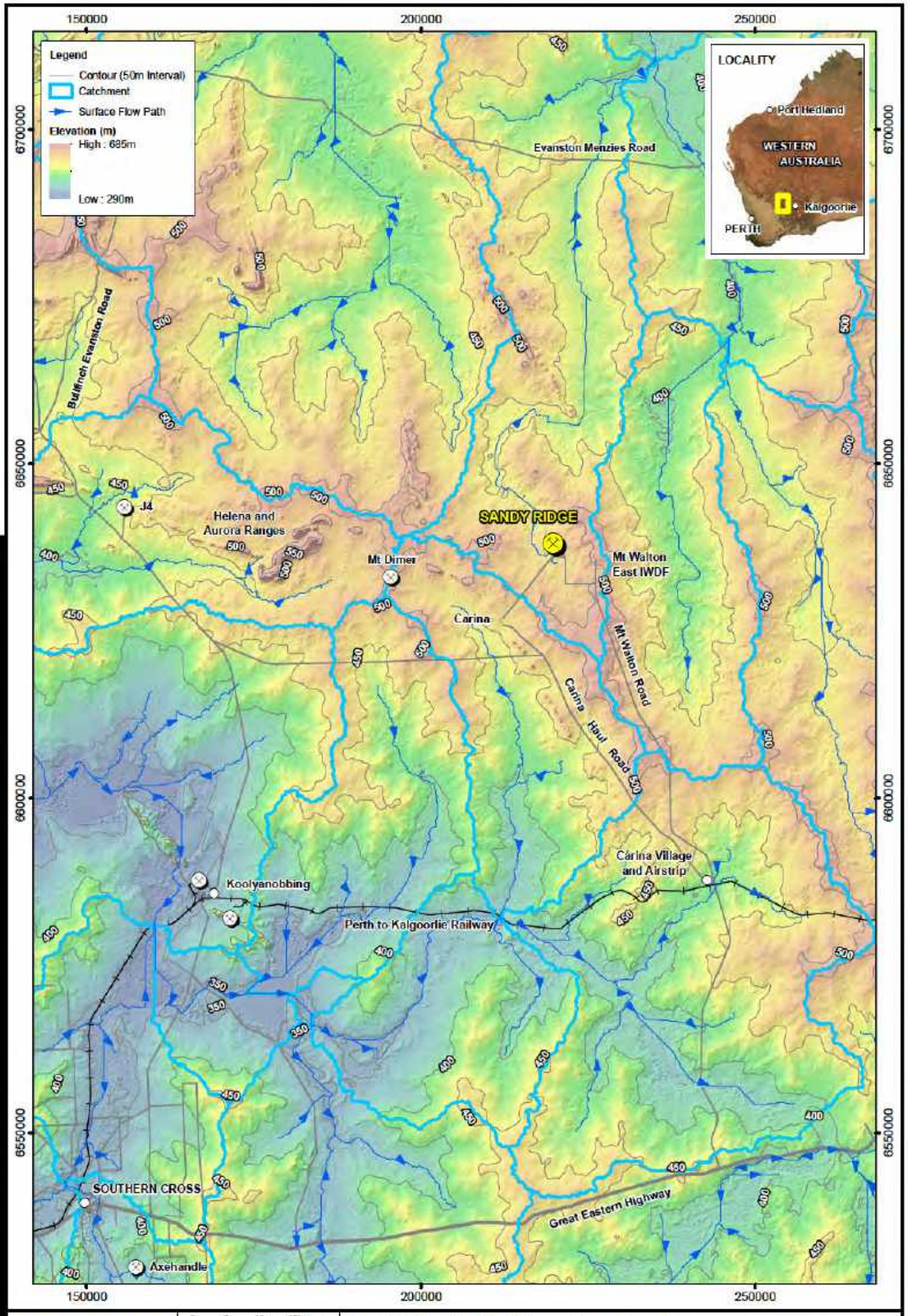

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Figure 3.4 - Regional Topography and Catchments

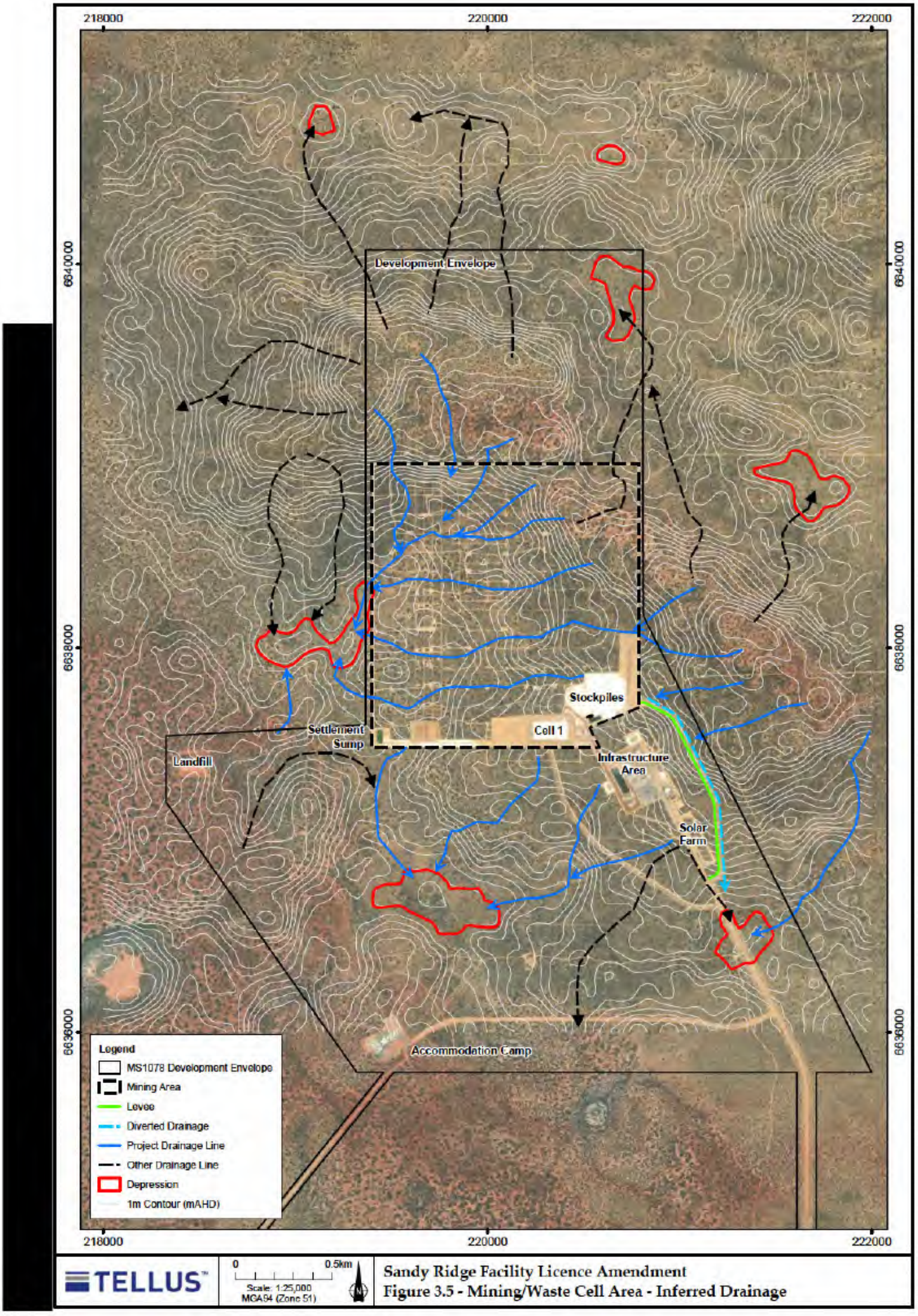

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Figure 3.5 - Mining/Waste Cell Area - Inferred Drainage

3.6.3 Hydrogeology

The hydrogeology of the MS1234 DE is characterised as weathered granite rock with minor groundwater resources (Kern, A. M., 1994). Except for groundwater bores for monitoring purposes at the IWDF (approximately 5.5 km east of the MS1234 DE) and water supply bores at the Mount Dimer Gold Mine, greater than 23 km from the MS1234 DE, there are no other known registered users of groundwater near the Proposal.

A groundwater investigation of the Mount Walton north-east area in 1988 (excluding drilling but including the area in which the IWDF and the proposed Sandy Ridge site are situated) considered both areas to be suitable for the permanent isolation of hazardous wastes (Hirschberg, K.J., 1988). The early investigations for the siting of the IWDF indicated a low likelihood of aquifers. Extensive exploration drilling conducted by Tellus has confirmed that there are no aquifers present within the mining area within the proposed maximum excavation depths (i.e., 30 m).

Previous drilling investigations in the region (Soil & Rock Engineering, 1989) and (ATA Environmental, 1995) comprising 21 drill holes did not detect a groundwater aquifer. Permeability tests conducted on four of the 21 holes gave approximate in situ soil permeability values for the weathered granite ranging from 2.5 x 10-8 m/s to 3.2 x 10-7 m/s. These values indicate that the materials underlying the mining area have low to very low permeability's and are generally dry.

In 2015, seven investigation groundwater bores were drilled and constructed within the MS1234 DE (Rockwater Pty Ltd, 2015). The depth of the holes ranged from 21 m to 49 m below ground level with drilling ceasing on refusal in weathered or fresh granite. All seven holes intersected typical granite weathering profiles. Minor cavities were observed in the silcrete, clay, kaolinite and weathered granite.

No aquifer was intersected during the investigation. Salinity of the moisture abstracted within damp soils ranged between 6,032 and 6,565 mg/L TDS. Permeability (hydraulic conductivity) testing was undertaken on all bores and the results are listed in Table 3-5.

The drilling indicated that water-bearing zones are small and disconnected due to very low permeability's and therefore the small quantities of water within the profile do not constitute a connected aquifer.

Table 3-5: Hydraulic Conductivity Results from Monitoring Bores within the Mining Area

Bore ID	Test Number	Dry Permeability (meters/day)	Dry Permeability (meters/second)	Lithology of Screened Interval
SRMB146	1	0.14	1.62×10^{-6}	Kaolinite and deeply weathered granite.
	2	0.12	1.36×10^{-6}	
SRMB147	1	0.93	1.08×10^{-5}	Kaolinite (saprolite).
SRMB148	1	0.99	1.15×10^{-5}	Kaolinite (weathered granite).
SRMB149	1	0.39	4.51×10^{-6}	Weathered granite.
	2	0.22	2.55×10^{-6}	
SRMB150	1	0.03	3.47×10^{-7}	Weathered and fresh granite.
	2	0.02	2.31×10^{-7}	
SRMB151	1	0.33	3.82×10^{-6}	Moderately to slightly weathered granite.
SRMB152	1	0.19	2.20×10^{-6}	Weathered granite.
	2	0.18	2.08×10^{-6}	

Tellus has continued to develop its understanding of the hydrogeological setting at Sandy Ridge with investigations continuing to conclude that a groundwater aquifer is absent in the weathered granite profile.

Drilling investigations at the Facility, including additional drilling since MS1078, confirmed that there are very few areas of high relative permeability observed across the entire site. Where there are, these appear isolated with no real horizontal connectivity and therefore any likelihood of potential aquifer development.

The results of geophysical based investigations by Geo9 (2019), are:

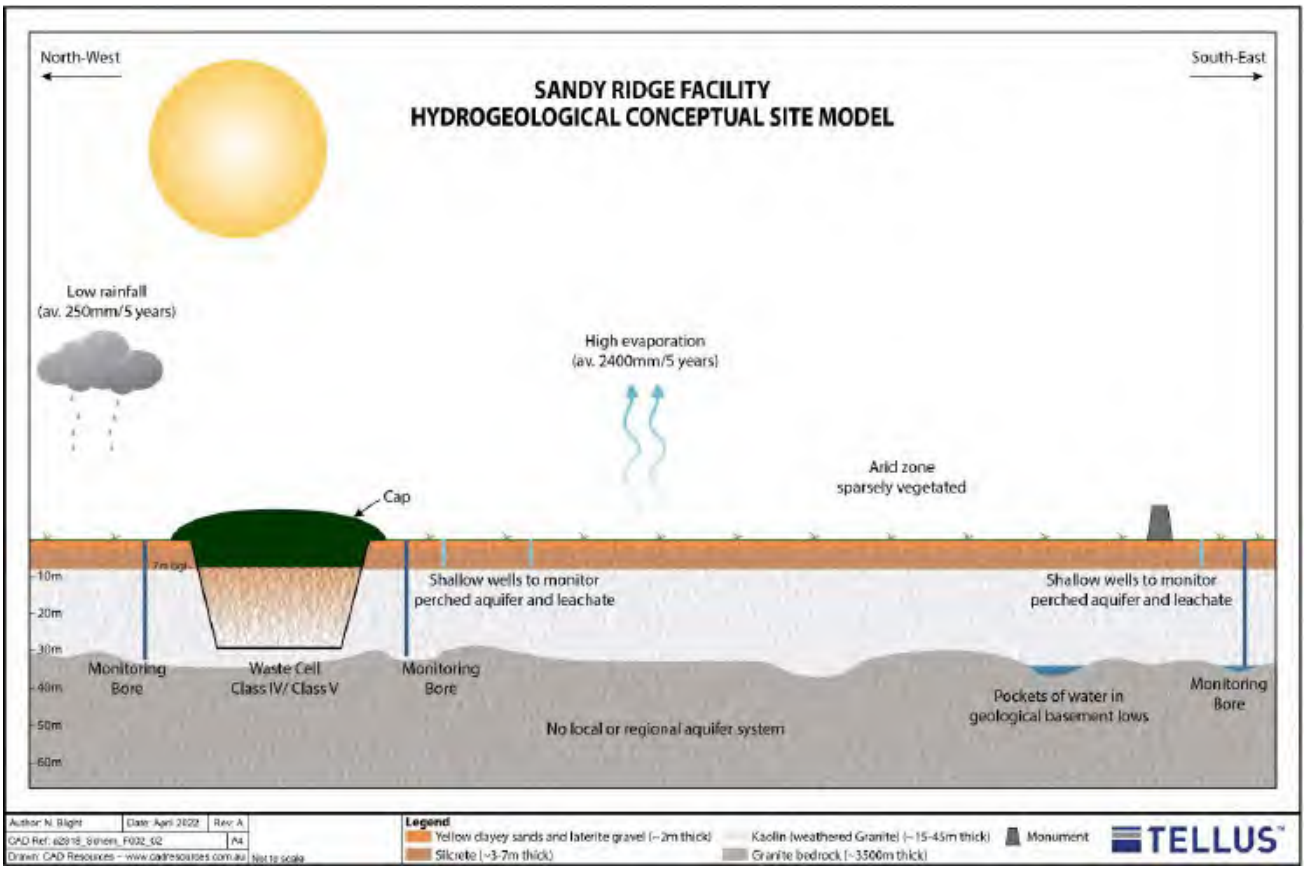
- The granite basement is irregular, with ridges and depressions evident that naturally control the location (spatial distribution) of groundwater on the site.
- Potential groundwater measured as relative hydraulic conductivity is in basement lows where the weathered granite meets the unweathered granite.
- There is no evidence of significant aquifer development or groundwater recharge in the area.
- Groundwater at Sandy Ridge is unlikely to be affected by seasonality, or change with time and, is slow moving from its existing location.
- In event of seepage from a storage cell, it is estimated that resident time in the unsaturated zone below the cell is on the order of 400,000 years.

The lack of horizontal connectivity suggests that migration of free liquid below the silcrete is unlikely. The most recent hydrogeological update of Sandy Ridge (Cymod Systems, 2022) confirmed these findings and concluded by saying that it is unlikely that groundwater mounding or lateral flow of seepage would occur from a cell and that the waste cell design and local geology minimises the likelihood of the formation and migration of leachate plumes from the Facility.

The basic conceptual hydrogeological model reaffirms that unsaturated groundwater flow from rainfall recharge migrates vertically, through the soil profile, until it reaches the interface between the overlying weathered granite or fractured granite and fresh unweathered granite (refer to Insert 3-1).

This process has occurred over hundreds of millions of years in this landscape. The low rainfall recharge implied by the lack of groundwater in the area is supported by the prevailing climatic conditions with annual rainfall generally less than 300 mm and evaporation exceeding 2,400 mm per annum. Sporadic rainfall events (which may be intense) result in local runoff, and infiltration of rainfall into the thin aeolian surface sand. However, during subsequent dry periods, evaporation and evapotranspiration act to remove this rainfall from the top two metres of soil, which results in little if any net recharge (Cymod Systems, 2022).

Insert 3-1: Conceptual Hydrogeological Model



Tellus commissioned Dr Thomas Hatton to undertake a peer review of the potential risks associated with any development of a perched water table and the subsequent creation of a contaminant pathway to the environment (Thomas Hatton Environmental Consulting, 2023). The review assessed the suitability of the shallow monitoring network, particularly vadose monitoring.

The review found that while there is the potential for limited perching of water on the silcrete following high rainfall events, this perched water is likely to be lost to evapotranspiration and percolation through the silcrete within a few months. The review also found that additional soil moisture modelling is unlikely to yield further or more robust insight.

Tellus' groundwater monitoring programme (as well as periodic soil sampling of high risk areas is previously summarised in Section 3.5) was approved by DWER and DCCEEW and is designed to detect potential impacts on groundwater quality from operational activities at Sandy Ridge. Monitoring to date has not identified such events.

3.6.3.1 Groundwater Monitoring

A Deep Groundwater Monitoring and Management Plan (DGMMP) (required under EPBC 2015/7478) and revised LMMP (required under MS1234) have been prepared to enable early detection of potential leachate to protect the environment from any impacts associated with potential leachate. The LMMP and DGMMP establish trigger and threshold criteria and responses for both standing water level and a suite of analytes. These were established based on baseline measurements taken prior to waste emplacement at the Facility.

Twenty-one monitoring bores, completed in the kaolin formation were installed to monitor for groundwater levels and water quality. Monitoring to date indicates that water levels are stable with changes in water levels in the order of decimetres and below the trigger levels (Cymod Systems, 2022). This water level response reflects the low rainfall recharge and low aquifer transmissivity described for the Sandy Ridge environment.

Six monitoring bores have also been established on top of the silcrete formation to assess for potential seepage and recharge following significant rainfall events. Monitoring reported five of the bores were dry and one reported a saturated zone for approximately two weeks following a 54 mm rainfall event. These results are consistent with the hydrogeological model of the site.

3.7 Flora and Vegetation

All proposed amendments relate to activities located wholly on cleared land as shown in Figure 1-2. No clearing of vegetation or additional land disturbance beyond approved the disturbance envelope is proposed.

The following information is therefore provided as background and to demonstrate that there is negligible risks from this proposal on flora and vegetation identified at or in the vicinity of Sandy Ridge.

Multiple botanical studies have been conducted during the planning phase of the Project across a wide-ranging area. The results of these surveys have contributed to defining the vegetation and flora aspects. Key vegetation and flora surveys are listed in Table 3-6.

Table 3-6: Summary of Flora and Vegetation Studies and Assessments

Studies and Assessments	Details
Sandy Ridge Facility Exploration Tenement E16/440 Level 1 Flora and Vegetation Survey (PGV Environmental, 2015)	The Level 1 Flora and Vegetation Survey of Tenement E16/440. Including desktop assessment and review of aerial photography.
Sandy Ridge Facility Exploration Tenement E16/440 Level 2 Flora and Vegetation Survey (PGV Environmental, 2016)	A Level 2 Flora and Vegetation Survey included a review of relevant databases, previous reports and aerial photography. The field survey was completed in spring using quadrats (25 sets of 20 m by 20 m quadrats) and several traverses of the access roads and water pipeline route to record native and introduced species, as well as a site walkover of any areas of native vegetation.

Studies and Assessments	Details
Sandy Ridge Facility – Borefield Flora and Vegetation Survey (Western Botanical, 2018a)	Flora and vegetation survey of the borefield including a desktop assessment, a field survey that mapped vegetation associations, provided an inventory of all flora encountered, mapped the location of any known Threatened or Priority species.
Sandy Ridge Facility – Flora and Vegetation Survey (Communication Towers and Borrow pits) (Western Botanical, 2018b)	Flora and vegetation survey of the communication tower and borrow pits for Tellus.
Sandy Ridge Facility – Targeted Flora and Vegetation Survey of the Southern Borefield (Western Botanical, 2019)	Targeted significant flora survey of the southern borefield area for Tellus.
Sandy Ridge Facility – Regional Priority Flora Search (Western Botanical, 2021)	Initial flora health monitoring program conducted by Western Botanical in 2019 identified a significant population of *Melichrus sp. Bungalbin Hill* (F.H. & M.P. Mollemans 3069) (P3) within the Facility. Western Botanical (2021) conducted a regional Priority Flora search with the aim of increasing the current knowledge and understanding of this species, along with any other significant flora species recorded in the region. This included desktop and field surveys.
Lepidosperma lyonsii R.L. Barrett at Sandy Ridge – A report prepared for Western Botanical (Eubio Consulting, 2021)	Taxonomic assessment and comparison between specimens of *Lepidosperma* collected at the Facility against *L. lyonsii*. The purpose of the assessment was to confirm whether specimens collected at the Facility were the Priority species.
Detailed Flora and Vegetation Assessment for Tellus Holdings Sandy Ridge Operation (Western Botanical, 2022)	A detailed flora and vegetation survey of the DE was completed during Spring 2021 and early Spring 2022. The report includes a review of previous flora and vegetation surveys completed at the Facility and surrounding areas, revision and updating of vegetation mapping completed by PGV Environmental (2016) and targeted flora surveys. A total of 56 quadrats were assessed The methodology and results are described further in subsequent sections.

In line with EPA Report 1767, MS1234 authorises up to 276.05 ha of native vegetation clearing for the Sandy Ridge Facility. In the interests of reducing duplication, the Public Environmental Review (PER) information is not replicated here. Please refer to Section 5.1 of the Environmental Review Document (ERD) (GHD, 2023) for detail on the existing flora and vegetation in the MS1234 DE.

3.7.1 Vegetation Types and Condition

Western Botanical (2022) identified and mapped twenty vegetation types within the DE (Figure 3-6). The vegetation condition in the uncleared portions was in Pristine to Excellent condition, with no visible signs of direct or indirect impacts outside the areas directly cleared for previous and current mining activities.

Only one minor weed population was observed, and a small amount of rubbish blown into the bush near the current rubbish tip. Vegetation was in Very Good condition associated with the mining areas, where extensive drilling has occurred. Vegetation condition within the Project area is shown in Figure 3-7.

3.7.2 Significance of Vegetation Types

Western Botanical (2022) considered the native vegetation to be common and widespread within the region, with the exception of association Ba-S that forms part of a Priority Ecological Community (PEC). The Priority 1 PEC Finnerty Range / Mt Dimer / Yendilberin Hills vegetation complexes was identified on the upper slopes of a low outcropping banded ironstone ridge with *Banksia arborea* shrubland (Ba-S). This PEC occurred in the borefield location with 2.7 ha (0.25%) mapped within the DE.

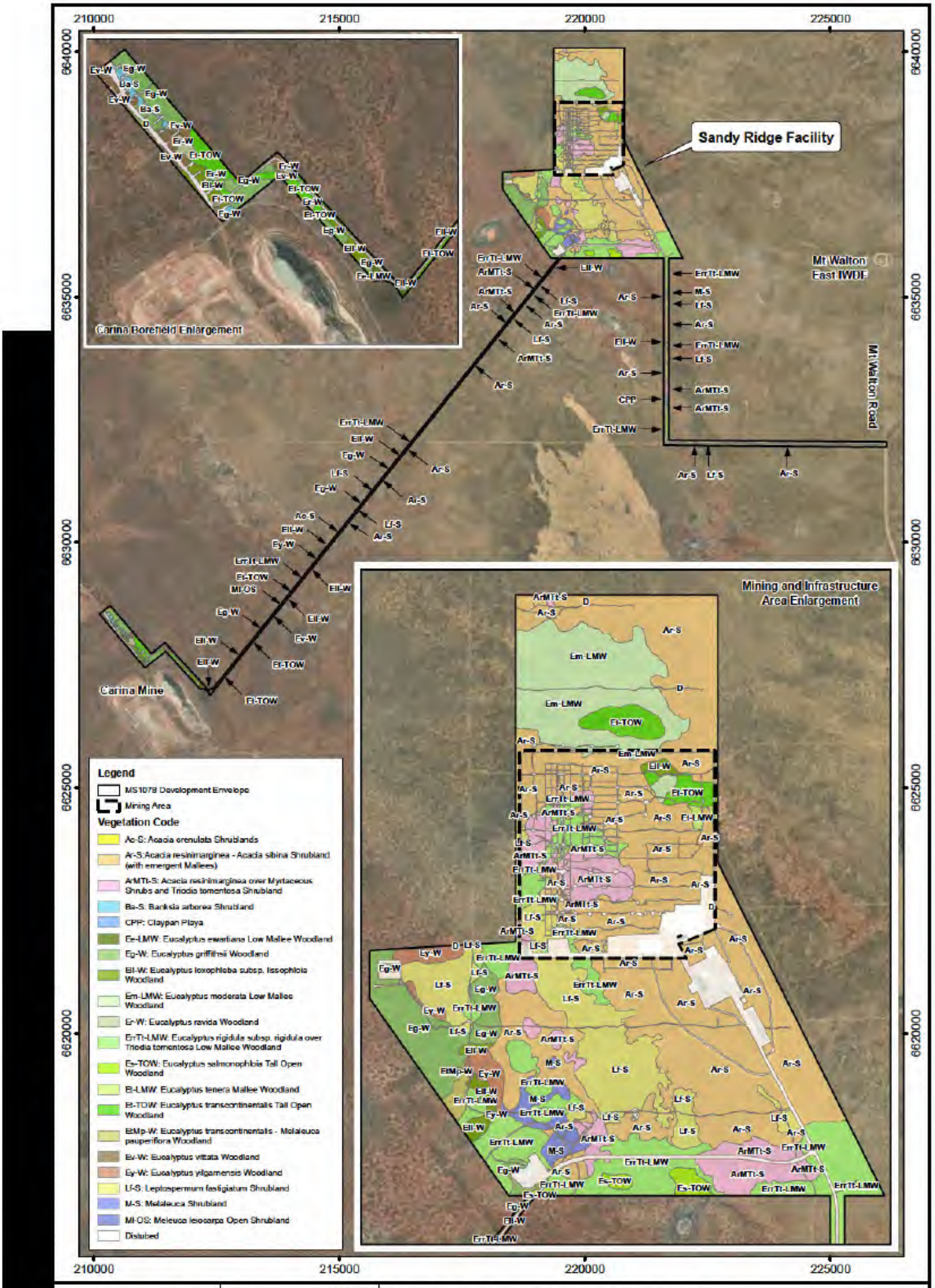
Given the distance from the PEC, the proposed activities associated with the requested licence amendments are of negligible risk to this feature.

There are minor claypans and broad drainage areas that are not incised, none of the vegetation was considered to be representative of riparian vegetation (wetland or watercourse).

3.7.3 Flora Diversity and Significant Taxa

Western Botanical (2022) identified 331 endemic flora taxa within the DE and four weed species. Eleven taxa are listed as Priority flora species and a further 11 considered as taxonomically significant, with two representing new novel species and nine being currently undescribed potential new species that require further expert taxonomic description. Eleven species were considered to represent minor range extensions.

The significant flora species are described further in Western Botanical (2022).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Sandy Ridge Facility
Mt Walton East IWDF
Mt Walton Road
Carina Borefield Enlargement
Carina Mine
Mining and Infrastructure Area Enlargement
Legend
MS1079 Development Envelope
Mining Area
Vegetation Code
Ac-S: Acacia orenulata Shrublands
Ar-S:Acacia resinimarginea - Acacia sibina Shrubland (with emergent Mallees)
ArMTt-S: Acacia resinimarginea over Myrtaceous Shrubs and Triodia tomentosa Shrubland
Ba-S: Banksia arborea Shrubland
CPP: Claypan Playa
Em-LMW: Eucalyptus ewartiana Low Mallee Woodland
Eg-W: Eucalyptus griffithsii Woodland
Ell-W: Eucalyptus loxophleba subsp. lissophloia Woodland
Em-LMW: Eucalyptus moderata Low Mallee Woodland
Er-W: Eucalyptus ravida Woodland
ErTt-LMW: Eucalyptus rigidula subsp. rigidula over Triodia tomentosa Low Mallee Woodland
Es-TOW: Eucalyptus salmonophloia Tall Open Woodland
Et-LMW: Eucalyptus tenera Mallee Woodland
Et-TOW: Eucalyptus transcontinentalis Tall Open Woodland
EtMp-W: Eucalyptus transcontinentalis - Melaleuca pauperiflora Woodland
Ev-W: Eucalyptus vittata Woodland
Ey-W: Eucalyptus yilgarnensis Woodland
Lf-S: Leptospermum fastigiatum Shrubland
M-S: Melaleuca Shrubland
MI-OS: Meleuca leiocarpa Open Shrubland
Disturbed
TELLUS
0
2Km
Scale: 1:100,000
MGA94 (Zone 51)
N
Sandy Ridge Facili y Licen e Amendment
Figure 3.6 - Vegetation Associations Within the Project Area

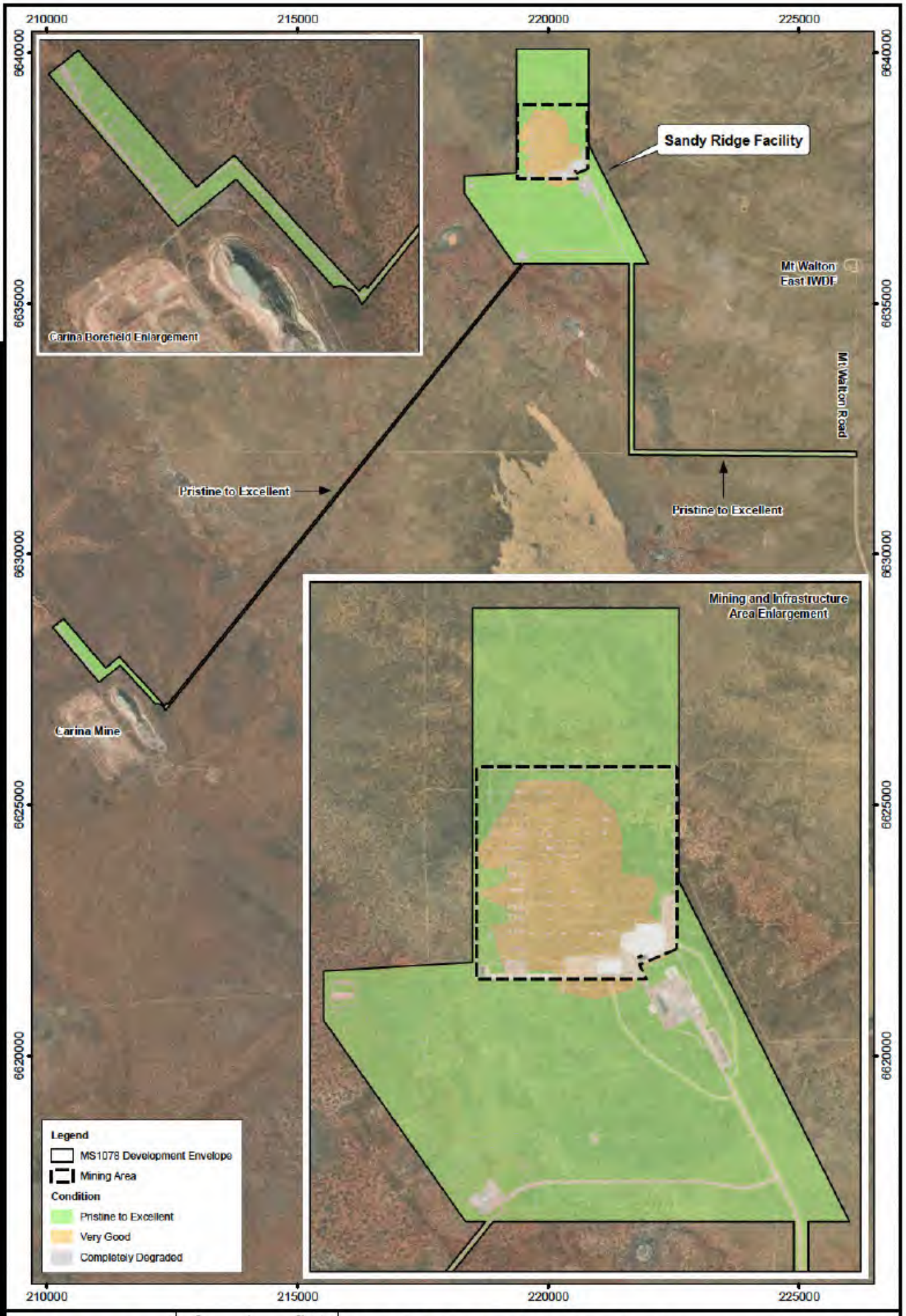

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Figure 3.7 - Vegetation Condition Within the Project Area

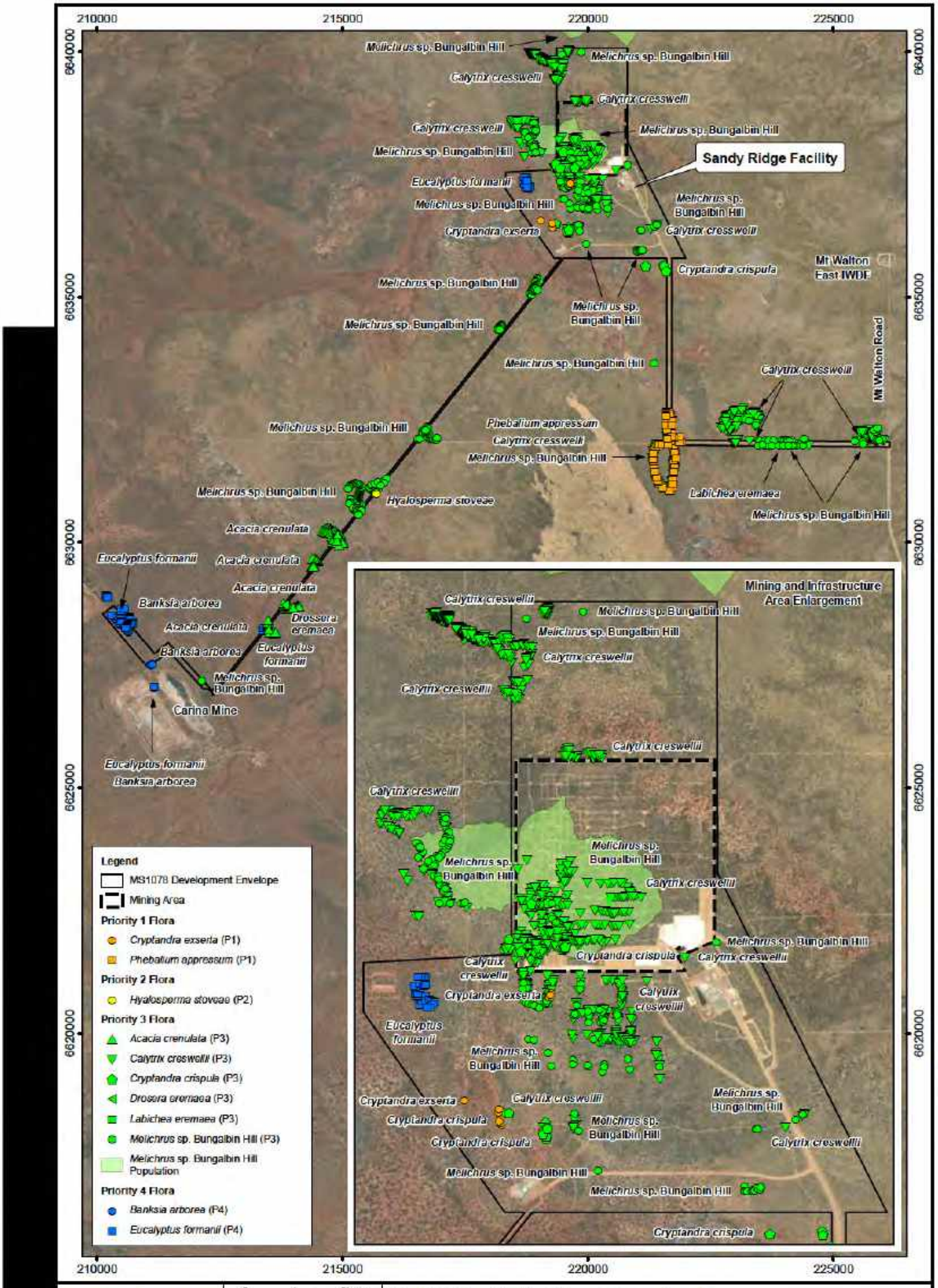

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Figure 3.8 - Locations of Priority Flora Within the Project Area

3.8 Fauna

All proposed amendments relate to activities located wholly on cleared land as shown in Figure 1-2. No clearing of vegetation or additional land disturbance beyond approved the disturbance envelope is proposed.

The following information is therefore provided as background and to demonstrate that there is negligible risks from this proposal on fauna species identified at or in the vicinity of Sandy Ridge.

Multiple Fauna surveys were undertaken in the Sandy Ridge Facility DE. in accordance with EPA *Guidance Statement 56: Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia* (EPA, 2004), *Environmental Factor Guideline – Terrestrial Fauna* (EPA, 2016), and *Technical Guidance Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* (EPA, 2020), as summarised in Table 3-7 below.

Table 3-7: Summary of Terrestrial Fauna Studies and Assessments

Studies and assessments	Details
Sandy Ridge Facility Level 1 Vertebrate Fauna Assessment (Terrestrial Ecosystems, 2015)	A level 1 (reconnaissance) vertebrate fauna assessment of the DE that defined fauna values and identified any fauna species of significance. The assessment included a field survey to assess fauna habitat. The field survey included a targeted Malleefowl survey (*Leipoa ocellata*).
Sandy Ridge Facility Malleefowl Assessment (BCE, 2016)	A targeted Malleefowl assessment was conducted using a line survey approach within the proposed disturbance areas. The assessment area extended slightly beyond the boundary of the DE, and the water pipeline alignment was also surveyed to identify Malleefowl mounds.
Sandy Ridge Facility – Short Range Endemic Invertebrates Survey (Bennelongia, 2017)	A Short-Range Endemic (SRE) invertebrates survey was carried out for the DE. A desktop review aimed to collate existing information on SREs and listed invertebrates in the vicinity of the Proposal, as well as information on likely SRE habitats within the DE.
Sandy Ridge Facility – Access Road and Groundwater Abstraction: Short Range Endemic Invertebrates Assessment (Bennelongia, 2018a)	An SRE invertebrates assessment for the Access Road (as the Mt Walton Road is outside the DE) and groundwater abstraction area was carried out. A desktop review collated existing information on SREs and listed invertebrates and information on likely SRE habitats.
Sandy Ridge Facility – Vertebrate Fauna Assessment – Access Road and Groundwater Infrastructure Areas (Terrestrial Ecosystems, 2018)	A vertebrate fauna assessment for the Access Road (note that the Mt Walton Road is outside the DE) and groundwater infrastructure areas to assess the vertebrate fauna assemblage in and near the Project Area. The assessment included a field survey to assess and identify fauna habitat, and to search for Malleefowl tracks and mounds.
Sandy Ridge Facility – Basic Vertebrate Fauna Assessment (Terrestrial Ecosystems, 2022)	A vertebrate fauna assessment for the DE was undertaken in 2021. The assessment included a review of relevant databases, previous reports and the updated flora and vegetation assessment from Western Botanical (2022). The assessment addressed the changes to fauna classification, where relevant, and included a targeted Malleefowl survey. The search area concentrated on the active mining tenement and areas surveyed in 2016 by BCE (2016).

MS1234 authorises up to 276.05 ha of clearing of fauna habitat for the Sandy Ridge Facility. In the interests of reducing duplication, the PER information relating to terrestrial fauna in the Sandy Ridge Facility is not replicated here. Please refer to Section 5.2 of the ERD (GHD, 2023) for detail on the existing terrestrial fauna in the MS1234 DE.

3.8.1 Fauna Habitat

Terrestrial Ecosystems (2022) described and mapped the fauna habitat within the MS1234 DE through consolidating information contained within Terrestrial Ecosystems (2016), BCE (2016) and current vegetation mapping by Western Botanical (2022). Four fauna habitats were recorded within the DE (refer Figure 3-9), as follows:

- Mixed Eucalypt woodland with and without an understorey of shrubs;
- Mallee woodland;
- Shrubland; and
- Claypan.

The fauna habitats were in Good to Excellent condition, with disturbances associated with the Facility, access tracks and clearing for exploration drilling. The DE represents a very small proportion of similar fauna habitats found in the adjacent areas and bioregion.

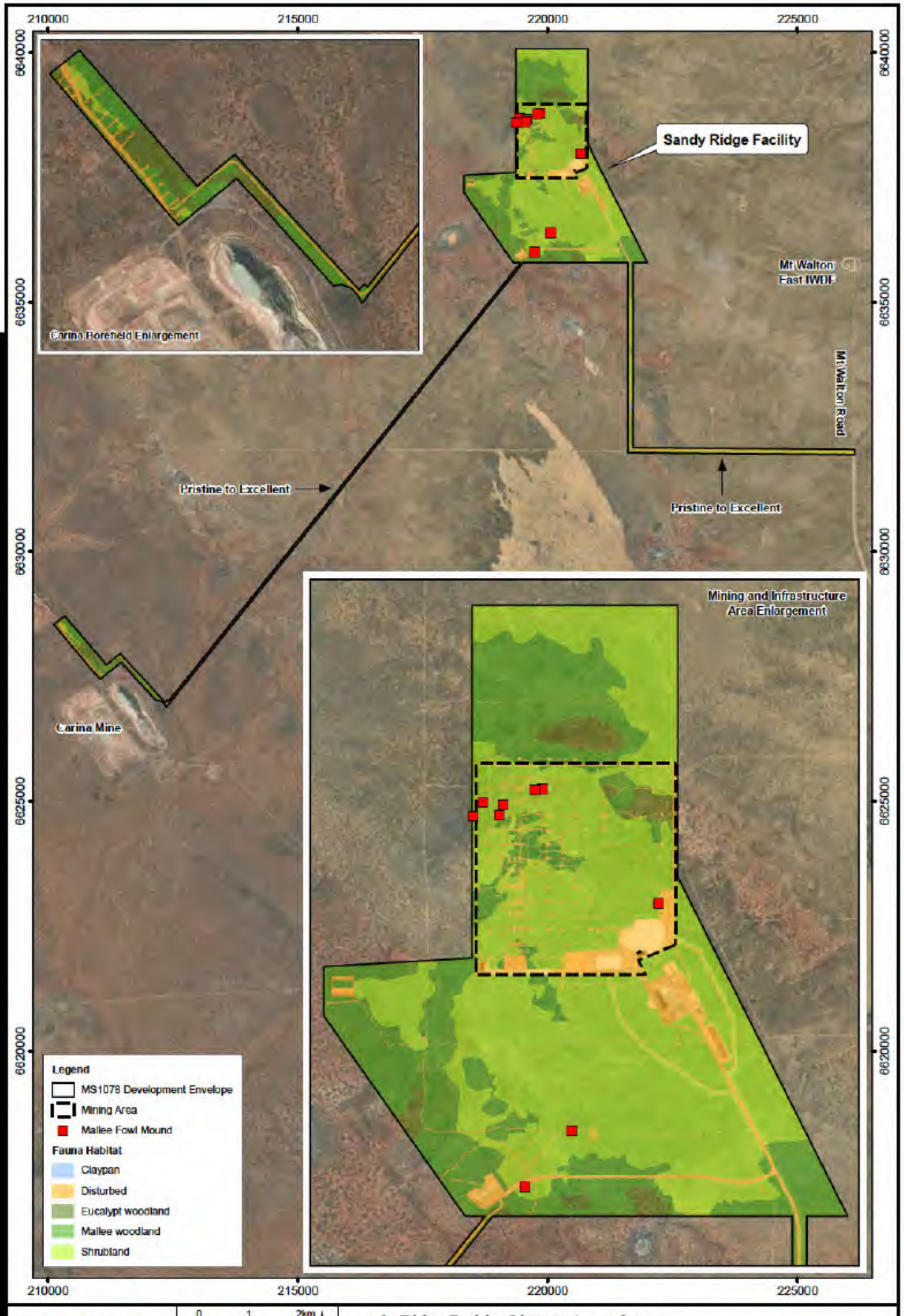

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Figure 3.9 - Fauna Habitat Within Mine Disturbance Envelope

3.8.2 Vertebrate Fauna Species of Conservation Significance

Terrestrial Ecosystems (2022) provides consolidated lists of vertebrate fauna potentially found in the vicinity of the MS 1078 DE; these potential species include:

- Four amphibians;
- 93 reptiles;
- 121 birds; 34 of which were recorded within the DE during the 2021 avifauna survey; and
- 35 mammals.

The consolidated list includes introduced species, with Terrestrial Ecosystems (2022) noting significant evidence of fox activity and a small amount of feral cat or wild dog during the 2021 surveys.

Terrestrial Ecosystems (2022) completed a likelihood of occurrence for significant fauna (species listed under the EPBC Act or BC Act or listed in the DBCA Priority and Threatened species lists). This assessment considered 19 species of significance and determined that 14 are unlikely to occur due to their known distribution and/or habitat preferences. Five significant species are considered to potentially occur within the DE, as discussed in Terrestrial Ecosystems (2022).

3.8.2.1 Malleefowl (Leipoa ocellata)

BCE (2016) recorded 63 Malleefowl mounds. Subsequently, Terrestrial Ecosystems (2022) revisited all mounds and transect searched the mining area for new mounds. No active Malleefowl mounds were recorded in the 2021 search and only nine of the 59 mounds assessed had a small vertical profile. No mounds were recorded in the project area which would be reused as a breeding mound. One set of Malleefowl tracks were recorded outside of the fenced mining tenement (Terrestrial Ecosystems, 2022) A single deceased Malleefowl was found on the access road in the DE in November 2020, and a live Malleefowl was observed on the access road in August 2022.

The Terrestrial Ecosystems (2022) survey indicated that Malleefowl are in low abundance in the project area.

3.8.3 Short-Range Endemic Fauna

Short-range endemic (SRE) invertebrate studies have been carried out at Sandy Ridge by Bennelongia Environmental Consultants:

- Desktop and field survey impact assessment in Mine Disturbance Envelope (consistent with MS1234 DE) (Bennelongia, 2017).
- Desktop assessment of the groundwater abstraction area in L16/121, future borrow pits and communication tower locations adjacent to the IWDF Access Road (Bennelongia, 2018a) in proposed new tenure areas.
- Desktop assessment of fifteen borrow pits adjacent to the IWDF Access Road (Bennelongia, 2018b) within L16/119, L15/361, L15/362.

Detailed evaluation of habitat identified six habitat types in the DE suitable for SRE, characterised by a range of woodland and shrubland vegetation. Habitats were determined not to have characteristics of typical SRE refuge and were ranked from low to not suitable for SRE fauna.

Two potential SRE species were recorded during field surveys at Sandy Ridge:

- *Aganippe* sp. B26 is a trapdoor spider: recorded in tall Eucalyptus woodland habitat.
- *Antichiropus* sp. is a millipede: recorded in open heath with scattered mallee and spinifex habitat, and in tall Eucalyptus woodland habitat.

Bennelongia (2017) concluded that the above species are unlikely to be SREs as their habitat occur widely across the region.

3.9 Heritage

3.9.1 Indigenous Heritage

All proposed amendments relate to activities located wholly on cleared land as shown in Figure 1-2. No clearing of vegetation or additional land disturbance beyond the approved disturbance envelope is proposed. Accordingly, no direct or additional impacts on known heritage sites are anticipated.

The following information is therefore provided as background and to demonstrate that there is negligible risks from this proposal on heritage sites identified within or in the vicinity of Sandy Ridge.

Aboriginal cultural heritage assessments have been undertaken (JCHMC, 2015) (Terra Rosa, 2019) and (JCHMC, 2022) to assess the heritage values of the Sandy Ridge Facility and to identify the potential presence of cultural heritage values. The cultural heritage investigations undertaken for the MS1234 DE include:

- A desktop review of previous heritage surveys and relevant heritage databases to determine whether there are any listed heritage sites within or in close proximity of the MS1234 DE.
- A field survey consisting of pedestrian transects in consultation with representatives of the Kapam Native Title Group, Kelamaia Kabu(d)n and Widji Group (JCHMC, 2015).
- Additional archaeological and ethnographic survey of eight areas across the DE (Terra Rosa, 2019).
- Further consultation with the Aboriginal stakeholder groups involved in the 2015 heritage investigations regarding the Facility (JCHMC, 2022).

Desktop searches completed by JCHMC (2015) and Terra Rosa (2019) found that there were no known records of Aboriginal heritage sites within the DE. Field surveys were conducted within the DE in consultation with representatives of the Kapam Native Title Group, Kelamaia Kabu(d)n, Widji Group and Marlinyu Ghoorlie Group in 2015. No sites of Aboriginal heritage were identified, however two isolated artefacts were identified and recorded within the Project. These artefacts were not considered to constitute Aboriginal heritage sites and no further action was recommended in their regard (JCHMC, 2015).

There are no registered sites in proposed tenements along the IWDF Access Road (L16/119, L15/362 and L15/361) or in the groundwater infrastructure areas of L16/121. Additional archaeological and ethnographic surveys of eight areas associated within the water pipeline, communication towers and borrow pits were completed by Terra Rosa (2019). Of the eight sites surveyed, one of the areas was identified as a potential 'men-only' ethnographic site, and site avoidance was requested until its 'men's ethnographic values' could be defined. It is noted that this location is within the IWDF Access Road Reserve 44102, approximately 60 km south of the Facility and was included in the survey as it was nearby to the location of either a communications tower or borrow pit. The location of the site is not within the DE; Tellus therefore considers that this site will not be impacted by the proposed amendments.

Thirty-six (36) native title claims have been lodged over the Shire of Coolgardie since 1994, two of which are active. One of these is a claim that coincides with the Sandy Ridge Facility. Tribunal number WC2017/007 was lodged in December 2017 and was registered. Tellus have signed a Sandy Ridge Project Agreement and Agreement for Heritage Protection with the native title claimant group.

3.9.2 European Heritage

The assessment of European heritage included a desktop review of publicly available information and a review of relevant heritage databases to determine whether there are any listed heritage sites within or in close proximity of the MS1234 DE.

Database searches (DPLH Site Register, State Heritage Register (inherit), World Heritage Register, National Heritage Register, Commonwealth Heritage Register and the Australian Heritage Database) performed in July 2022 did not identify any known records of European heritage items within the MS1234 DE.

A search of State Heritage Places on the WA database (inHerit) indicated no heritage places are within Sandy Ridge DE. Several heritage places are adjacent to the Great Eastern Highway with the nearest to the Proposal being:

- Granite Hill Well (Well No. 19), place number 17563 located approximately 2 km east of the IWDF Access Road; and
- Bullabulling Rock Water Catchment and Dams, place number 3933 located approximately 2 km west of the intersection of IWDF Access Road and Great Eastern Highway.

Tellus therefore considers that European heritage values will not be impacted by the proposed amendments.

There are no world heritage properties in the vicinity (i.e., 100 km) of the MS1234 DE. There are no Commonwealth or National heritage listed places in the MS1234 DE. The nearest National Heritage Place is the Goldfields Water Supply Scheme (i.e., Mundaring to Kalgoorlie water pipeline), located adjacent to Great Eastern Highway, approximately 85 km south of the proposed Borrow Pit 1. The Mundaring to Kalgoorlie water pipeline is not impacted by the proposed amendments.

3.10 Radiation

Baseline radiation surveys have been conducted to establish the pre-existing conditions, so that future management and rehabilitation of the site may be successfully managed to meet applicable assessment criteria and closure objectives. Tellus has also conducted a study to measure the baseline radiological conditions of the Facility prior to commencement of radioactive waste management operations. The study methodology was established via agreement with the WA Government Regulator, Radiation Health Unit, with environmental measurements broadly based on the Naturally Occurring Radioactive Material (NORM) guidelines published by the DMPE, formerly DEMIRS, in 2010.

On an operational basis gamma surveys are conducted in a variety of areas at site to determine the ambient dose rates in those areas in accordance with the Radiation Management Plan (Tellus Holdings Ltd, 2022c). A gamma survey is also completed for each new waste cell prior to excavation.

Monitoring to date has confirmed that results are consistent with typical gamma dose levels for the Perth Coastal Plain, which has a range of 0.05 to 0.19 µSv/hr, and the average levels for Australia. As such monitored radiation levels present no health risks to human health or the environment.

Tellus' radiation monitoring program also includes the use of dust and gas monitoring stations (Tellus Holdings Ltd, 2022c) at seven locations as defined in the Radiation Management Plan for the Sandy Ridge Project as approved by the Department of Mines, Petroleum and Exploration (DMPE) Mines Safety Directorate. The monitors are sited near the village, weather station, around the Facility boundary and surrounding the waste cell areas.

Tellus has completed approximately three years of dust deposition monitoring during operations. Radon and thoron concentrations are monitored at each of the locations described above.

Monitoring data confirms that monitored radiation parameters and personnel and environmental exposure levels remain consistently under adopted assessment criteria.

3.11 Contaminated Sites

Tellus is committed to meeting its obligations under Section 13 of the *Contaminated Sites Act 2003*. The Sandy Ridge Facility was reported because it has been used as a waste facility accepting liquid and solid wastes and class IV and class V intractable landfill material since 2020. The site has been reported to DWER as a known or suspected contaminated site, with a Classification as determined on 30 March 2022 as "Contaminated – restricted use".

4 PROPOSED ACTIVITIES

4.1 Proposal Timing

In general terms, the anticipated project execution timeframes for each of the proposed amendments are summarised in Table 4-1 below. Actual timeframes will be dictated by receipt of required approvals as well as other logistical arrangements applicable to each activity.

Table 4-1: Anticipated Project Implementation Schedule

Proposed Change	Estimated Commencement
1. Align Licence L9240/2020/1 with the obligations of MS1234 to:	Quarter 1 2026
a) Align Licence validity with the Project Life approved under MS1234.	
b) Permit 280,000 tpa through Facility gate, in accordance with MS1234.	
c) Remove duplication of regulation for LLW, where this issue can be appropriately managed under Part IV of the EP Act and the RSA.	
2. Allow for bulky wastes (e.g., railway sleepers and pipework) to be stored uncovered / in the open, prior to permanent disposal to waste cells.	Quarter 1 2026
3. Allow the area under the waste cell air domes to be utilised as temporary working storage areas once a cell has been filled to final waste level.	Quarter 2 2026
4. Amend per- and poly-fluoroalkyl substances (PFAS) storage in accordance with the PFAS National Environmental Management Plan, version 3.0 (NEMP 3.0) to:	Quarter 1 2026
a) Permit, when operations require, storage of excess PFAS liquid waste in the Main Storage Area.	
b) Remove the maximum PFAS concentration (50 mg/kg) limit in consideration of Section 14.6 of the NEMP 3.0.	
5. Minor amendments and corrections to the existing licence.	Quarter 1 2026

4.2 Infrastructure and Equipment

The key infrastructure and equipment applicable to this licence amendment application, as described in Condition 1, Table 1 of L9240/2020/1, is outlined in Table 4-2 below.

Table 4-2: Key Process and Non-Process Infrastructure Requirements

Infrastructure / Equipment	L9240/2020/1 Operational Requirement	Proposed Design and Construction Requirements
East Yard (solids) Storage Area	a) Sloped to allow surface water within the East Yard (solids) storage area to drain to the Stormwater Retention Pond.	No design or construction modifications are proposed under this licence amendment application; however, Tellus has defined operational controls to be adhered to when storing uncovered bulky wastes in the East Yard (solids) Storage Area (refer to Sections 4.4 and 8 for further details).

Infrastructure / Equipment	L9240/2020/1 Operational Requirement	Proposed Design and Construction Requirements
Stormwater Retention Pond (East Yard)	a) Total capacity of 3,623 m³, capable of capturing a 1 in 100 year 72-hour storm event from the East Yard (solids) Storage Area.	No modifications are proposed under this licence amendment application. There is limited potential for groundwater contamination as existing controls are considered to be adequate, given the limited environmental pathways and sensitive receptors (refer to Section 8 for further details).
PFAS Contaminated Waste Storage Area	a) Maintained as an impervious concrete floor sloped to an impervious floor sump (blind) with a 400 mm high perimeter bund constructed of concrete; and b) Maintained to retain at least 110% of the largest ISO storage container within the bunded area and sump.	No modifications are proposed under this licence amendment application.
Low Level Radiation Waste Warehouse / Liquid Waste Unloading Area	a) Maintained as a roofed and walled warehouse with concrete floor sloping to a concrete floor sump (blind), and perimeter concrete bunding; and b) Maintained to retain at least 110% of the largest ISO storage container within the bunded area and sump.	No modifications are proposed under this licence amendment application.
Low Level Radiation Waste, Liquid Waste and Sludge Storage Yard	a) Maintained as a sealed interlocking concrete paving floor with joint stabiliser and sealant to be maintained as per manufacturers' specifications; and b) Hardstand drainage to include blind sumps constructed of concrete, capable of retaining 1:100 year, 72 hour rainfall event when combined with the 4x Stormwater Storage Tanks.	No modifications are proposed under this licence amendment application.
Waste Cell 1, Air Dome, Settlement Pond	a) Excavated mine cell (Cell 1) for waste deposition of nominal size 80m x 160m x 30m; b) Covered air dome enclosing the width of the excavated waste cell 1; c) Air dome fitted with entry and exit doorway airlock; and d) Air dome to be maintained at an inflated pressure to +500 Pa.	No design or construction modifications are proposed under this licence amendment application; however, Tellus has defined specific procedures to be adhered to when undertaking temporary waste storage activities up until pre-closure / pre-capping of the cell (refer to Sections 4.5 and 8 for further details).

4.2.1 Critical Containment Infrastructure

No critical containment infrastructure is proposed.

4.3 MS1234 Alignment

As previously stated, Tellus proposes amendments to L9240/2020/1 to align the licence with new Ministerial conditions under MS1234. Specifically, the alignment is requested to ensure the following:

- Align Licence validity with the Project Life approved under MS1234.
- Permit 280,000 tpa of Class IV and V waste to be accepted at the Facility gate, in accordance with MS1234.
- Remove duplication of regulation for LLW for all aspects and impacts that are already adequately managed under Part IV of the EP Act and the RSA.

4.3.1 Project Life

MS1234 approves a Project life of 25 years from December 2024, where L9240/2020/1 is valid until 28 June 2040.

To align L9240/2020/1 with the Project life approved under MS1234, Tellus requests that the licence duration of L9240/2020/1 is extended to December 2049.

Proposed amendments to the Licence conditions as discussed above are summarised in Section 9.

4.3.2 Alignment of Waste Tonnages

In June 2018, the Facility was granted approval under MS1078 under Part IV of the EP Act. Schedule 1 of MS1078 authorises up to 100,000 tpa of Class IV and V waste to be accepted at the gate, and up to 280,000 tpa of waste (including treated waste) to be disposed of into the waste cells. Approval of MS1078 allowed for concentrated liquid wastes to be immobilised on site (made spadeable) before being disposed, eliminating the generation of leachate. This is achieved through mixing inert materials, such as kaolin clay and cement, with the concentrated liquid wastes in the Facility's waste immobilisation equipment.

In its initial planning, Tellus had estimated that up to 40% of the annual accepted waste could be liquid to be immobilised at a nominal ratio of 5.5:1 inert solid to liquid (i.e. 40,000 tonnes (t) of liquid once immobilised would create 220,000 t of spadeable solid). The remaining 60,000 t of solid waste not requiring immobilisation, when added to the 220,000 t of spadeable solid, results in the maximum approved waste disposal rate of 280,000 tpa.

Since approval of MS1078, Tellus has identified a need for greater operational flexibility to respond to requests for waste storage from solid waste customers. A Proposal to align the mass of waste received at its Facility, initially approved at 100,000 tpa, to the mass of waste (including immobilised liquid waste) permitted to be disposed in its approved storage cell (up to 280,000 tpa) was referred to the EPA for assessment. This alignment of waste received and stored improves Tellus' capacity to respond to customers requiring disposal of Class IV and Class V solid material. [2]

The EPA determined that the long-term safety and performance of the Facility was acceptable based on the total overall disposal of 280,000 tpa of contaminated, hazardous materials and the Proposal was assessed by the EPA and approved under MS1234 on 13 December 2024.

To align L9240/2020/1 with the conditions of MS1234, Tellus requests that the licence is amended to allow a combined total of 280,000 tpa under prescribed premises categories 61 and 61A through the Facility gate, in alignment with MS1234, as shown in Table 4-3 below.

Table 4-3: Schedule 1 Prescribed Premises Category Amendments

Category No.	Description of Category	Approved Design Capacity	Proposed Design Capacity
61	Liquid Waste Facility: premises on which liquid waste produced on other premises (other than sewerage waste) is stored, reprocessed, treated or irrigated.	100,000 tonnes (combined) per annual period	280,000 tonnes (combined) per annual period
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.		
65	Class IV secure landfill site: Class IV secure landfill site: premises (other than clean fill premises) on which waste of a type permitted for disposal for this category of prescribed premises, in accordance with the *Landfill Waste Classification and Waste Definitions 1996*, is accepted for burial.	280,000 tonnes (combined) per annual period	No change
66	Class V intractable landfill site: Class V intractable landfill site: premises (other than clean fill premises) on which waste of a type permitted for disposal for this category of prescribed premises, in accordance with the *Landfill Waste Classification and Waste Definitions 1996*, is accepted for burial.		

The potential environmental impacts and proposed management measures associated with this proposed amendment are discussed in Section 8.

Proposed amendments to the Licence conditions as discussed above are summarised in Section 9.

[2] Tellus' proposal also included a modified design to the cell cap to further improve the function of the cell cap to remove any potential connection between the stored wastes and surface water (rainfall). This aspect is the subject of a separate ongoing application with DWER under Part V of the EP Act.

4.3.3 Regulation of Low-level Radioactive Waste

Condition 6 of L9240/2020 requires that Tellus must not accept radioactive wastes onto the premises unless approval to do so has been granted by the Radiological Council under the RSA.

Accordingly, the Facility's operations are conducted in accordance with the Facility's Site Registration (RS 210/2018 30289) issued in 2022, and the Facility has a Safety Case and Radiation Management Plan approved by the Radiological Council under the RSA. The Facility's Site Registration permits acceptance, storage, treatment and disposal of LLW in accordance with the Safety Case and Radiological Waste Acceptance Criteria.

The approved Safety Case demonstrates that the Facility meets all safety requirements adopted in the Disposal Facilities Code (ARPANSA, 2018) and determined that doses to receptors are below the set dose constraints after implementation of the Facility's controls.

Given the measures outlined above, there is potential duplication of regulation between the Licence and other regulatory processes administered by the Radiological Council under the RSA, which is summarised in Table 4-4 below.

Table 4-4: Potential Duplication of LLW Obligations

Condition	Condition Summary	Relevant Approval under the RSA
5	Radiological waste acceptance criteria and process documents.	Radiation Management Plan, Radiological Waste Acceptance Criteria, Disposal Permit[1] and Safety Case.
6	Radiological waste acceptance subject to Radiological Council approval under the RSA (Site Registration has been obtained).	Site Registration.
15, Table 4	Waste processing and disposal.	Disposal Permit[1].
20	Radiological waste disposal subject to Radiological Council approval under the RSA.	Disposal Permit[1].
21	Disused sealed radioactive sources (DSRS) disposal geometry[2].	Radiation Management Plan, Disposal Permit[1] and Safety Case.

1. In accordance with the Site Registration, prior to disposal of LLW, Tellus must apply for and be granted a Disposal Permit under Section 34 of the RSA.
2. Refer to Section 4.3.3.1 below for additional details.

Tellus therefore requests DWER consider removal and/or amendment of LLW conditions in L9240/2020/1, in order the remove duplication of regulation which can be appropriately managed by other regulatory processes administered by relevant decision-making authorities (DMAs), as follows:

- Condition 5 requires Tellus to manage waste acceptance on the premises in accordance with the following documents:
  - Sandy Ridge Facility Chemical Waste Acceptance Procedure, Document No. SR00-1178396587-11037, September 2022";
  - Sandy Ridge Facility Chemical Waste Acceptance Criteria, Document No. SR00-1178396587-11032, September 2022";

- Sandy Ridge Facility Radiological Waste Acceptance Procedure, Document No. SR00-1178396587-11034, September 2022"; and
- Sandy Ridge Facility Radiological Waste Acceptance Criteria, Document No. TEL-08.720, April 2022".

Tellus requests DWER to amend Condition 5 to remove specific reference to the Radiological Waste Acceptance Procedure (RWAP) and Radiological Waste Acceptance Criteria (RWAC), as these are determined in accordance with the Safety Case, which is required to be updated periodically. The Radiological Council must approve updated versions of the Safety Case (including the RWAC and RWAP) prior to use. Additionally, Tellus requests an amendment to Condition 5 to remove the specific document references and dates for the Chemical Waste Acceptance Criteria (CWAC) and Chemical Waste Acceptance Procedure (CWAP) to allow for update and continuous improvement of these documents.

- No change to Condition 6. This condition acknowledges that radiological waste acceptance can be adequately regulated under the RSA.
- Condition 9 to be amended to correctly reference Condition 5 instead of Condition 4.
- Remove reference to the RWAC in Condition 15, Table 4, Row 2.
- No change to Condition 20. This condition acknowledges that radiological waste disposal can be adequately regulated under the RSA.

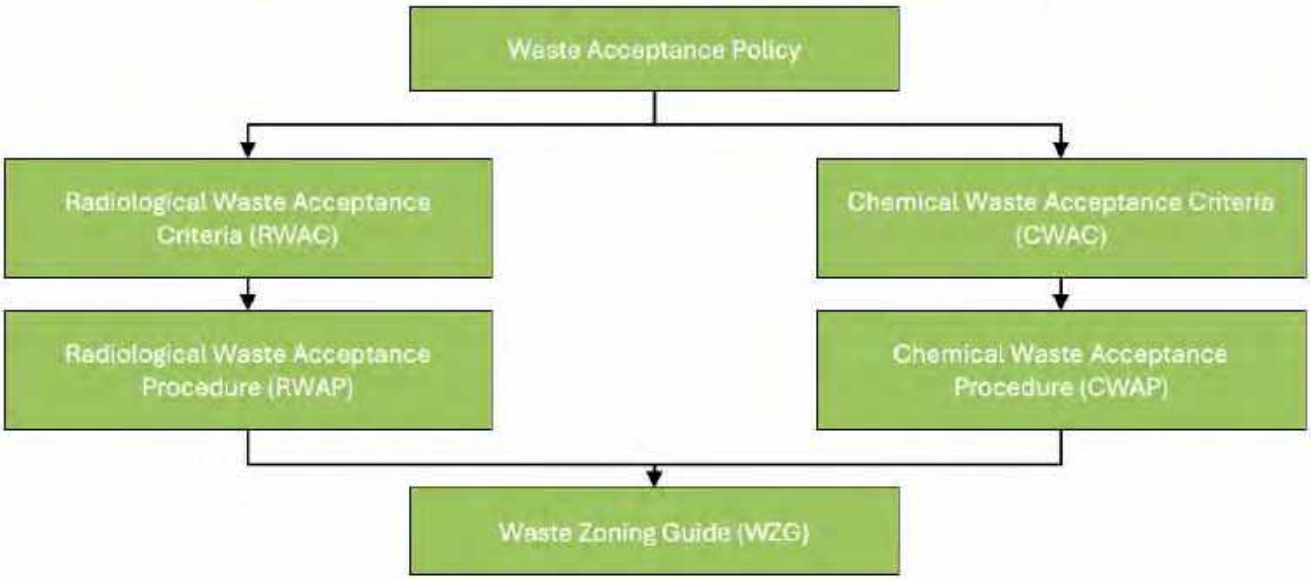
The potential environmental impacts and proposed management measures associated with this proposed amendment are discussed in Section 8.

Proposed amendments to the Licence conditions as discussed above are summarised in Section 9.

4.3.3.1 Disused Sealed Radioactive Sources

Tellus established a waste acceptance hierarchy for the Facility, which distinguishes radioactive waste and non-radioactive waste. The hierarchy is shown in Insert 4-1 below.

Insert 4-1: Waste Acceptance-Criterial Document Hierarchy



Tellus developed the Waste Zoning Guide which outlines how radiological and chemical wastes should be grouped to avoid incompatibility. After wastes have been accepted at the Facility, it is important they are both stored and disposed of in a safe manner.

Due to the potentially high activity of aggregated disused sealed radioactive sources (DSRS) packages, additional controls and shielding will be implemented to maintain safe working conditions. Tellus considers that there are two appropriate disposal methods for DSRS, as follows:

- Shaft disposal – DSRS are encapsulated in a vertical concrete shaft that is progressively constructed and filled as the cell is filled (as specified in Condition 21 of L/9240/2020/1 and approved under RS 210/2018 30289); and
- Vault disposal – DSRS are encapsulated in a horizontal concrete vault within a cell (approved under RS 210/2018 30289, but not included in L/9240/2020/1).

The two methodologies are very similar, with the primary difference being that the vault is constructed horizontally, and the shaft vertically, which impacts the depth of disposal. Construction of vaults and shafts may be an ongoing operation as new waste cells are opened.

The Radiological Council of WA has approved disposal of DSRS in horizontal vaults as well as vertical shafts (RS 210/2018 30289). Specific DSRS Disposal procedures contain controls for protecting workers and environment from radiological hazards, for example, thickness of shielding material.

Tellus therefore requests DWER consider removal of Condition 21 of L9240/2020/1, as disposal of DSRS can be appropriately managed by the Radiological Council of WA under RS 210/2018 30289.

Tellus considers that removing these Conditions will remove any duplication or ambiguity between the Licence, the Safety Case and its supporting documents, approved under RS 210/2018 30289.

DSRS is proposed to be disposed of in accordance with the Waste Zoning Guide approved under RS 210/2018 30289, which describes waste placement and separation requirements for incompatible wastes. Removal of specific requirements under Condition 21a and 21b is therefore unlikely to increase or introduce any potential risks associated with acceptance and disposal of DSRS.

Proposed amendments to the Licence conditions as discussed above are summarised in Section 9.

4.4 Bulky Waste Storage

Bulky contaminated solid wastes are items that are unable to be contained within enclosed shipping containers, and include railway sleepers, power poles, pipework, mechanical equipment and large machine parts.

Condition 7, Table 3 of L9240/2020/1 requires that Contaminated Solid Wastes – Bulky Items are stored:

a.) completely dry;
b.) within suitable secure and sealed packaging that:
    i.) completely contains the waste;
    ii.) does not allow the ingress of stormwater; and
    iii.) prevents the discharge of contaminants;
c.) in manner that does not obscure fire protection equipment or signage; and
d.) no longer than 12 months from the date of receipt.

Currently, bulky wastes are stored within the East Yard (Solids) Storage Area, in accordance with Condition 7, Table 3, prior to permanent disposal to waste cells. The East Yard (Solids) Storage Area comprises a low permeability pad that is sloped to allow surface water within the storage area to drain to the Stormwater Retention Pond (East Yard) which is capable of capturing a 1 in 100 year 72-hour storm event from the East Yard (Solids) Storage Area, in accordance with Condition 1, Table 1. Condition 26 requires that the Stormwater Retention Pond (East Yard), Yard Containment Pond and Brine Pond are managed such that the integrity of the containment infrastructure is maintained.

Condition 7, Table 3 also permits storage of bulky wastes in the Mixed Store (Main Yard); Non-radioactive Waste Inspection and Unloading Warehouse; Low Level Radiation Waste Warehouse; Flammable Goods Store; PFAS Storage Area; and Low Level Radiation Waste, Liquid Waste and Sludge Storage Yard.

As described in Section 3.6, there are limited environmental and human health pathways and receptors for contamination of soils, surface or groundwater resources originating from the above storage areas and Facility as a whole. The risks to these receptors are therefore negligible and form the primary basis for selection of Sandy Ridge as the preferred and approved location for the Facility.

Tellus therefore requests removal of the requirement to ensure bulky wastes are stored in secure and sealed packaging and to ensure the materials are completely dry. This requirement places significant logistical constraints on the storage of bulky items with limited environmental benefit, given the reasons previously detailed regarding the lack of environmental pathways and contamination risks.

Key controls in place include the fact that the Mixed Store (Main Yard) is maintained as a sealed concrete paving floor, in accordance with Condition 1, Table 1, and drains to the lined Yard Containment Pond, which is capable of capturing a 1 in 100 year 72-hour storm event from the Mixed Store. Surface water from all other approved bulky waste storage locations is directed to concrete sumps, in accordance with Condition 1, Table 1, and will continue to be managed in accordance with existing controls.

In order to mitigate the potential for contaminated surface water runoff being directed to the Stormwater Retention Pond (East Yard), Tellus proposes to install a compacted kaolin pad in the East Yard (Solids) Storage Area to create a contained area to store bulky wastes until they are disposed of to the waste cells.

The pad will be periodically sampled for potential contamination (typically 6-monthly sampling). Analytical testing will be based on the type of waste that was temporarily stored, using XRF screening or NATA-accredited laboratory analysis, as appropriate. If contaminated, the kaolin pad will be removed and disposed of to the waste cells and replaced as required.

Tellus considers that the DWER Licence and MS1234, including associated EMPs, provide a range of management controls and contingencies to mitigate potential risks.

Tellus will demonstrate that storage of bulky wastes in the open at Sandy Ridge will not increase the potential environmental risk profile for the Facility but will offer an improved environmental outcome to current open storage at source locations.

The potential environmental impacts and proposed management measures associated with this proposed amendment are discussed in Section 8.

Proposed amendments to the Licence conditions as discussed above are summarised in Section 9.

4.5 Air Dome Temporary Storage

Licence Condition 19a, MS1234 and Crown Lease obligations require that only one Cell is operational at the Facility at any one time, which constrains the transition from Cell 1 to Cell 2 (once constructed), and future cell transition, resulting in the potential for operations at Sandy Ridge to stall.

Once a cell has reached its final fill level, and before installation of the seal and cap, Tellus proposes to utilise the area under the Cell air dome for temporary working storage of waste. Due to the fully enclosed nature of the Cell, this storage area presents lower environmental risk than storage in the yards within the Infrastructure Area.

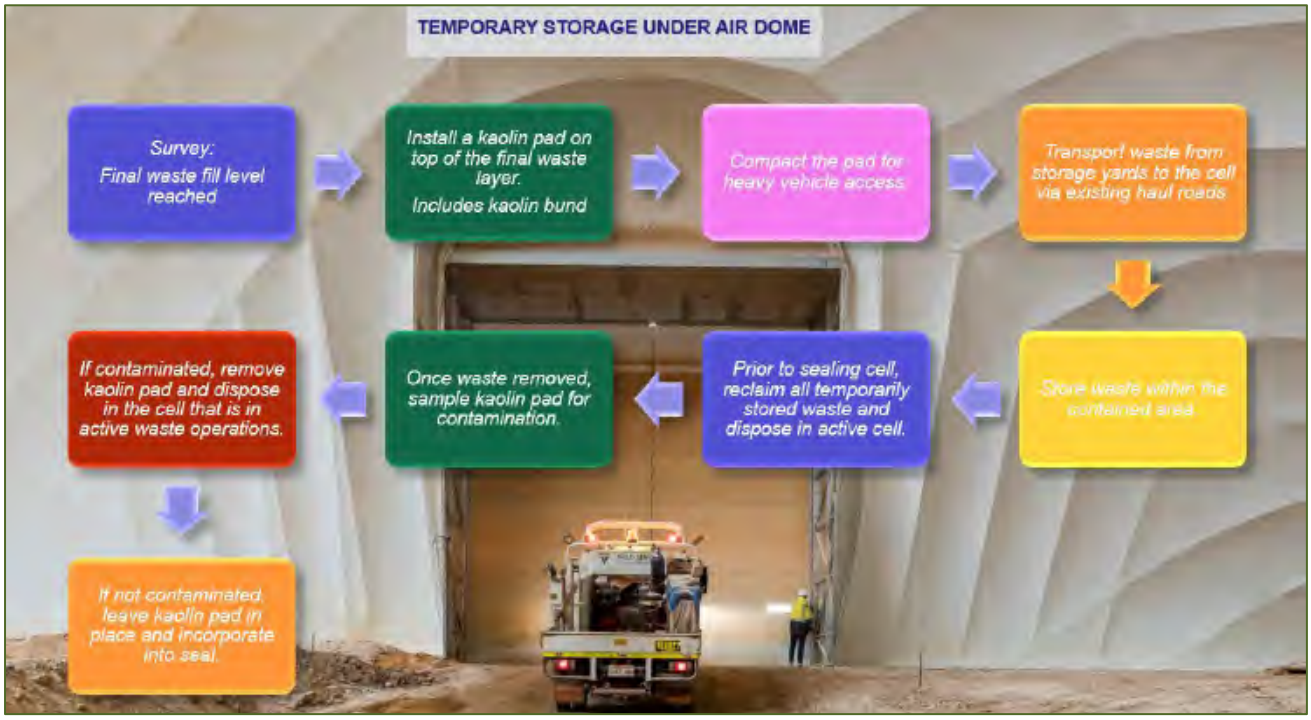
Tellus has developed Operational Procedures for proposed temporary storage activities which are summarised below:

1. Confirm via survey that the final waste fill level has been reached.
2. In the area to be used for temporary storage, install a 500mm thick kaolin pad on top of the final waste layer. The edges of the pad to be 1000mm thick to create a contained area. Kaolin ramp to be constructed for heavy vehicle access.
3. Compact the pad to a level suitable for heavy vehicle access.
4. Transport waste from the storage yards in the Infrastructure Area to the cell via existing haul roads.
5. Store waste within the contained area.
6. When cell is due for sealing, reclaim all temporarily stored waste, dispose in the cell that is in active waste operations.

7. Once the waste has been removed, sample the kaolin pad for potential contamination. Analytical testing will be based on the type of waste that was temporarily stored, using XRF screening or NATA-accredited laboratory analysis as appropriate.
8. If contaminated, remove kaolin pad and dispose in the cell that is in active waste operations.
9. If not contaminated, leave kaolin pad in place and incorporate into seal.

The temporary storage process is illustrated in Insert 4-2 below. Proposed controls and performance monitoring are discussed in Section 8.

Insert 4-2: Temporary Air Dome Storage Process



The potential environmental impacts and proposed management measures associated with this proposed amendment are discussed in Section 8.

Proposed amendments to the Licence conditions as discussed above are summarised in Section 9.

4.6 PFAS Management

Tellus supports appropriate and stringent regulation for the management of PFAS wastes and considers that several key factors and attributes make Sandy Ridge the most appropriate location for hazardous wastes such as PFAS. Sandy Ridge is isolated from major populations being located 240 km northwest of Kalgoorlie. It is Australia's first commercial geological repository with natural barriers built-in that make them very effective at limiting exposure of contaminants to the environment and sensitive receptors due to the lack of environmental pathways that exist. Multiple international experts have independently confirmed that Sandy Ridge has some of the best geology in the world for permanently isolating and managing hazardous materials. It is therefore appropriate that Tellus has been granted approval under both State and Federal auspices to receive, treat and dispose of Per- and Poly-fluoroalkyl Substances (PFAS).

4.6.1 PFAS 50mg/kg Limit

Insofar as regulation of the acceptance, treatment, storage and disposal of PFAS waste at Sandy Ridge is concerned, a number of prescriptive licence conditions have been imposed via licence L9240/2020/1. These include but are not limited to setting a concentration limit of 50 mg/kg for solid PFAS waste disposed into cells.

DWER has advised Tellus that the 50mg/kg PFAS limit for Sandy Ridge is based on the Stockholm Convention limit and is consistent with the EPBC Act and section 14 of the NEMP 3.0. The Stockholm Convention sets 50mg/kg set as a threshold for guiding disposal by landfill.

Tellus contends that the position set out in the Stockholm Convention is more nuanced and is arguably not fully reflected in Australian regulation and/or application of that regulation. In particular, the Convention makes allowance for disposal above this threshold, provided PFAS is managed via environmentally sound disposal (ESM). What the Stockholm Convention effectively says is that below this threshold, ESM is not relevant. But above the threshold, technical guidance documents developed to support the Stockholm Convention set out what constitutes ESM in the management of PFAS waste: geological repositories are included as one of the methods available for use "when destruction or irreversible transformation does not represent the environmentally preferable option."

This being the case, Tellus considers that DWER's interpretation and adoption of the Stockholm Convention guidelines, does not appear to fully recognise the intent of the guidance on this aspect and the applicability of the 50mg/kg limit.

4.6.2 PFAS Storage in accordance with the NEMP 3.0

At a DWER inspection of the Sandy Ridge Facility in 2025, DWER determined that PFAS storage at the time was non-compliant with the NEMP 3.0 (Table 9 of Section 10.1), as a number of Intermediate Bulk Containers (IBCs) of liquid PFAS were stored within the licensed PFAS storage bund but were not under cover. Whilst Tellus resolved this matter by moving all IBCs into lockable sea containers, Tellus is seeking to amend Condition 7, Table 3 Waste Storage to permit storage of waste packages in the open (uncontainerised), within designated PFAS storage areas including in the Main Storage Area.

Tellus considers that this practice is not inconsistent with the PFAS NEMP 3.0 guidelines on the basis of Table 9 of NEMP 3.0 Section *10.1 (Risk-based management)* and Section 10.3.2 (*Stockpiling and, storage)*.

Firstly, Section 10.1 prescribes that a risk-based management approach is undertaken which also considers the timeframe for stockpiling. Timeframes and risks are important considerations in planning stockpiling, storage, and containment infrastructure. As outlined in Table 9, the design of infrastructure should be proportionate to the level of assessed risk (ANZG 1999). Whilst the levels of controls increase with the duration of stockpiling, the guideline does not specify that the PFAS containment vessels need to be stored undercover.

Secondly, the stockpiling, storage and containment infrastructure detailed in Table 9 of the NEMP 3.0 needs to be considered in the context of the requirements of Section 10.3.2 of the NEMP 3.0, i.e.:

> *10.3.2 Stockpiling and storage*
>
> *As outlined earlier in this section, stockpiling and storage infrastructure should be planned and implemented in accordance with a risk-based approach designed to:*
>
> - *minimise the potential for the storage facility or the stockpile to release PFAS into the environment*
> - *addressing operational requirements for differing durations of storage.*
>
> *The essential criterion is to ensure all PFAS remain completely contained.*
>
> *PFAS-contaminated material, particularly liquids, should be stored above ground in appropriately bunded storage areas or in containment vessels such as covered intermediate bulk containers (IBCs) and isotainers in bunded areas*

Notwithstanding the above, Tellus considers that the content of Table 9 of the NEMP 3.0 is guidance and not a requirement.

In addition, Tellus has also considered the Basel Convention (transboundary movements of hazardous wastes) referenced in the PFAS NEMP 3.0 (Section 2.2 p10) and it's Technical Guidelines on the environmentally sound management of wastes (consisting of, containing or contaminated with perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride (PFOSF), perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds, and perfluorohexane sulfonic acid (PFHxS), its salts and PFHxS-related compounds (2023)).

Tellus commits to continue to conform to the guidelines which prescribe that appropriate measures should be taken to prevent leakage of POP-PFASs wastes during handling, collection, packaging, transportation and storage. Such wastes will continue be handled and packaged separately to avoid their mixing with, and the contamination of, other materials.

Tellus is acutely aware that secondary containment of liquid POP-PFASs wastes is a critical aspect of controlling accidental releases during storage and transportation. Whilst the guidance does not state that it is necessary for secondary containments to meet long-term material compatibility as is the case with primary storage; however, their design and build should be able to contain releases of liquids at least until the leaked materials are recovered.

Containers will continue to be appropriately labelled with details of their contents and stored in approved and designated enclosed areas that have secondary containment. The facilities are subject to regular inspection and maintenance in accordance with licence conditions.

Please refer to Table 9-1 for details regarding proposed licence amendments to storage requirements for both liquid and solid PFAS wastes including solid wastes – Type 3.

4.6.3 Proposed Removal of 50mg/kg Limit

Consistent with the Basel Convention and the Stockholm Convention, specially engineered landfills or underground rock formations with zero environmental release may, in some circumstances, be acceptable repositories for certain types of high concentration wastes (NEMP 3.0 Section 13.5 (page 129).

The 50 mg/kg acceptance limit applies to conventional landfills, not universally to all disposal facilities under NEMP 3.0. Section 14.6 (page 141) gives scope for the regulator to vary PFAS limits depending on specific circumstances:

> "Based on individual landfill siting, design, operation and ongoing management requirements, as well as individual environmental regulator approaches to the derivation of landfill acceptance criteria, the environmental regulator may determine that these criteria are not suitable for a specific landfill or landfills and derive and implement alternative criteria."

The 50 mg/kg PFAS concentration in Table 11 relates to ASLP leachable concentration limits at regular landfills where leachate is generated. Tellus considers that this is not relevant to Sandy Ridge because PFAS is immobilised in a cement/kaolin matrix. Additionally, the Facility is geologically isolated in arid conditions, with no leachate generated; containment is provided by multiple engineered and natural barriers.

Tellus requests that the 50mg/kg limit should therefore be removed, as this would not be inconsistent with the flexibility provided in Section 14.6 of the NEMP 3.0.

The potential environmental impacts and proposed management measures associated with this proposed amendment are discussed in Section 8.

Proposed amendments to the Licence conditions as discussed above are summarised in Section 9.

4.6.4 PFAS Conclusion and Request

Tellus therefore considers that these requests conform to the NEMP 3.0 guidelines and objectives (which apply a risk-based management approach to PFAS storage).

In light of the above, Tellus currently is seeking a licence amendment to:

- Remove the 50 mg/kg limit in consideration of Section 14.6 of the NEMP 3.0; and
- Permit, when operations require, storage of excess PFAS Liquid Waste in the Main Storage Area.

The potential environmental impacts and proposed management measures associated with this proposed amendment are discussed in Section 8.

Proposed amendments to the Licence conditions as discussed above are summarised in Section 9.

4.7 Minor Administrative Corrections

Tellus wishes to address minor additional drafting and/or administrative updates within L9240/2020/1. The changes proposed below are administrative in nature and do not alter the nature, scale, risk profile or regulatory controls of the Facility.

4.7.1 Registered Business Address update

The Licence currently lists an outdated Sydney address. Tellus notified DWER of the updated registered business address on 12 June 2024, in accordance with MS1078 Condition 2-1.

The updated registered business address is:

> Level 6, Allendale Square, 77 St Georges Terrace, Perth WA 6000

4.7.2 Update Reference to Ministerial Statement

The Licence currently refers to MS1078 as the current Ministerial Statement. Tellus requests that all licence references to MS1078 are updated to MS1234 (e.g., Table 2 Note 3, Table 4 Note 2, and Table 5 Note 2).

4.7.3 Condition 15 Table 4 – Flexibility for Acid and Base Treatment

Table 4 currently states that acidic and basic wastes must undergo neutralisation in the Waste Neutralisation Plant (WNP) prior to treatment via the Waste Immobilisation Plant (WIP), before disposal to Waste Cell 1. This wording creates two unintended compliance barriers:

i.) No distinction between solid and liquid outputs:
Neutralisation produces both a solid fraction (e.g., gypsum) and a liquid fraction.
The WIP is designed to treat liquid wastes only, meaning the current wording cannot be complied with, as the solid fraction cannot physically be processed through the WIP.

ii.) Overly prescriptive infrastructure pathway:
Other liquid waste streams may be treated via the WIP and/or portable mixing equipment; however, acidic/basic wastes are currently constrained to a combined WNP–WIP treatment process. This unnecessarily prevents small-scale neutralisation campaigns performed outside the WNP and also prevents the liquid component of neutralisation from being treated in portable mixing equipment, as for other liquid wastes.

Tellus therefore requests treatment of acidic and basic wastes via neutralisation in the WNP, portable mixing equipment and/or WIP, producing a neutralised solid fraction and a neutralised liquid fraction. The neutralised solid fraction meeting the required disposal specifications may be disposed in Waste Cell 1. The liquid fraction may be reused within the WNP as process water or solidified via the WIP and/or portable mixing equipment prior to disposal.

This administrative correction:

- Corrects ambiguity related to WIP applicability to solids.
- Enables operational flexibility for low-volume neutralisation campaigns.
- Aligns treatment pathways with those for other liquid waste streams.
- Does not alter environmental risks or require new infrastructure.

4.7.4 Condition 19b Clarification of Verification Testing Timing

Condition 19(b) currently states that stabilised and solidified liquid wastes must "have been" subject to the requirements of Condition 16 prior to placement in the waste cell. During a recent inspection, this was interpreted to mean that Clegg Impact testing must be conducted before solidified waste can be placed in the cell.

This interpretation is inconsistent with Condition 19(d), which enables post-placement verification testing following sufficient curing time (which is required in order for Clegg Impact testing results to be technically valid).

Tellus therefore requests administrative amendment for Condition 19b as follows:

> "Where stabilised and solidified liquid wastes are disposed, these wastes will be subjected to the requirements of Condition 16. Such verification testing may be undertaken post-placement to allow sufficient curing for results to be representative."

This administrative correction:

- Removes ambiguity and aligns Condition 19(b) with the intent of Condition 19(d).
- Ensures verification testing is undertaken at the most technically reliable stage.
- Does not alter the nature, scope or risk profile of activities authorised under the Licence.

4.7.5 Condition 34 – Homogenisation Tank Storage Location Correction

Table 7 currently identifies the Homogenisation Tank location as the Liquid Waste Storage Yard. However, the correct and practical location is the adjacent Low Level Radiation Waste Warehouse / Liquid Waste Unloading Area, which is undercover and allows direct access to both isotainer and WIP inlets associated with liquid PFAS processing.

Locating the Homogenisation Tank in this enclosed area:

- Ensures homogenisation tank and its associated mixer are not exposed to rain.
- Avoids unnecessary hose routing across the open yard.
- Reduces potential interaction with Reach Stacker and forklift movements.

This correction addresses an oversight in the previous licence amendment, where it was not realised that the Liquid Waste Storage Yard does not include the undercover Liquid Waste Unloading Area.

5 ENVIRONMENTAL IMPACTS AND MANAGEMENT

Tellus considers that given the nature and scale of the proposed amendments, potential impacts to the environment resulting from operational changes at the Facility are likely to be limited.

Potential impacts, proposed management measures and predicted outcomes for the relevant environmental factors associated with the proposed amendments are discussed in Sections 5.1 through 5.4 below. An environmental risk assessment is provided in Section 8.

5.1 Surface Water

5.1.1 Potential Impacts

In consideration of the proposed amendments to L9240/2020/1, potential impact to surface water and its quality may arise from:

- Contaminated surface water and/or sediment-laden stormwater runoff beyond the site boundary:
  - Increased saline water runoff from increased dust suppression due to any potential increased traffic volumes and materials handling commensurate with the amended capacity, once aligned.
  - Increased potential to generate contaminated surface water runoff associated with uncovered storage of bulky items.
- Loss of containment of potentially contaminated materials during handling or storage:
  - Increased potential for spills due to higher volumes of materials handing associated with increased quantities of waste accepted at the gate.
  - Increased potential for loss of containment of fuels and liquid chemicals due to vehicle movements, materials handling and chemical / hydrocarbon storage.
  - Waste is not fully contained within designated area under the air dome, failure of the integrity of temporary storage pads or bunds.

5.1.2 Management Strategies

There are no permanent waterways in the vicinity of the proposed activities, and surface water management measures surrounding mining and processing areas are already established and have been demonstrated to effectively capture surface water runoff from these areas.

Notwithstanding, existing controls being implemented by Tellus will continue to be adopted to mitigate potential impacts associated with loss of containment of contaminated material in stormwater runoff.

These include:

- Installed surface water management measures around the processing area, through the use of containment perimeter bunding, will capture surface water runoff from these areas. This feature will also prevent the loss of sediment laden runoff into adjacent vegetated areas.

- Potentially contaminated runoff and stormwater will continue be directed to sumps, sediment traps and stormwater retention ponds and/or allowed to evaporate prior to solids being removed during regular housekeeping activities, with solids directed to the waste cell(s) for permanent disposal.
- Any residual surface and stormwater runoff from the East Yard (Solids) Storage Area will continue to be directed to the Stormwater Retention Pond (East Yard), which is capable of capturing a 1 in 100 year 72-hour storm event from the East Yard (solids) Storage Area.
- Potentially contaminated runoff and stormwater will be segregated from clean stormwater runoff and washdown water.
- Personnel will be provided with appropriate training in the handling of wastes, fuels, oils and chemicals including emergency response.
- An appropriate number of spill kits will be retained on-site.
- Regular housekeeping will be conducted to minimise the build-up of materials that would increase the level of surface water contamination in runoff and stormwater.

Tellus also proposes the following additional measures to prevent contaminated surface water runoff associated with the proposed amendments:

- Installation of a temporary kaolin pad within the East Yard (Solids) Storage Area for storage of bulky wastes, as summarised in Section 4.4.
- Implementation of the Operational Procedures for proposed temporary storage activities under the waste cell air dome, as summarised in Section 4.5.

5.1.3 Predicted Outcomes

There is no anticipated surface water impact to significant ecosystems (e.g., wetlands of conservation significance, saline lakes or wild rivers) as none occur within the Project vicinity.

There is no anticipated impact to drinking water supplies due to the lack of viable groundwater resources for such purposes within the vicinity of the premises.

Mitigation and management measures will continue to be implemented during operation. These measures include surface water management infrastructure (containment bunds, collection sumps and stormwater runoff ponds) with uncontaminated runoff segregated from that which may be potentially contaminated.

Accordingly, other than the installation of compacted kaolin pads within the East Storage Yard and Temporary Storage Area beneath the Cell dome, Tellus considers that no additional operational controls are necessary as part of the DWER licence to ensure a satisfactory outcome for surface water protection as a result of the proposed amendments.

5.2 Groundwater

Groundwater throughout the Project area does not occur within the proposed depths of disturbance (i.e., approximately 30 m). Therefore, there would be no anticipated interception of groundwater (and therefore no impact to groundwater) associated with the proposed amendments to L9240/2020/1.

There would be no impact to drinking water supplies due to the lack of viable groundwater resources for such purposes within Project area.

5.2.1 Potential Impacts

Groundwater impacts associated with the proposed works have the potential to occur from the following:

- Groundwater contamination via seepage from waste cells, ponds, and other water-holding structures, including the Stormwater Retention Pond (East Yard).
- Increased likelihood of contaminated water being directed to the Stormwater Retention Pond (East Yard), due to bulky items being stored uncovered in the East Yard (Solids) Storage Area.
- Groundwater mounding beneath or in the vicinity of waste cells or ponds.
- Increased saline water for use in dust suppression, associated with 280,000 tpa of waste accepted at the gate.
- Greater potential for spills due to higher volumes of materials handing associated with 280,000 tpa of waste accepted at the gate.

5.2.2 Management Strategies

As there is no foreseeable risk to groundwater from the proposed activities, no specific mitigation measures are proposed beyond those described for Surface Water Management Strategies in Section 5.1.2.

As discussed in Section 3.6.3, hydrogeological modelling confirms that unsaturated groundwater flow from rainfall recharge migrates vertically, through the soil profile, until it reaches the interface between the overlying granite and fresh granite. During subsequent dry periods, evaporation and evapotranspiration act to remove this rainfall from the top two metres of soil (Cymod Systems, 2022). As such, it is unlikely that groundwater mounding or lateral flow of seepage would occur given the local geology minimises the likelihood of the formation and migration of leachate plumes from the Facility.

Notwithstanding, groundwater protection measures for the aquifer (primarily beneath the waste cells) are included in approved Management Plans which stipulate the ongoing monitoring and reporting in accordance with the DGMMP (required under EPBC 2015/7478) and LMMP (required under MS1234) have been prepared to enable early detection of potential leachate to protect the environment from any impacts associated with potential leachate.

5.2.3 Predicted Outcomes

Given the lack of sensitive ecological pathways and receptors in the vicinity of the proposed activity, and extensive monitoring and management measures regulated through MS1234 and EPBC 2015/7478, Tellus considers that no additional controls are necessary as part of the DWER licence to ensure a satisfactory outcome for groundwater protection as a result of the proposed amendments.

5.3 Dust

In the context of the proposed licence amendments, the activities that have the potential to generate dust include vehicle movements and handling and transfer of wastes.

No clearing of vegetation or additional land disturbance is proposed. Similarly, Cell 1 has already been established and functions in accordance with approved designs and operational protocols, including the use of a roof canopy to minimise the ingress of rainfall, which also functions to limit fugitive dust emissions.

5.3.1 Potential Impacts

In consideration of the proposed amendments to L/9240/2020/1, potential impacts may arise from:

- Increased dust generation due to increases traffic volumes associated with 280,000 tpa of waste accepted at the gate.

5.3.2 Management Strategies

Dust mitigation measures at the Facility will continue to include the use of conventional techniques such as water carts to suppress dust and enforcing vehicle speed limits onsite.

Dust management procedures are implemented at the Facility as part of the Flora and Vegetation Management Plan (FVMP), Operational Environmental Management Plan and Air Quality Management Plan, including such protocols as regular dust suppression of transport routes.

5.3.3 Predicted Outcomes

Although the generation of localised dust may increase due to higher volumes accepted at the Facility gate, potential impacts on air quality, public amenity and on flora and vegetation are considered low due to the size, frequency and extent of the activity, as well as the isolated location of these works relative to sensitive human receptors; the closest non-permanent camp is approximately 52 km away from the Facility.

Accordingly, Tellus considers that no additional operational controls are necessary as part of the DWER licence to ensure a satisfactory outcome for dust mitigation as a result of this proposal.

5.4 Radiation (Disposal of Disused Sealed Radioactive Sources)

The Radiological Council of WA is an independent statutory authority appointed under the WA RSA to assist the Minister for Health to protect public health and to maintain safe practices in the use of radiation. The RSA regulates the keeping and use of radioactive substances, irradiating apparatus (e.g., x-ray equipment) and certain electronic products (e.g., lasers, sun-tanning units and UV transilluminators). The RSA applies to both ionising and non-ionising radiation. Registration and licensing are the principal means by which the use of radiation is regulated, as described in Part III of the RSA.

Section 34 of the RSA deals with the issuing of disposal permits by the Council. A disposal permit authorises the holder to deal with the substance, apparatus or product in a manner satisfactory to the Council in accordance with the provisions of and within the period specified in that permit. Daily administration of the RSA is handled by personnel from the Radiation Health Unit.

The RSA and the associated Radiation Safety (General) Regulations 1983 require compliance with standards and various codes of practice published by Australian Radiation and Nuclear Safety Agency (ARPANSA).

Regulation 31A of the Radiation Safety (General) Regulations 1983 deals with the near-surface disposal of radioactive waste. The regulations require the disposal facility, to comply with the requirements of the Code for Disposal Facilities for Radioactive Waste (RPS C-3). Section 2.3 of this document is particularly important, as it requires safety assessments to be carried out to demonstrate that the Facility can meet performance requirements.

The Council regulates the use of radiation primarily by the:

- Registration of equipment, substances and products and the premises where they are manufactured, operated, used or stored.
- Licensing of individuals to possess, use, operate, manufacture or otherwise deal with radiation sources.

In October 2019, Tellus was granted a Site Registration (RS 210/2018 30289) for storing radioactive substances in the form of NORM at the Facility. In March 2021, the Site Registration was amended to include DSRS up to and including a LLW classification, in accordance with *Guide for Classification of Radioactive Waste* (ARPANSA 2020).

The operational Radiological Safety Case was approved in November 2022 and the Site Registration was amended to allow disposal of radioactive material up to and including a LLW classification into the waste cells.

Tellus is cognisant of its obligations to mitigate potential human health impacts from radiation exposure in line with the EPA's objectives, and acknowledges DWER's role under Part V of the EP Act in licensing this prescribed activity. Notwithstanding, Tellus considers that mitigating radiation exposure including the management, handling, storage and disposal of radioactive wastes can be comprehensively regulated through the above legislation, instruments and DMAs.

5.4.1 Potential Impacts

Two methods are proposed for disposal of DSRS. Either a purpose designed vault is constructed at the bottom of the cell for the placement of multiple DSRS packages or a vertical shaft consisting of prefabricated interlocking sections is constructed and used for placement of DSRS packages, and filled progressively as the cell is being filled over time.

The WA Radiological Council approved disposal of radioactive substances at the Facility in line with the Safety Case and its supporting documentation in November 2022 (Registration RS 210/2018 30289). Tellus must obtain Disposal Permits for DSRS from the Council prior to disposing of DSRS.

Tellus' proposal is to seek a rationalisation of radiation related licence conditions, given that activities associated with the acceptance, receival, storage and handling and disposal of such wastes are fully regulated under the RSA under the jurisdiction or the Radiological Council of WA.

Specifically, Tellus considers that there are no new or additional radiation exposure impacts that require regulation by DWER over and above that already regulated by other DMAs who are fully legislated to do so.

5.4.2 Management Strategies

The following descriptions are offered for information only and are regulated under other legal instruments.

The vault disposal methodology is the preferred disposal method for higher activity sources and consolidated or single sources of Am-241, Ra-226 and Cs-137. Where required by DSRS activity, the vault will be placed at a depth of no less than 20 mbgl and will be constructed on a campaign basis when the inventory of DSRS justifies a new vault. This method reduces the long-term risk of human intrusion and meets recommendations from the Post-Closure Radiological Safety Assessment (PCRSA).

The shaft disposal methodology is retained for shorter lived and lower activity DSRS, that are received between vault disposal campaigns and can safely be disposed of at shallower depths. No DSRS will be placed at a depth of less than 7 mbgl.

Construction of vaults and shafts will be an ongoing operation as new waste cells are opened.

The two disposal methodologies have been assessed in the operational and post-closure radiological safety assessments (ORSA and PCRSA), which together with the Radiation Management Plan forms part of the Safety Case. Both methods for disposal of DSRS, either in a vault or shaft, are described in more detail in the Disposal of DSRS procedure.

The Waste Zoning Guide outlines how radiological and chemical wastes shall be grouped to avoid incompatibility.

The WA Radiological Council has approved the above methodology for disposal of the DSRS in both horizontal vaults as well as in vertical shafts (RS 210/2018 30289).

5.4.3 Predicted Outcomes

EPA Report 1767 on its assessment of MS1234 stated:

> *The EPA considers that it is highly unlikely that workers or members of the public would be exposed to levels above the annual occupational and public dose limits.*

The approved Safety Case demonstrates that the Facility meets all safety requirements adopted in the Disposal Facilities Code (ARPANSA, 2018) and determined that doses to receptors are below the set dose constraints after implementation of the Facility's controls.

Tellus considers that the proposed amendment and removal of regulation of this activity under the licence, whilst still recognising that such wastes may be accepted at Sandy Ridge for disposal, is therefore unlikely to increase or introduce potential risks associated with acceptance and disposal of LLW at the Facility.

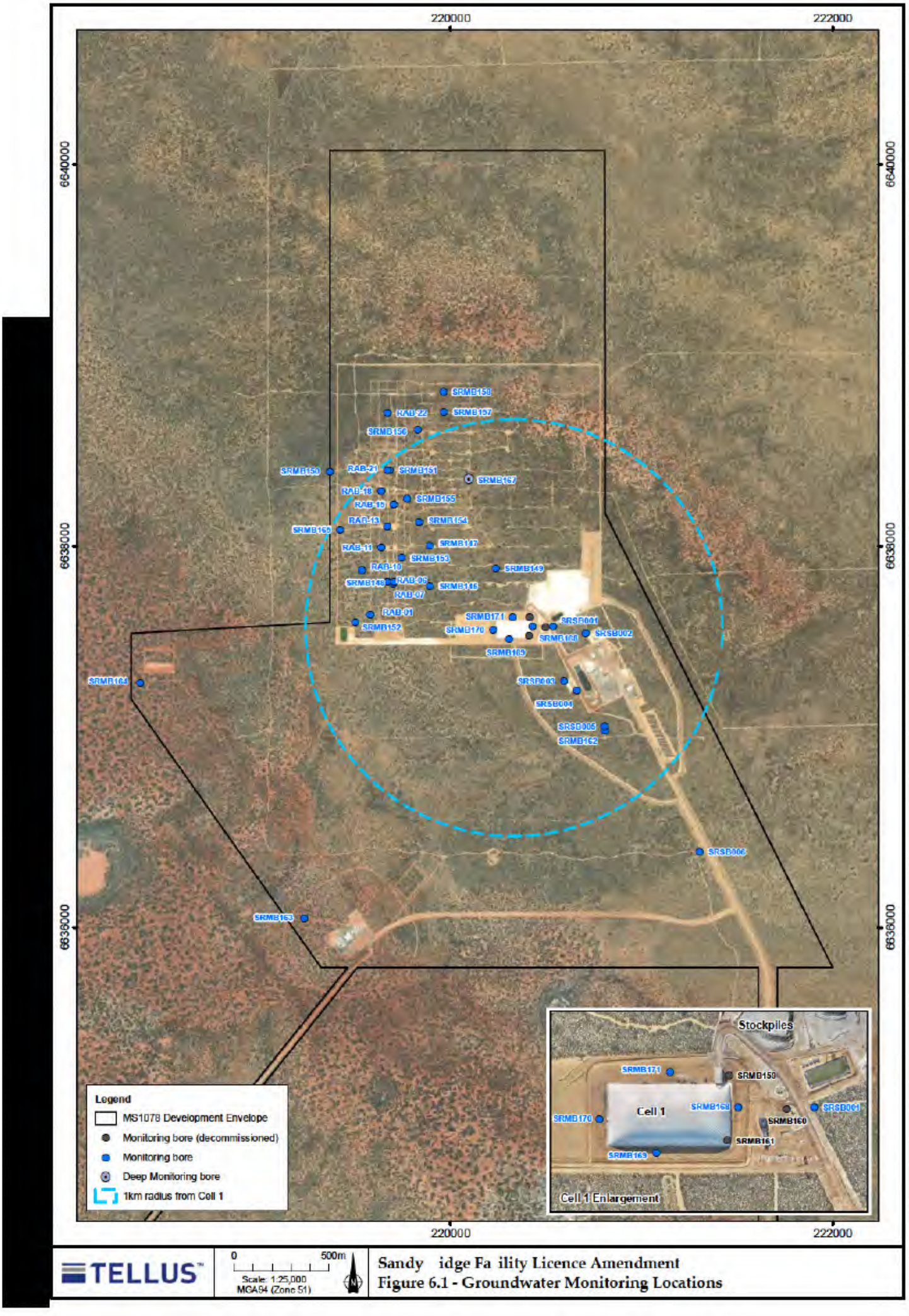
6 MONITORING

A comprehensive monitoring and inspection programme is already in place at the Facility in accordance with the following conditions of L9240/2020/1:

- Condition 11 (Inspections);
- Condition 15, Table 4 (Waste Processing and Disposal);
- Condition 28, Table 5 (Waste Monitoring); and
- Condition 29 (Records and Reporting (auditable records)).

No new emissions or discharges which would warrant additional monitoring. Inspections or analyses are anticipated as a result of the proposed amendments.

Existing monitoring locations at the Facility are shown in Figure 6-1.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SRSB006
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Stockpiles
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SRMB150
Cell 1
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SRMB160
SRMB161
SRMB169
Cell 1 Enlargement
Legend
MS1078 Development Envelope
Monitoring bore (decommissioned)
Monitoring bore
Deep Monitoring bore
1km radius from Cell 1
TELLUS
0
500m
Scale: 1:25,000
MGA94 (Zone 51)
N
Sandy Ridge Facility Licence Amendment
Figure 6.1 - Groundwater Monitoring Locations

7 REPORTING

Tellus commits to preparing and submitting Annual Audit and Compliance Reports and Annual Environmental Reports in accordance with Conditions 32 and 33 of L9240/2020/1.

As stated in Section 6 above, no new emissions or discharges which would warrant additional monitoring, inspections or analyses are anticipated as a result of the proposed amendments, and therefore no additional reporting requirements are expected as a result of the proposed amendments.

8 ENVIRONMENTAL RISK ASSESSMENT

A risk assessment (Table 8-1) based on available project information was conducted in accordance with Part V, Division 3 of the EP Act, to identify potential environmental risks / impacts associated with the proposed amendments. A risk rating was determined for each risk in accordance with the DWER risk rating matrix, and assessment of the consequence and likelihood of each risk has been determined in accordance with the DWER risk criteria table (Appendix A).

The following aspects were considered when determining the consequence of each potential impact:

- Type of impact (direct or indirect).
- Geographic extent, size, and scale.
- Duration, frequency, reversibility of the potential impact.
- Whether the potential impacts are from planned or unplanned events.
- Sensitivity of the receptor / resource the value of the receptor / resource and whether impacts are likely to be from planned or unplanned events.

The inherent risk of each identified event is initially assessed as a factor of the likelihood of the event occurring and the associated environmental consequence (Table A-2 in Appendix A). The risk matrix (Table A-1 in Appendix C) combines the allocated level of likelihood and consequence to categorise the level of associated risk as extreme (red), high (orange), medium (yellow) or low (green).

Control measures for each identified risk are then included and the risk rating is reassessed to determine the residual risk rating. It is recognised that this risk register will be updated throughout the project life as conditions change, and new information / processes are developed.

This risk assessment does not in any way intend to pre-empt the DWER's own assessment of the proposed works. Similarly, input from potential public submissions received by DWER following advertising of the proposal would be considered in the DWER's assessment to inform the level of community interest or concern. This risk assessment does, however, take into account regulatory agency feedback as determined from scoping meeting consultation completed by Tellus to date.

Table 8-1: Environmental Risk Assessment

Factor	Risk Pathway	Impact / Consequence	Likelihood	Consequence	Inherent Risk	Reasoning and Proposed Mitigations	Likelihood	Consequence	Residual Risk
Activity 1a: Align Licence validity with the Project Life approved under MS1234 (25 years from December 2024)									
Not applicable. Amendments relate to administrative changes only, refer to Sections 4.3.1 and 9 for further discussion.									
Activity 1b: Permit 280,000 tonnes per annum (tpa) of Class IV and V waste to be accepted at the Facility gate, in accordance with MS1234									
Dust Generation	Increased dust generation due to increased traffic volumes and materials handling.	• Dust from movement of vehicles and machinery settles on adjacent vegetation causing plant death. • Dust generated by materials handling and processing settles on adjacent vegetation. • Dust events result in increased ambient particulate concentrations and reduced public amenity.	**Possible**	**Minor**	**Medium**	• Closest permanent sensitive human receptors are over 52 km away. • Vegetation Health Monitoring as per Flora and Vegetation Management Plan (FVMP) within Environmental Management Programme. • Regular dust suppression of trafficked areas and waste cell area using water carts. • Regular dust suppression of haul routes, access roads, hardstand areas and ROM using water carts. • Vehicle speed limits enforced on site. • Implement dust management procedures as part of the FVMP, Operational Environmental Management Plan and Air Quality Management Plan, including such protocols as regular dust suppression of transport routes. • Environmental inductions given to all employees and contractors to include information on potential sources of dust, dust suppression activities, speed limits on site and restricted access areas.	**Rare**	**Minor**	**Low**
Saline Water Runoff	Increased saline water runoff from increased dust suppression due to traffic volumes and materials handling.	• Inadequate containment of potential pollutants of concern. • Surface water runoff beyond the premises boundary. • Surface and groundwater contamination.	**Possible**	**Minor**	**Medium**	• No major surface water bodies exist surrounding the Sandy Ridge Project area and associated prescribed premises boundary. • Groundwater throughout the Project area does not occur within the proposed depths of disturbance (i.e., approximately 30 m). • There are no PDWSAs in proximity to the Sandy Ridge Project Area. • Surface Water Control Procedure (SR-08.51) will be implemented at the Facility. • Potentially contaminated runoff and stormwater will be segregated from clean stormwater runoff and washdown water. • Surface water management measures surrounding mining and processing areas are already established and have been demonstrated to effectively capture surface water runoff from these areas.	**Rare**	**Minor**	**Low**

Factor	Risk Pathway	Impact / Consequence	Likelihood	Consequence	Inherent Risk	Reasoning and Proposed Mitigations	Likelihood	Consequence	Residual Risk
Spills	Soil, surface or groundwater contamination from spillage due to increased materials handling.	• Contamination of soils, surface or groundwater resources. • Contaminated or sediment-laded surface water runoff beyond the premises boundary. • Indirect impacts to vegetation.	**Possible**	**Minor**	**Medium**	• No major surface water bodies exist surrounding the Sandy Ridge Project area and associated prescribed premises boundary. • Groundwater throughout the Project area does not occur within the proposed depths of disturbance (i.e., approximately 30 m). • Surface Water Control Procedure (SR-08.51) will be implemented at the Facility. • Potentially contaminated runoff and stormwater will be segregated from clean stormwater runoff and washdown water. • Soil contamination from spills or leaks will be removed upon identification to either, onsite bioremediation facility or to Cell 1 or an acceptable alternative location offsite. • Appropriate spill kits provided. Spill response training provided to personnel periodically. • Implement spill clean-up procedures and remove contaminated soil from the premises. • Minimise potential for spills through personnel training and awareness, and application of spill response procedures.	**Rare**	**Minor**	**Low**
Spills	Loss of containment of fuels and liquid chemicals due to vehicle movements, materials handling and chemical / hydrocarbon storage.	• Contamination of soils, surface or groundwater resources from loss of containment of hydrocarbons or other liquid chemicals.	**Possible**	**Moderate**	**Medium**	• Hydrocarbons and other chemicals stored in established bunded areas. • Existing stormwater drainage will be utilised as fuels and chemicals will be located within the existing temporary waste storage area. • Minimise potential for spills through personnel training and awareness, and application of spill response procedures. • Mobile and stationary equipment used during, operation will be subjected to regular mechanical inspections to minimise any leaks and spills of fuels, oils and hydraulic fluids. • Appropriate spill kits provided. Spill response training provided to personnel periodically. • Fuel, oil and chemical storage tanks will include impervious secondary containment (such as concrete bunding) to prevent direct spills or releases to the soil. • Soil contamination from spills or leaks will be removed upon identification to either, onsite bioremediation facility or to Cell 1 or an acceptable alternative location offsite. • Appropriate spill kits provided. Spill response training provided to personnel periodically. • Implement spill clean-up procedures and remove contaminated soil from the premises. • Minimise potential for spills through personnel training and awareness, and application of spill response procedures.	**Rare**	**Minor**	**Low**
Activity 1c: Remove duplication of regulation for low-level radioactive waste (LLW)									
Not applicable. Amendments relate to administrative changes only, refer to Section 4.3.3 and Section 9 for further discussion.									

Factor	Risk Pathway	Impact / Consequence	Likelihood	Consequence	Inherent Risk	Reasoning and Proposed Mitigations	Likelihood	Consequence	Residual Risk
Activity 2: Allow for bulky wastes (e.g., railway sleepers and pipework) to be stored uncovered / in the open, prior to permanent disposal to waste cells									
Surface Water Runoff	Contaminated stormwater runoff from uncovered bulky wastes resulting in surface and groundwater contamination.	• Inadequate containment of potential pollutants of concern. • Surface water runoff beyond the premises boundary. • Significant contamination of surface and groundwater resources in the vicinity of the Facility.	**Possible**	**Moderate**	**Medium**	• No major surface water bodies exist surrounding the Sandy Ridge Project area and associated prescribed premises boundary. • A kaolin pad will be installed on the East Yard (Solids) Storage Area pad to minimise surface water runoff, as described in Section 4.4. • Any residual surface and stormwater runoff from the East Yard (Solids) Storage Area will continue to be directed to the Stormwater Retention Pond (East Yard), which is capable of capturing a 1 in 100 year 72-hour storm event from the East Yard (solids) Storage Area. • Surface water from all other approved bulky waste storage locations is directed to a lined stormwater retention pond or concrete sump and will be managed via existing controls in accordance with Condition 1, Table 1. • Implement Surface Water Control Procedure (SR-08.51). • Surface water management measures surrounding mining and processing areas are already established and have been demonstrated to effectively capture surface water runoff from these areas. • There is limited potential for groundwater contamination as existing controls are considered to be adequate, given the limited environmental pathways and sensitive receptors: – Groundwater throughout the Project area does not occur within the proposed depths of disturbance (i.e., approximately 30 m). – Hydrogeological modelling confirms that unsaturated groundwater flow from rainfall recharge migrates vertically, through the soil profile, until it reaches the interface between the overlying granite and fresh granite. During subsequent dry periods, evaporation and evapotranspiration act to remove this rainfall from the top two metres of soil (Cymod Systems, 2022). • Tellus considers that the DWER Licence and MS1234, including associated EMPs, provide a range of management controls and contingencies to mitigate potential risks. This includes the Deep Groundwater Monitoring and Management Plan (DGMMP) (required under EPBC 2015/7478) and Leachate Monitoring and Management Plan (LMMP) (required under Ministerial Statement) which have been prepared to enable early detection of potential leachate to protect the environment from any impacts associated with potential leachate.	**Rare**	**Minor**	**Low**
Activity 3: Allow the area under the waste cell air domes to be utilised as temporary working storage areas once a cell has been filled to final waste level.									
Air, Soils, Surface and Groundwater	Waste is not fully contained within designated area resulting in dust generation, contamination of soils, surface or groundwater.	• Inadequate containment of potential pollutants of concern. • Surface water runoff beyond the premises boundary. • Surface and groundwater contamination.	**Possible**	**Moderate**	**Medium**	• Due to the fully enclosed nature of the Cell, this storage area presents lower environmental risk than storage in the yards within the Infrastructure Area. • Temporary storage area preparation in accordance with Operating Procedures summarised in Section 4.5. • Gas monitoring skid to be maintained and gas monitoring to continue. • Ventilation to be maintained as per existing operational plans. • Air dome to remain in place to exclude stormwater. • Groundwater monitoring to continue. • Only waste that can be readily reclaimed will be temporarily stored. This includes packaged material that would be stored in bags, drums, containers, etc., and bulk material that can be tipped into a stockpile for ready reclaim.	**Rare**	**Minor**	**Low**

Factor	Risk Pathway	Impact / Consequence	Likelihood	Consequence	Inherent Risk	Reasoning and Proposed Mitigations	Likelihood	Consequence	Residual Risk
						• Wastes that will not be temporarily stored include: – Liquid waste. – Flammable wastes. – DSRS.			
Activity 4a: Permit storage of excess PFAS liquid waste in the Main Storage Area.									
Soils, Surface and Groundwater	Waste is not fully contained within designated area resulting in contamination of soils, surface or groundwater.	• Inadequate containment of potential pollutants of concern. • Surface water runoff beyond the premises boundary. • Surface and groundwater contamination.	**Possible**	**Moderate**	**Medium**	• Surface and stormwater runoff will continue to be directed to the Stormwater Retention Pond, which is capable of capturing a 1 in 100 year 72-hour storm event. • Implement Surface Water Control Procedure (SR-08.51). • Surface water management measures surrounding storage and processing areas are already established and have been demonstrated to effectively capture surface water runoff from these areas. • There is limited potential for groundwater contamination as existing controls are considered to be adequate, given the limited environmental pathways and sensitive receptors: – Groundwater throughout the Project area does not occur within the proposed depths of disturbance (i.e., approximately 30 m). – Hydrogeological modelling confirms that unsaturated groundwater flow from rainfall recharge migrates vertically, through the soil profile, until it reaches the interface between the overlying granite and fresh granite. During subsequent dry periods, evaporation and evapotranspiration act to remove this rainfall from the top two metres of soil (Cymod Systems, 2022). • A Deep Groundwater Monitoring and Management Plan (DGMMP) (required under EPBC 2015/7478) and Leachate Monitoring and Management Plan (LMMP) (required under Ministerial Statement) have been prepared to enable early detection of potential leachate to protect the environment from any impacts associated with potential leachate. • Groundwater monitoring to continue.	**Rare**	**Minor**	**Low**
Activity 4b: Remove the maximum PFAS concentration (50 mg/kg) limit in consideration of the NEMP 3.0.									
Soils, Surface and Groundwater	Waste is not fully contained within designated area resulting in contamination of soils, surface or groundwater.	• Inadequate containment of potential pollutants of concern. • Surface water runoff beyond the premises boundary. • Surface and groundwater contamination.	**Possible**	**Moderate**	**Medium**	• PFAS storage, including maximum PFAS concentration, will be appropriately managed in accordance with the NEMP 3.0, refer Section 4.6.3. • Management measures in accordance with Activity 4a above.	**Rare**	**Minor**	**Low**
Activity 5: Minor amendments and corrections to the existing licence									
Not applicable. Amendments relate to administrative changes only, refer to Section 4.7 and Section 9 for further discussion.									

9 SUMMARY OF PROPOSED AMENDMENTS TO L9240/1/2020

Tellus requests DWER consider amending the licence to reflect the changes described in Table 9-1 below.

Table 9-1 presents a summary of all requested amendments discussed in detail within Section 4 of this document.

Table 9-1: Summary of Requested Amendments to L9240/1/2020

Condition	Existing condition	Requested change	Reasoning	Section Ref.
Registered Business Address	Suite 2, Level 10, 151 Castlereagh Street, Sydney NSW 2000	Level Six, Allendale Square, 77 St Georges Terrace, Perth WA 6000	Tellus previously notified DWER of this change in registered business address on 12 June 2024 to fulfil the requirements of MS1078 Condition 2-1.	4.7.1
Licence Duration	The duration of L9240/2020/1 is 29/06/2020 to 28/06/2040.	To 13/12/2049.	Align Licence validity with the Project Life approved under MS1234 (25 years from 13 December 2024).	4.3.1
Category 61 Category 61A	100,000 tonnes (combined) per annual period.	280,000 tonnes (combined) per annual period.	Alignment with the requirements of MS1234.	4.3.2
1, Table 1, Row 19	Homogenising Tank Located in the area depicted as Liquid Waste Storage Yard in Figure 3 in Schedule 1.	Revise location of Homogenising Tank (currently within area indicated as 24 in Figure 3 of L9240/2020/1) to the Low Level Radiation Waste Warehouse / Liquid Waste Unloading Area (area indicated as 21 in Figure 3 of L9240/2020/1).	The correct location of the Homogenising Tank is within the Low Level Radiation Waste Warehouse rather than the Liquid Waste Storage Yard, as this is undercover and where the WIP inlets are located. The Liquid Waste Storage Yard does not include the Low Level Radiation Waste Warehouse; this amendment is requested as a minor correction.	4.7.5
3	The Licence Holder must only accept onto the premises waste of a waste type and waste description, which does not exceed the corresponding rate at which waste is received, and which meets the corresponding acceptance specification set out in Table 2.	Refer to amendments noted below.	Alignment with the requirements of MS1234.	Refer below
3, Table 2	Rate at which Waste is Received: 100,000 tonnes (combined) per annual period	Rate at which Waste is Received: 280,000 tonnes (combined) per annual period	The increased limit has been assessed by the EPA and approved under MS1234.	4.3.2

Condition	Existing condition	Requested change	Reasoning	Section Ref.
3, Table 2, Note 3	Additional requirements for the acceptance and handling and disposal of wastes under Ministerial Statement 1078 or other approvals may apply.	Note 3 to be updated to reference MS1234.	The increased limit has been assessed by the EPA and approved under MS1234.	4.3.2
5	The Licence Holder must manage waste acceptance on the premises in accordance with the following documents: a) "Sandy Ridge Facility Chemical Waste Acceptance Procedure, Document No.: SR00-1178396587-11037, September 2022"; b) "Sandy Ridge Facility Chemical Waste Acceptance Criteria, Document No.: SR00-1178396587-11032, September 2022"; c) "Sandy Ridge Facility Radiological Waste Acceptance Procedure, Document No.: SR00-1178396587-11034, September 2022"; and d) "Sandy Ridge Facility Radiological Waste Acceptance Criteria, Document No.: TEL-08.720, April 2022".	Remove reference to specific document versions, i.e.: a) Current Sandy Ridge Facility Chemical Waste Acceptance Procedure; and b) Current Sandy Ridge Facility Chemical Waste Acceptance Criteria. Remove reference to the RWAP and RWAC.	Allows for continuous updates to documents. Most recent revisions are as follows: a) Sandy Ridge Facility Chemical Waste Acceptance Procedure, 30/07/2025; b) Sandy Ridge Facility Chemical Waste Acceptance Criteria, 30/07/2025; c) Sandy Ridge Facility Radiological Waste Acceptance Procedure, 03/07/2025; and d) Sandy Ridge Facility Radiological Waste Acceptance Criteria, 03/07/2025. The RWAP and RWAC are determined in accordance with the Safety Case, which is required to be updated periodically. The Radiological Council must approve updated versions of the Safety Case (including the RWAP and RWAC) prior to use.	4.3.3
6	The Licence Holder must not accept radioactive wastes onto the premises unless approval to do so has been granted under the *Radiation Safety Act 1975*, issued by the Radiological Council.	No change.	Tellus has approval under the *Radiation Safety Act 1975* to accept radioactive wastes at the Facility. In retaining this condition DWER recognises that the activity is regulated and approved by the Radiological Council and no additional controls are required in the licence.	N/A

Condition	Existing condition	Requested change	Reasoning	Section Ref.
7	The Licence Holder must only store wastes accepted onto the premises in accordance with the storage requirements, and at the storage location, as set out in Table 3.	Reference to storage time (no longer than 12 months from the date of receipt) is amended to reflect the approved authorised extent of MS1234 (no longer than 12 months from the date of receipt, or as agreed by the CEO).	The authorised extent of MS1234 provides for the CEO to extend the maximum storage time beyond 12 months.	-
7, Table 3, Row 2	Contaminated Solid Wastes – Bulky Items Storage Requirements: a) completely dry; b) within suitable secure and sealed packaging that: i.) completely contains the waste; ii.) does not allow the ingress of stormwater; and iii.) prevents the discharge of contaminants; c) in manner that does not obscure fire protection equipment or signage; and d) no longer than 12 months from the date of receipt.	Amend to allow for bulky wastes to be stored uncovered. Storage Requirements: ~~a) completely dry;~~ ~~b) within suitable secure and sealed packaging that:~~ ~~i.) completely contains the waste;~~ ~~ii.) does not allow the ingress of stormwater; and~~ ~~iii.) prevents the discharge of contaminants;~~ a) minimises the ingress and export of stormwater runoff; b) in manner that does not obscure fire protection equipment or signage; and c) no longer than 12 months from the date of receipt.	Bulky wastes are stored within the East Yard (Solids) Storage Area, which is sloped to allow surface water within the storage area to drain to the Stormwater Retention Pond (East Yard) which is capable of capturing a 1 in 100 year 72-hour storm event. A kaolin pad will be installed in the East Yard (Solids) Storage Area to minimise surface water runoff, as described in Section 4.4. Surface water from all other approved bulky waste storage locations is directed to a lined stormwater retention pond or concrete sump and will be managed in accordance with existing controls in accordance with Condition 1, Table 1. Tellus considers that there are limited pathways for contamination of soils, surface or groundwater resources originating from the Facility.	4.4

Condition	Existing condition	Requested change	Reasoning	Section Ref.
			Tellus therefore requests removal of the requirement to ensure bulky wastes are stored in secure and sealed packaging and to ensure the materials are completely dry. This requirement places significant logistical constraints on the storage of bulky items with limited environmental benefit given the reasons previously detailed regarding the lack of environmental pathways and contamination risks. Tellus therefor requests removal of the requirement to cover bulky wastes to prevent all ingress of stormwater to the storage areas. Proposed controls are discussed in Sections 4.4 and 8. Tellus considers that the DWER Licence and MS1234, including associated EMPs, provide a range of management controls and contingencies to mitigate potential risks.	
7, Table 3, Row 5	PFAS Liquid Waste Storage Location: PFAS storage area, located in the area depicted as PFAS Storage Area in Figure 3 in Schedule 1.	Amend to permit, when operations require, storage of excess PFAS liquid waste in the Main Storage Area.	Storage will continue to comply with the requirements and intent of the PFAS NEMP 3.0 given the potential risks and limited environmental pathways that exist at Sandy Ridge.	4.6
9	The Licence Holder must ensure solid and liquid waste containers on the Premises remain closed, unless waste verification inspection or testing is being undertaken within inspection warehouses, or is being managed in accordance with the procedures listed in Condition 4.	The Licence Holder must ensure solid and liquid waste containers on the Premises remain closed, unless waste verification inspection or testing is being undertaken within inspection warehouses, or is being managed in accordance with the procedures listed in Condition 5.	Condition incorrectly refers to Condition 4 instead of Condition 5 – minor correction is requested.	4.3.3

Condition	Existing condition	Requested change	Reasoning	Section Ref.
15	The Licence Holder must ensure that the waste types specified in Table 4 are only subjected to the corresponding process and disposal limits and/or specifications.	Refer to amendments noted below.	-	Refer below
15, Table 4, Row 2	Radioactive Waste: Meet the activity limits specified in the "Sandy Ridge Facility Radiological Waste Acceptance Criteria, Document No.: TEL-08.720".	Remove reference to RWAC.	The RWAP and RWAC are determined in accordance with the Safety Case, which is required to be updated periodically. The Radiological Council must approve updated versions of the Safety Case (including the RWAP and RWAC) prior to use.	4.3.3
15, Table 4, Row 3	PFAS Liquid Waste: Maximum PFAS concentration ≤50mg/kg. Waste must not be diluted to achieve this limit.	Amend to remove 50mg/kg maximum concentration. Specify that solidified waste must not be diluted to achieve the maximum concentration specified in the NEMP 3.0.	Maximum PFAS concentrations are specified within the NEMP 3.0. Tellus proposes to remove the 50mg/kg limit from the Licence to remove duplicate regulation. Wording in a previous licence version stated: *Solidified waste must not be diluted to achieve this limit.* The removal of the word "solidified" was a textual change, as it appeared earlier in paragraph. As written in the current licence, this condition could be interpreted to mean that liquid PFAS with an initial concentration exceeding 50mg/kg cannot be treated at Sandy Ridge. This was not the intent of this condition.	4.6

Condition	Existing condition	Requested change	Reasoning	Section Ref.
15, Table 4, Row 5	Acidic (B100) and Basic (C100) Waste: Treatment of acidic and basic wastes via neutralisation in the Waste Neutralisation Plant (WNP) prior to treatment via the WIP and disposal to in Waste Cell 1.	Treatment of acidic and basic wastes via neutralisation in the Waste Neutralisation Plant (WNP) and/or portable mixing equipment, producing a neutralised solid fraction and/or a neutralised liquid fraction. The neutralised solid fraction meeting the required disposal specifications may be disposed in Waste Cell 1. The neutralised liquid fraction must be solidified via the WIP and/or Portable Mixing Equipment prior to disposal or reused within the WNP as process water.	This corrects a drafting inconsistency in the current licence, which incorrectly implies that the WIP can process solid materials. In practice, the WIP is only capable of treating liquid waste streams. Allowing acid and bases to be treated outside of the WNP, where required, and allowing the neutralised liquid fraction from the WNP to be processed using portable mixing equipment, where required, provides operational flexibility without changing the risk profile of the activity.	4.7.3
15, Table 4, Row 8	Special Waste Type 3: Maximum PFAS concentration ≤50mg/kg. Waste must not be diluted to meet this limit.	Remove reference to 50mg/kg limit.	Maximum PFAS concentrations are specified within the NEMP 3.0. Tellus proposes to remove the 50mg/kg limit from the Licence to remove duplicate regulation.	4.6
15, Table 4, Note 2	Additional requirements for the acceptance and handling and disposal of wastes under Ministerial Statement 1078 or other approvals may apply.	Update reference from MS1078 to MS1234.	Alignment with new Ministerial Statement.	4.7.2
19a	The Licence Holder must manage in-ground waste disposal activities to ensure: (a) only one waste cell is used for the disposal of waste at a time;	Amend to include provision for temporary storage under the waste cell air dome, once a cell has reached its final fill level, and before installation of the seal and cap.	Tellus request this provision is amended to allow for the transition from Cell 1 to Cell 2 (once constructed), and future cell transition.	4.5

Condition	Existing condition	Requested change	Reasoning	Section Ref.
19b	(b) where stabilised and solidified liquid wastes are disposed, these wastes have been subject to the requirements of condition 16;	(b) where stabilised and solidified liquid wastes are disposed, these wastes will be subjected to the requirements of Condition 16. Such verification testing may be undertaken post-placement to allow sufficient curing for results to be representative.	The words "have been" is ambiguous and has been interpreted by DWER to mean that Clegg Testing must be done before placement (where Condition 19d indicates that Clegg Testing can be done post-placement). Clarification of Condition 19b is requested to remove ambiguity and to align with Condition 19d.	4.7.4
20	The Licence Holder must not dispose of radioactive wastes into the waste cell unless approval to do so has been granted under the *Radiation Safety Act 1975*, issued by the Radiological Council.	No change.	Tellus has approval under the *Radiation Safety Act 1975* to dispose of radioactive wastes at the Facility. In retaining this condition DWER recognises that the activity is regulated and approved by the Radiological Council and no additional controls are required in the licence.	N/A
21	Disused sealed radioactive sources (DSRS) are to be disposed of only within dedicated vertical concrete shafts that are: a) at least 3 metres apart from one another; and b) with a 5 metre barrier between the shafts and chemical waste.	Remove Condition 21.	Tellus proposes to dispose of DSRS can be appropriately managed by the Radiological Council of WA under RS 210/2018 30289.	4.3.3
34 – 37	Specified Works Condition	Update to reflect completion of the works.	All Specified Works-related condition are completed and have been complied with.	-

10 SUPPORTING DATA FOR FEE CALCULATION

Estimated costs of works associated with the proposed works, and the Licence Amendment Application fee, are specified in Table 10-1 below:

Table 10-1: Fee Calculation

Description	Units	Totals
61 – Liquid waste facility: More than 100 000 tonnes per year	[redacted]	[redacted]
61A – Solid waste facility: More than 100 000 tonnes per year	[redacted]	[redacted]0
65 – Class IV secure landfill site: Not applicable	[redacted]	[redacted]0
66 – Class V intractable landfill site: Not applicable	[redacted]	[redacted]
TOTAL (Exclusive of GST)[1]	[redacted]	[redacted]

1. Highest applicable premises fee.

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APPENDICES

Appendix A: DWER Risk Rating and Risk Criteria Tables

Table A-1: Risk Rating Matrix

Likelihood	Consequence				
	Slight	Minor	Moderate	Major	Severe
Almost Certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

(DWER, December 2020)

Table A-2: Risk Criteria Table

Consequence		
The following criteria will be used to determine the consequences of a risk event occurring:		
	Environment	Public Health*and Amenity (such as air and water quality, noise and odour)
Severe	• On-site impacts: catastrophic • Off-site impacts local scale: high level or above • Off-site impacts wider scale: mid-level or above • Mid to long term or permanent impact to an area of high • Conservation value or special significance • Specific Consequence Criteria (for environment) are significantly exceeded	• Loss of life • Adverse health effects: high level or ongoing medical treatment • Specific Consequence Criteria (for public health) are significantly exceeded • Local scale impacts: permanent loss of amenity
Major	• On-site impacts: high level • Off-site impacts local scale: mid-level • Off-site impacts wider scale: low level • Short term impact to an area of high conservation value or • Special significance • Specific Consequence Criteria (for environment) are exceeded	• Adverse health effects: mid-level or frequent medical treatment • Specific Consequence Criteria (for public health) are exceeded • Local scale impacts: high level impact to amenity

Likelihood	
The following criteria will be used to determine the likelihood of the risk event occurring.	
Almost Certain	The risk event is expected to occur in most circumstances.
Likely	The risk event will probably occur in most circumstances.

Consequence		
The following criteria will be used to determine the consequences of a risk event occurring:		
	Environment	Public Health*and Amenity (such as air and water quality, noise and odour)
Moderate	• On-site impacts: mid-level • Off-site impacts local scale: low level • Off-site impacts wider scale: minimal • Specific Consequence Criteria (for environment) are at risk of not being met	• Adverse health effects: low level or occasional medical treatment • Specific Consequence Criteria (for public health) are at risk of not being met • Local scale impacts: mid-level impact to amenity
Minor	• On-site impacts: low level • Off-site impacts local scale: minimal • Off-site impacts wider scale: not detectable • Specific Consequence Criteria (for environment) likely to be met	• Specific Consequence Criteria (for public health) are likely to be met • Local scale impacts: low level impact to amenity
Slight	• On-site impact: minimal • Specific Consequence Criteria (for environment) met	• Local scale: minimal impacts to amenity • Specific Consequence Criteria (for public health) criteria met

Likelihood	
The following criteria will be used to determine the likelihood of the risk event occurring.	
Possible	The risk event could occur at some time.
Unlikely	The risk event will probably not occur in most circumstances.
Rare	The risk event may only occur in exceptional circumstances.

(DWER, December 2020)

Table A-3: Risk Treatment Table

Rating of Risk Event	Acceptability	Treatment
Extreme	Unacceptable	Risk event will not be tolerated. We may refuse the application.
High	May be acceptable subject to multiple regulatory controls	Risk event may be tolerated. We may apply multiple regulatory controls, including both outcome-based and management conditions.
Medium	Acceptable, generally subject to regulatory controls	Risk event is tolerable. We may apply some regulatory controls, including outcome-based conditions where practical and appropriate.
Rating of risk event	Acceptability	Treatment
Low	Acceptable, generally not controlled	Risk event is acceptable. Generally, we will not apply regulatory controls.

(DWER, December 2020)