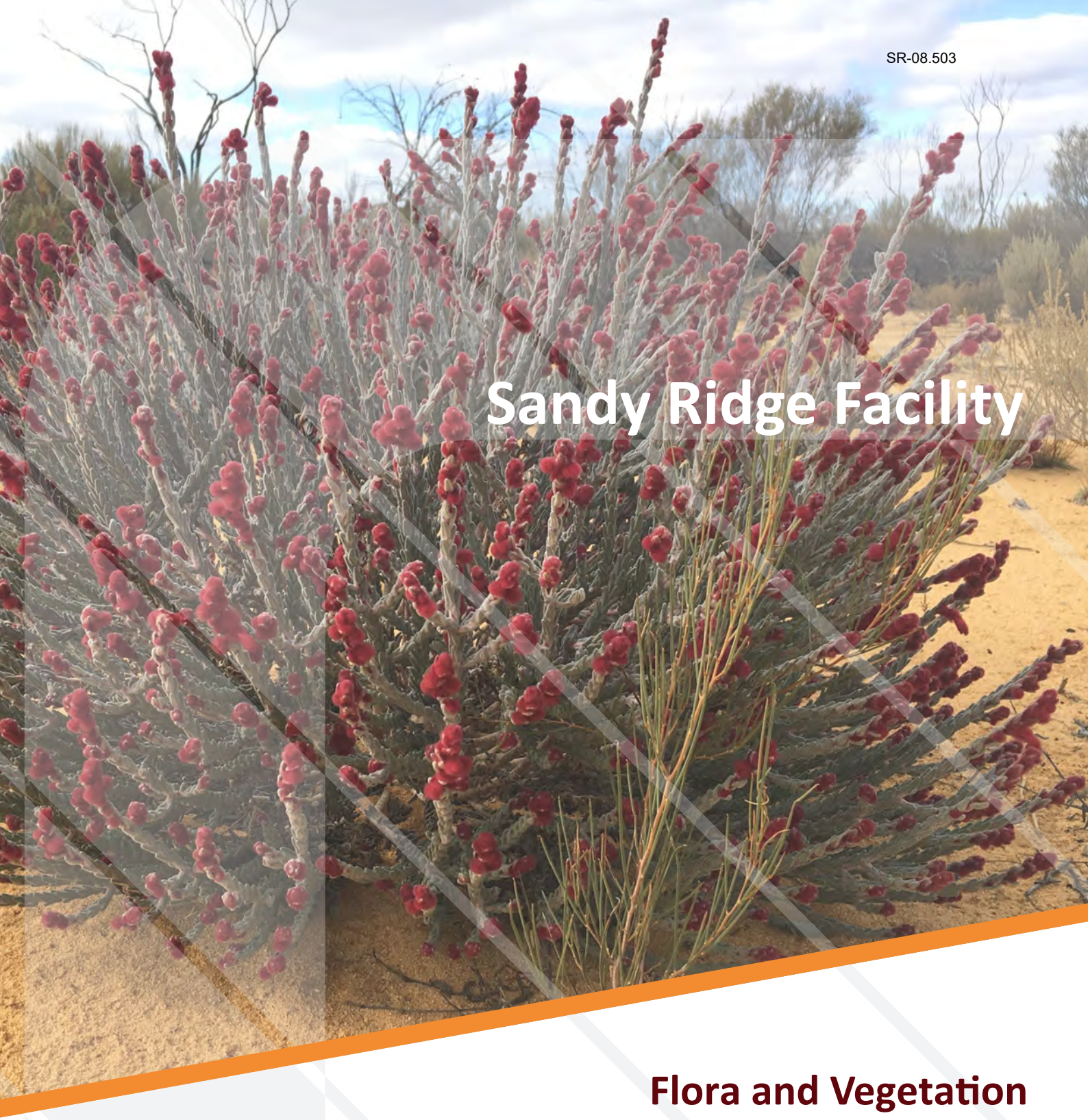
SR-08.503



Sandy Ridge Facility

Flora and Vegetation Management Plan
June 2019

TELLUS

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DOCUMENT CONTROL

The signatures below certify that this management plan has been reviewed and accepted and demonstrates that the signatories are aware of all the requirements contained herein and are committed to ensuring their provision.

	Name	Signature	Position	Date
Prepared by	Sophy Townsend		Manager HSECQ	4/4/2019
Reviewed by	Richard Phillips		General Manager HSECQ	4/4/2019
Approved by	Richard Phillips		General Manager HSECQ	4/04/2019

Amendment Record

This management plan is reviewed to ensure its continuing relevance to the systems and process that it describes. A record of contextual additions or omissions is given below:

Page No.	Context	Version	Date
Various	Revised as per peer review by Geoff Cockerton. Added section 2.2.1.	1	19 June 2019

Company Proprietary Information

The electronic version of this management plan is the latest version. It is the responsibility of the individual to ensure that any paper material is the current version. The printed version of this procedure is uncontrolled, except when provided with a document reference number and version in the field below:

Document Ref.	HS00-1760150200-22152			Ver	1
Uncontrolled Copy	✓	Controlled Copy		Date	19/06/2019

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ABBREVIATIONS

BC Act	*Biodiversity Conservation Act 2016* (WA)
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of Section 48 of the *Environmental Protection Act 1986*, or his delegate.
Cmth	Commonwealth
DBCA	WA Department of Biodiversity, Conservation and Attractions
EEC	Endangered Ecological Community
EMS	Environmental Management System
EPA	WA Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999 (*Cwlth)
EPBC 2015/7478	Australian Government Ministerial Approval of the Sandy Ridge Facility
FVMP	Flora and Vegetation Management Plan
ha	Hectares
HSECQ	Health, Safety, Environment, Compliance and Quality
km	Kilometres
MS 1078	WA Government Approval of the Sandy Ridge Facility (Ministerial Statement 1078)
PEC	Priority Ecological Community
PER	Public Environmental Review
TEC	Threatened Ecological Community
Tellus	Tellus Holdings Ltd
Tpa	Tonnes per annum
WA	Western Australia

WA EPA ENVIRONMENTAL MANAGEMENT PLAN TEMPLATE - CHECKLIST

The format of this Flora and Vegetation Management Plan (FVMP) is based on the template requirements as per 'Instructions on how to prepare *Environmental Protection Act 1986* Part IV Environmental Management Plans' (WA EPA 2018).

The table below provides a list of the requirements as set out in 'Instructions on how to prepare *Environmental Protection Act 1986* Part IV Environmental Management Plans' (WA EPA 2018) and a cross reference as to where these requirements are addressed within this FVMP.

Reference (as per WA EPA 2018)	Template requirement (as per WA EPA 2018)	Location in this Flora and Vegetation Management Plan)
-	Document control	i
-	Summary	viii
1.0	Context, scope and rationale	
1.1	Proposal	Chapter 1, Section 1.1.
1.2	Key environmental factors	Chapter 1,, Section 1.2.
1.3	Condition requirements.	Chapter 1, Section 1.3.
1.4	Rationale and approach	Chapter 1, Section 1.4.
1.5	Index of Biodiversity Surveys for Assessments (IBSA)	Chapter 1, Section 1.5.
2.0	EMP provisions	Chapter 2, Section 2.1 through Section 2.3.
3.0	Adaptive management and review of EMP	Chapter 3.
4.0	Stakeholder consultation	Chapter 4.

SUMMARY

Title of proposal:	Sandy Ridge Facility
Proponent name:	Tellus Holdings Pty Ltd
Ministerial statement no.:	Ministerial Statement 1078 (MS 1078)
Purpose of environmental management plan:	To manage impacts/risks to flora and vegetation in accordance with best practice and legal requirements during construction and operation of the Sandy Ridge Facility. This management plan specifically addresses Condition 10-1 through 10-9 of MS 1078.
Key environmental factor/s and objective:	Key environmental factor: flora and vegetation. Objective: To avoid disturbance to flora and vegetation outside of the development envelope; to protect conservation-significant flora species; to protect air quality; to prevent soil/water contamination; to prevent the introduction and spread of weeds; and to prevent the incidence of bushfire resulting from activities during construction and operation of the Sandy Ridge Facility.
Condition clauses:	This management plan specifically addresses Condition 10-1 through 10-9 of MS 1078.
Key provisions of this plan:	They key provisions of this plan include those outlined in Condition 10-1 through Condition 10-9 of MS 1078 (refer to Chapter 2).

1 CONTEXT, SCOPE AND RATIONALE

1.1 Proposal

Tellus Holdings Ltd (Tellus) has approval to construct and operate the Sandy Ridge Facility (the Facility) as per Western Australia Ministerial Statement 1078 (MS 1078) and the Australian Government Final Decision (EPBC2015/7478) (refer to Appendix A). The Facility is located approximately 240 kilometres (km) northwest (by road) from Kalgoorlie in WA (refer to Figure 1-1). A summary of the Facility is provided in Table 1-1. The authorised extent of physical and operational elements of the Facility are listed in Table 1-2.

Table 1-1 Summary – Sandy Ridge Facility

Proposal title	Sandy Ridge Facility
Proponent name	Tellus Holdings Ltd (Tellus)
Short description	To construct and operate a dual kaolin clay mine and near-surface geological waste repository within the mine voids for the storage of Class IV and Class V waste. The proposal is located approximately 75 kilometres north-east of Koolyanobbing, in the Shire of Coolgardie.

Table 1-2 Authorised extent of physical and operational elements of the Facility

Element	Proposed extent
Physical elements	
Mine pits/waste cells	Clearing up to 202.3 hectares (ha) of native vegetation within a 1061 ha development envelope
Associated infrastructure	Clearing up to 73.75 ha of native vegetation with a 1061 ha development envelope
Operational elements	
Class IV and V wastes accepted at gate	Up to 100,000 tonnes per annum
Temporary waste storage on surface	Up to 15,000 tonnes
Maximum temporary storage time	Up to 12 months
Waste (including treated waste) disposed to waste cells	Up to 280,000 tonnes per annum
Water use	Up to 0.18 gigalitres per annum

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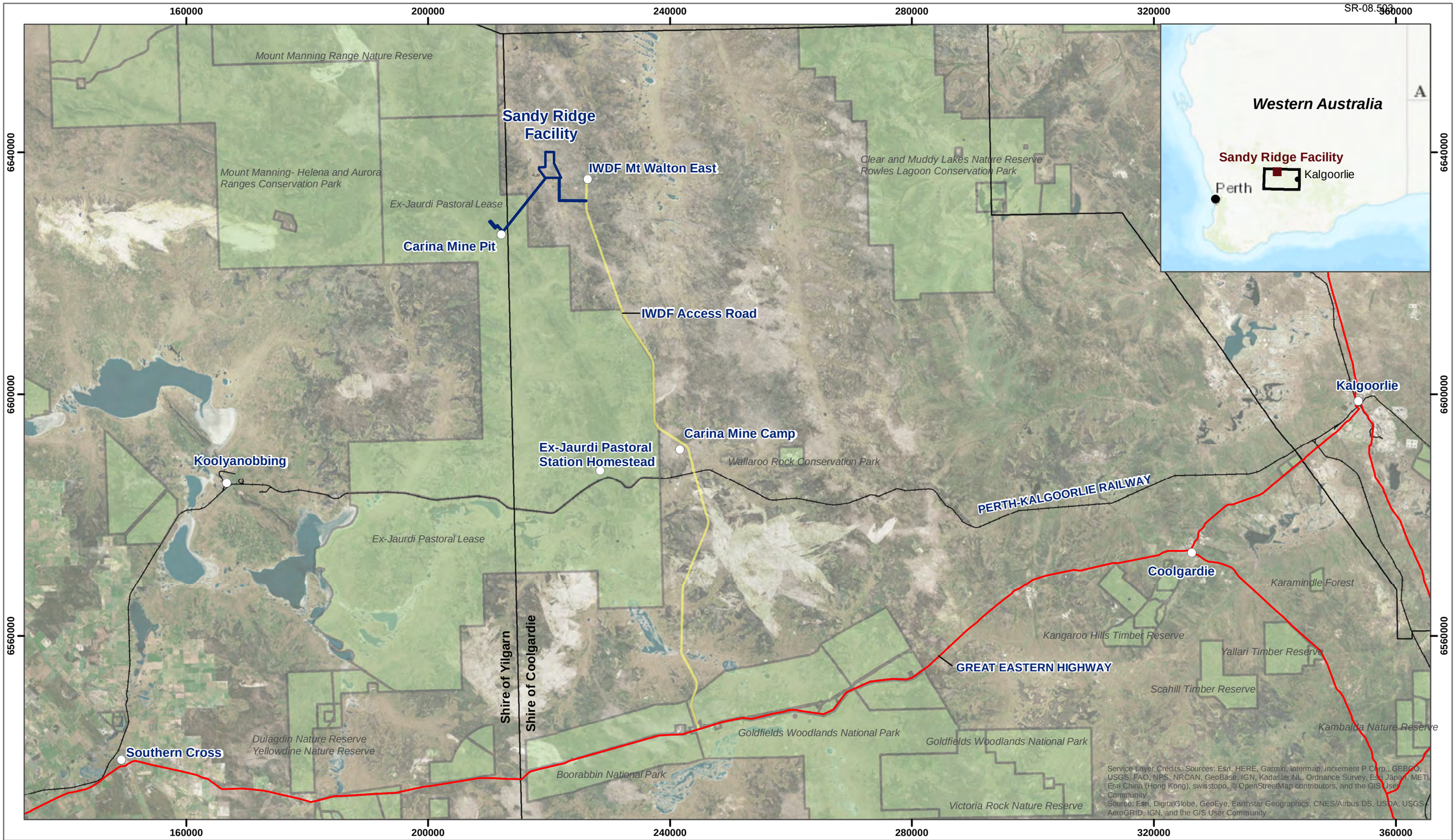


N

10 5 0 10 Km

Coordinate System:
GDA 94 MGA Zone 51

SP-ID:GL00-2017072102-563
TSR0170_MPlan_RegionalLocation.mxd

Legend

- Sandy Ridge Facility
- Local Government Authority Boundaries
- Department of Biodiversity, Conservation and Attractions Lands
- IWDF Access Road
- Principal Road
- Railways

Data in this map is sourced from: © Commonwealth of Australia (Geoscience Australia) 2018 and © State of Western Australia (Department of Mines, Industry Regulation and Safety) 2018.

Figure 1-1
Regional Location

SANDY RIDGE FACILITY

TELLUS

Version: A
Date: 8/11/2018

1.2 Key environmental factor – flora and vegetation

This section discusses the proposal activities which would affect flora and vegetation and the environmental values of flora and vegetation within the development envelope.

1.2.1 Proposal activities which would affect flora and vegetation

Vegetation will be cleared to facilitate the development of the Facility. Tellus has approval under MS 1078 and EPBC/7478 for the removal of:

- Up to 202.3 hectares (ha) of native vegetation for mine pits/waste cells within a 1061 ha development envelope.
- Clearing up to 73.75 ha of native vegetation for associated infrastructure within a 1061 ha development envelope (refer to Table 1-2).

Vegetation that requires removal relates to the approved development envelope which is inclusive of a construction corridor. The extent of vegetation removal by vegetation type is provided in Table 4-1 and is shown graphically in Figure 1-2 and Figure 1-3.

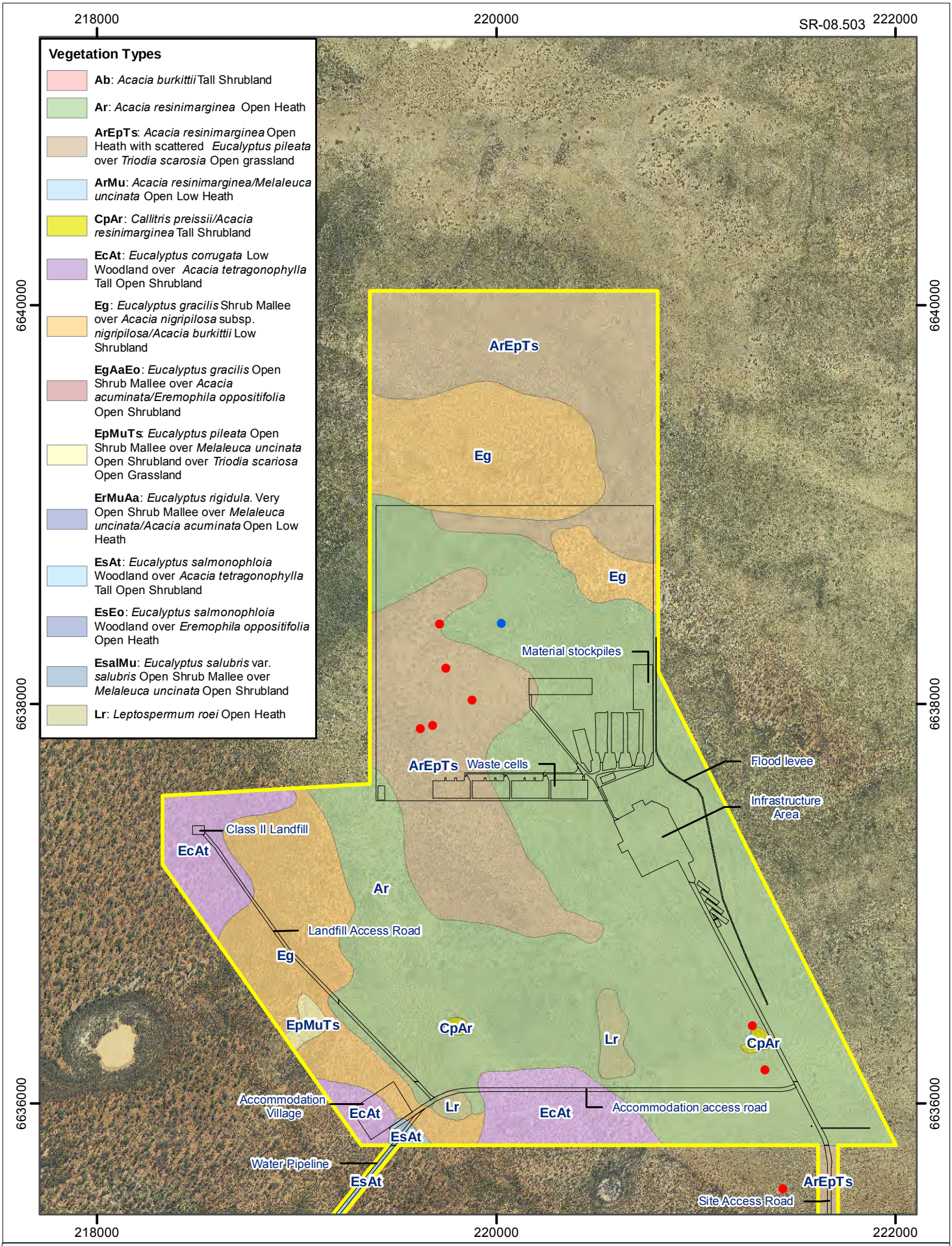
Construction may also have indirect impacts on flora and vegetation such as an increased incidence of fire, increased dust, the uptake of saline water from dust suppression and the introduction and spread of weeds.

Direct and indirect impacts to flora and vegetation will be avoided/minimised via the provisions outlined in Chapter 2.

Table 1-3 Vegetation removal by vegetation type – Sandy Ridge Facility

Code	Vegetation types	Area within development envelope (ha)	Areas to be cleared for construction (ha)
Ab	*Acacia burkittii* Tall Shrubland	0.98	0.17
Ar	*Acacia resinimarginea* Open Heath	434.18	133.87
ArAa	*Acacia resinimarginea/Allocasuarina acutivalvis* Open Heath	0.04	0
ArEpTs	*Acacia resinimarginea* Open Heath with scattered *Eucalyptus pileata* over *Triodia scariosa* Open Grassland	295.57	96.57
ArMu	*Acacia resinimarginea/Melaleuca uncinata* Open Low Heath	10.91	4.65
CpAr	*Callitris preissii/Acacia resinimarginea* Tall Shrubland	2.19	0.09
EcAt	*Eucalyptus corrugata* Low Woodland over *Acacia tetragonophylla* Tall Open Shrubland	60.44	5.12
Eg	*Eucalyptus gracilis* Shrub Mallee over *Acacia nigripilosa* subsp. *nigripilosa/Acacia burkittii* Low Shrubland	150.86	19.42
EgAaEo	*Eucalyptus gracilis* Open Shrub Mallee over *Acacia acuminata/Eremophila oppositifolia* Open Shrubland	0.91	0
EpMuTs	*Eucalyptus pileata* Open Shrub Mallee over *Melaleuca uncinata* Open Shrubland over *Triodia scariosa* Open Grassland	15.59	2.38
ErMuAa	*Eucalyptus rigidula* Very Open Shrub Mallee over *Melaleuca uncinata/Acacia acuminata* Open Low Heath	2.22	0.94

Code	Vegetation types	Area within development envelope (ha)	Areas to be cleared for construction (ha)
EsalMu	*Eucalyptus salubris* var. *salubris* Open Shrub Mallee over *Melaleuca uncinata* Open Shrubland	1.62	0.69
EsAt	*Eucalyptus salmonophloia* Woodland over *Acacia tetragonophylla* Tall Open Shrubland	4.42	1.51
EsEo	*Eucalyptus salmonophloia* Woodland over *Eremophila oppositifolia* Open Heath	16.11	6.85
Lr	*Leptospermum roei* Open Heath	8.16	0.26
W3	Open woodland of *Eucalyptus corrugata* over open shrubland of *Acacia acuminata* (narrow phyllode variant), *Senna artemisioides* subsp. *filifolia* and *Grevillea acuaria*	21.38	0.99
W4	Open woodland of *Eucalyptus vittata* and *E. salmonophloia* over sparse shrubland of *Atriplex* spp., *Eremophila scoparia* and *Templetonia sulcata*	11.32	0.41
W5	Open woodland of *Eucalyptus ravida* with occasional *E. longicornis* and *E. transcontinentalis* over open shrubland of *Eremophila interstans* subsp. *virgata*, *E. scoparia* and *Santalum acuminatum* on clayey soils	2.26	0.28
W6	Woodland of *Eucalyptus salmonophloia* and *E. salubris* over open shrubland of *Eremophila scoparia,* and *Atriplex vesicaria* and *Senna artemisioides* subsp. *filifolia*	2.44	0.42
S9	Tall sparse shrubland of *Acacia sibina* with *Allocasuarina campestris*, over open shrubland of *Baeckea elderiana, Grevillea obliquistigma* subsp. *obliquistigma* and *Leucopogon* sp. Clyde Hill (M.A. Burgman 1207)	13.37	0.28
W3/S9	W3/S9 Complex	7.93	1.15
TOTAL		**1061**	**276.05**



N

0 125 250 375 500 Meters

Coordinate System:
GDA 1994 MGA Zone 51

SP-ID: GL00-2017072102-551
TSR0245_FVMP_VegTypes_MIA.mxd

Legend

Species

- *Calytrix Creswellii* (Priority 3)
- *Lepidosperma* aff. *lyonsii sp.**

Proposed infrastructure

Development Envelope

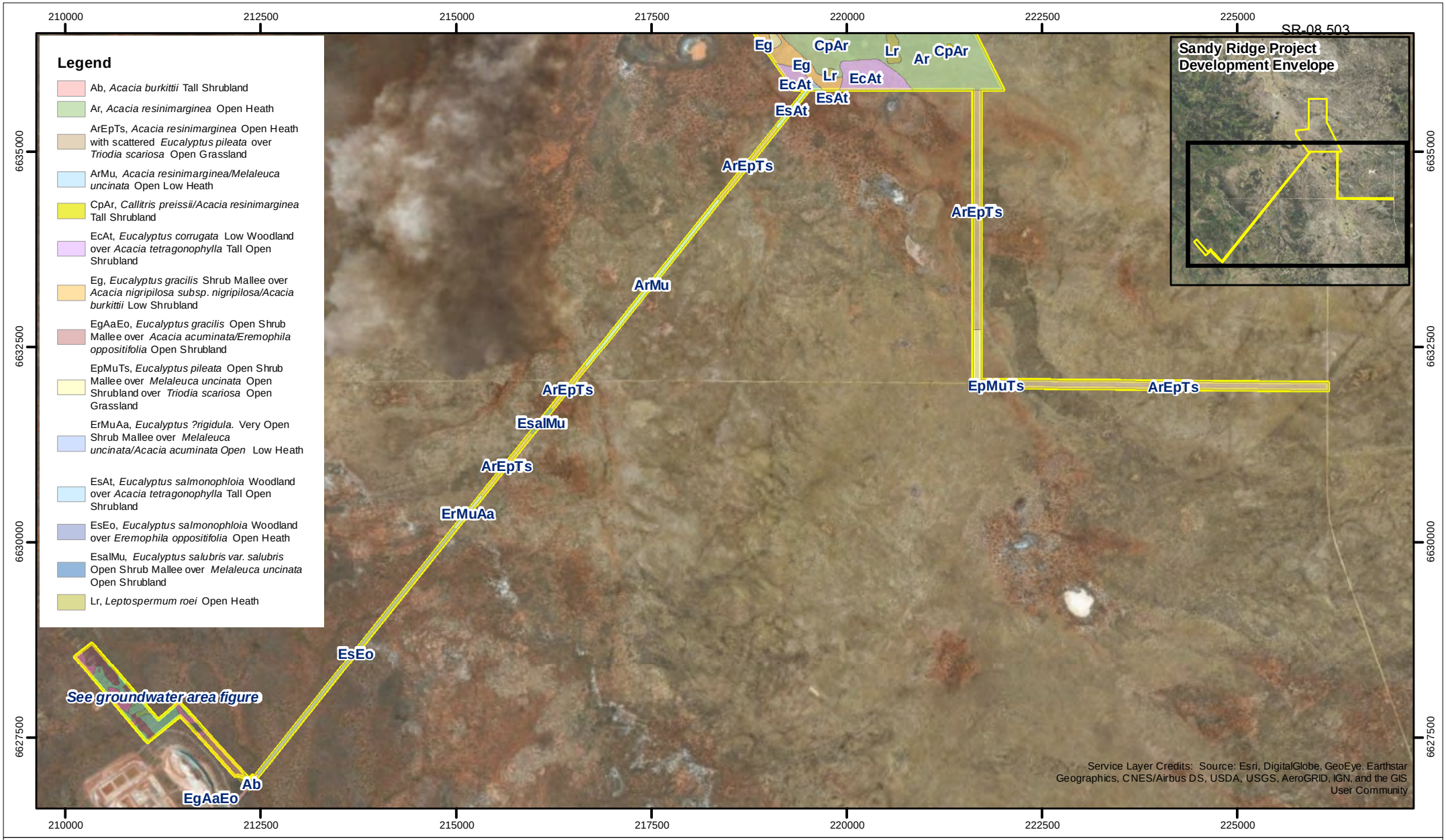
Figure 1-2a
Vegetation Types: Mine Infrastructure Area, Access Road and Water Pipeline Route

SANDY RIDGE PROJECT
FLORA AND VEGETATION MANAGEMENT PLAN

TELLUS

*'*Lepidosperma lyonsii* and 'unknown *Lepidosperma*' recorded within the development envelope during the field surveys for the PER were later identified as Lepidosperma aff. lyonsii. This species is not a conservation-significant species (that is, it is not listed under the BC Act, EPBC Act or by the DBCA).

Version: A
Date: 5/03/2019



N

0 0.5 1 1.5 2 km

Projection: GDA 94
MGA Zone 51

Legend

Development Envelope

^ Vegetation data in this map is sourced from PGV Environmental (2015) and Western Botanical (2018).

Figure 1-2b
Vegetation Types: Mine Infrastructure Area, Access Road and Water Pipeline Route

SANDY RIDGE FACILITY
FLORA AND VEGETATION MANAGEMENT PLAN

TELLUS

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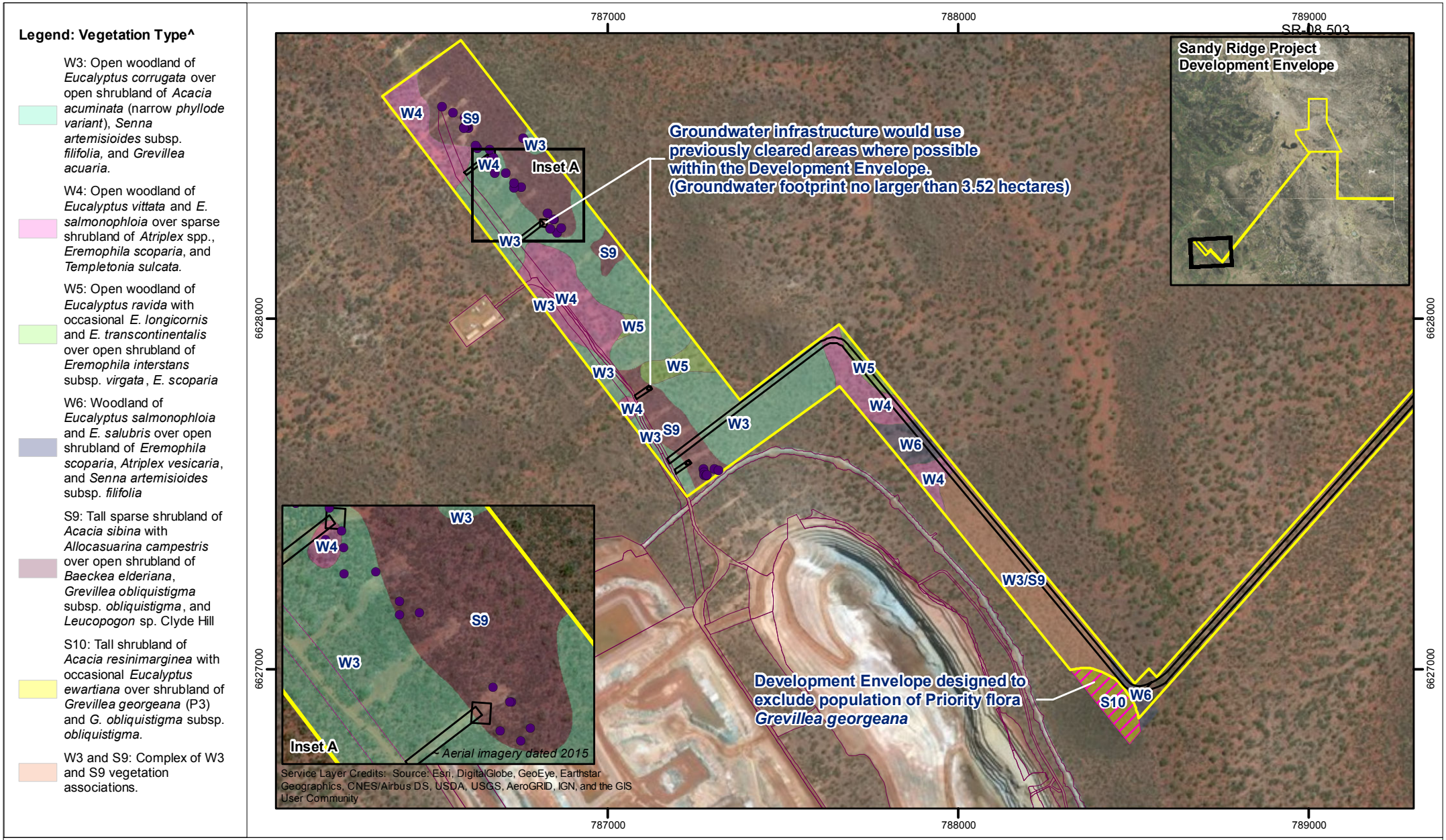
TSR0257_FVMP_VegTypes_RdPl.mxd

Version:A Date:25/03/2019


Legend: Vegetation Type^
W3: Open woodland of Eucalyptus corrugata over open shrubland of Acacia acuminata (narrow phyllode variant), Senna artemisioides subsp. filifolia, and Grevillea acuaria.
W4: Open woodland of Eucalyptus vittata and E. salmonophloia over sparse shrubland of Atriplex spp., Eremophila scoparia, and Templetonia sulcata.
W5: Open woodland of Eucalyptus ravida with occasional E. longicornis and E. transcontinentalis over open shrubland of Eremophila interstans subsp. virgata, E. scoparia
W6: Woodland of Eucalyptus salmonophloia and E. salubris over open shrubland of Eremophila scoparia, Atriplex vesicaria, and Senna artemisioides subsp. filifolia
S9: Tall sparse shrubland of Acacia sibina with Allocasuarina campestris over open shrubland of Baeckea elderiana, Grevillea obliquistigma subsp. obliquistigma, and Leucopogon sp. Clyde Hill
S10: Tall shrubland of Acacia resinimarginea with occasional Eucalyptus ewartiana over shrubland of Grevillea georgeana (P3) and G. obliquistigma subsp. obliquistigma.
W3 and S9: Complex of W3 and S9 vegetation associations.
787000
788000
789000
SR-08 503
Sandy Ridge Project Development Envelope
Groundwater infrastructure would use previously cleared areas where possible within the Development Envelope. (Groundwater footprint no larger than 3.52 hectares)
Inset A
6628000
6627000
Development Envelope designed to exclude population of Priority flora Grevillea georgeana
~ Aerial imagery dated 2015
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
N
0 100 200 300 400 m
Projection: GDA 94 MGA Zone 50
Legend
Development Envelope
Indicative Infrastructure Footprint
Previously cleared areas*
Vegetation Species
Priority species as listed by WA DBCA Parks and Wildlife Service
Banksia arborea (P4)
Grevillea georgeana (P3) population
^ Vegetation data in this map is sourced from Western Botanical (2018).
* Data provided by Mineral Resources. Note - the data does not show exploration drill lines and tracks which have been rehabilitated.
SP-ID: GL00-2017072102-552
TSR0246_FVMP_VegTypes_GW.mxd
Tellus Holdings Ltd makes every effort to ensure this map is free of errors but does not warrant the map or its features are either spatially or temporally accurate or fit for a particular use.
Tellus Holdings Ltd provides this map without any warranty of any kind whatsoever, either expressed or implied.
Figure 1-3
Vegetation Types
Groundwater Abstraction Area
SANDY RIDGE FACILITY
FLORA AND VEGETATION MANAGEMENT PLAN
TELLUS
Version:A Date:5/03/2019

1.2.2 Environmental values of flora and vegetation within the development envelope

This section discusses the environmental values of flora and vegetation within the development envelope of the Facility.

Vegetation

The development envelope and vicinity has experienced minor disturbance because of previous exploration activities (undertaken by Polaris and Tellus). Remnant and native vegetation dominate the landscape within the development envelope. Vegetation types identified during pre-development surveys include open woodlands, sparse shrubland, open health and grassland consisting primarily of mixed *Acacia* and eucalypt species.

The vegetation types present and their distribution within the development envelope are shown in Figure 1-2 andFigure 1-3.

Conservation-significant flora species

No threatened species listed under the *Biodiversity Conservation Act 2016* (WA) (BC Act) and/or the *Environment Protection and Biodiversity Conservation Act 1999* (Cmth) (EPBC Act) were recorded or are likely to occur within the development envelope.

Some of the vegetation types within the development envelope provide habitat for conservation-significant species listed by the WA Department of Biodiversity, Conservation and Attractions (DBCA). These include:

- *Calytrix creswellii* – listed as Priority 3 by the DBCA. This species was recorded within the mine infrastructure area. There will be no impact to *C. creswellii* as no individuals occur within the footprint of the mine pits/waste cells (the mining infrastructure having been designed to specifically avoid impacts to *C. creswellii*) (refer to Figure 1-2).
- *Banksia arborea* – listed as Priority 4 by the DBCA. This species was recorded within the groundwater abstraction area. There will be no impact to *B. arborea* as no individuals occur within the footprint of the groundwater infrastructure (the groundwater infrastructure having been designed to specifically avoid impacts to *B. arborea*) (refer to Figure 1-3).

The locations of *Calytrix creswellii* and *Banksia arborea* are listed in Table 3-1 and are shown in Figure 1-2 and Figure 1-3. For reference, photographs of *Calytrix creswellii* are provided in Plate 1-1 and Plate 1-2. Photographs of *Banksia arborea* are provided in Plate 1-3.

Lepidosperma sp. (*Lepidosperma lyonsii* and 'unknown *Lepidosperma'*) recorded within the development envelope during the field surveys for the Public Environmental Review (PER) were later identified during targeted flora surveys undertaken as per Condition 10-4 of MS 1078 as *Lepidosperma* aff. *lyonsii.* This taxon is not a conservation-significant species (that is, it is not listed under the BC Act, EPBC Act or by the DBCA). The locations of *Lepidosperma* aff. *lyonsii* within the development envelope of the Sandy Ridge Facility are shown in in Figure 3-2 with further details provided within the Targeted Flora Survey (refer to Appendix B). Impacts to this species will be

avoided, where practicable (the mining infrastructure having been designed to avoid or minimise impacts to *Lepidosperma* aff. *lyonsii*) (refer to Figure 1-2).

Should further information be required regarding conservation-significant species, the reader is referred to Appendix A.3 of the PER and Appendix B of the Request for a Change to Proposal under Section 45C of the EP Act. The results of the Targeted Flora Survey, as required by Condition 10-6 of MS 1078, are provided in Appendix B.

Table 1-4 Location of *Calytrix creswellii* and *Banksia arborea* within the development envelope of the Sandy Ridge Facility

Species	Location		
	MGA Zone	MGA94 East	MGA94 North
Calytrix creswellii	51	220025	6638406
Banksia arborea	50	787273	6627570
Banksia arborea	50	787276	6627561
Banksia arborea	50	787276	6627553
Banksia arborea	50	787282	6627552
Banksia arborea	50	787283	6627553
Banksia arborea	50	787305	6627571
Banksia arborea	50	786678	6628414
Banksia arborea	50	786629	6628485
Banksia arborea	50	786624	6628492
Banksia arborea	50	786857	6628245
Banksia arborea	50	786867	6628258
Banksia arborea	50	786848	6628284
Banksia arborea	50	786846	6628284
Banksia arborea	50	786836	6628255
Banksia arborea	50	786829	6628299
Banksia arborea	50	786754	6628375
Banksia arborea	50	786734	6628373
Banksia arborea	50	786734	6628386
Banksia arborea	50	786710	6628416
Banksia arborea	50	786677	6628441
Banksia arborea	50	786675	6628458
Banksia arborea	50	786659	6628449
Banksia arborea	50	786663	6628481
Banksia arborea	50	786603	6628543
Banksia arborea	50	786600	6628548
Banksia arborea	50	786598	6628548
Banksia arborea	50	786595	6628550
Banksia arborea	50	786591	6628545
Banksia arborea	50	786591	6628543

Species	Location		
	MGA Zone	MGA94 East	MGA94 North
Banksia arborea	50	786593	6628573
Banksia arborea	50	786602	6628567
Banksia arborea	50	786559	6628586
Banksia arborea	50	786527	6628605
Banksia arborea	50	786759	6628515
Banksia arborea	50	787316	6627567

Plate 1-1 *Calytrix creswellii* (PaWS, 2017)

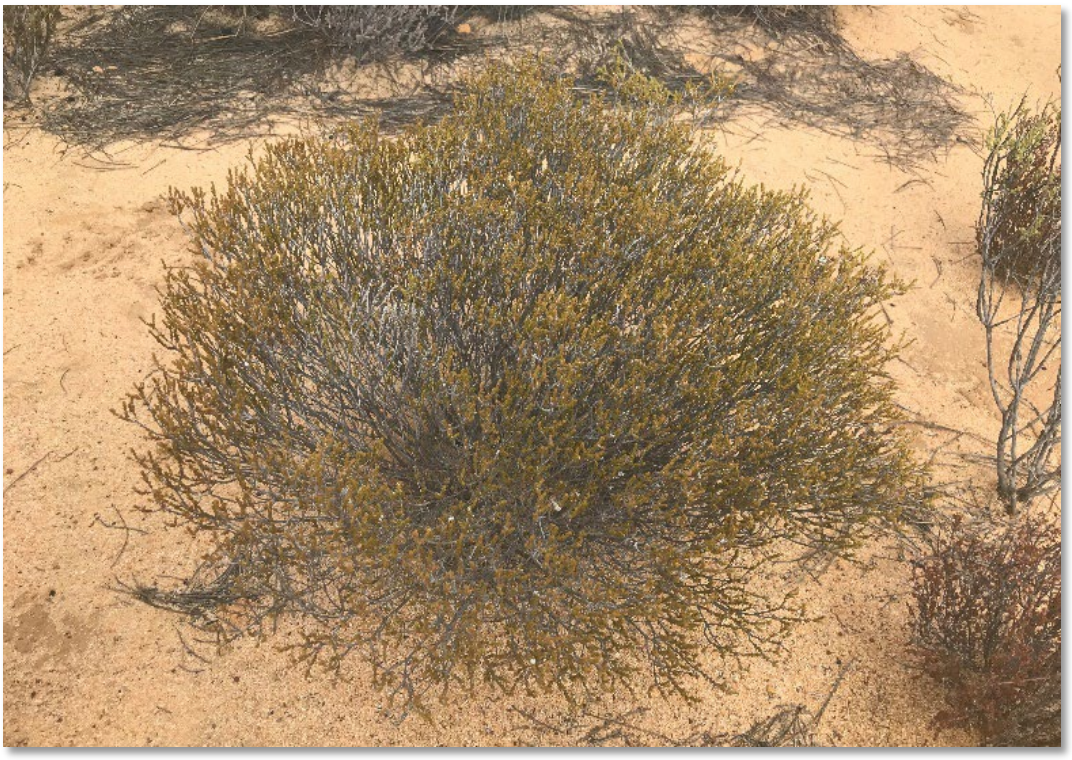


Plate 1-3 *Calytrix creswellii* recorded during targeted surveys within the development envelope in 2017

Plate 1-5 *Banksia arborea* (Western Australian Herbarium 1998)

Conservation-significant ecological communities

There are no Threatened Ecological Communities (TECs) or Endangered Ecological Communities (EECs) that have been recorded or that are predicted to occur within or near the development envelope as listed under the BC Act and/or EPBC Act.

One Priority Ecological Community (PEC) has been recorded as occurring within the groundwater abstraction area and vicinity – the 'Finnerty Range/Mt Dimer/Yendilberin Hills vegetation complexes (banded ironstone formation)' PEC listed at Priority 1 by the DBCA. Vegetation Association S9 and Vegetation Complex W3/S9 is considered part of this PEC (refer toFigure 1-3). The extent of this PEC in the vicinity of the groundwater abstraction area is shown in Figure 4 in Appendix B of the Request for a Change in Proposal under Section 45C of the EP Act.

Vegetation condition

Vegetation within the development envelope is considered to be in excellent to pristine condition with the exception of the already cleared areas (access tracks and drill lines) within the groundwater abstraction area that are considered to be in completely degraded to degraded condition (refer to Table 1-5)[1].

Table 1-5 Vegetation condition rating scale

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very good	Vegetation structure altered obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Completely degraded	The structure of the vegetation is no longer in-tact and the area is completely or almost completely without native species.

Weeds

No weed species were recorded within the development envelope during pre-development field surveys.

[1] *Condition rating scale devised by Keighery (1994) and described in Bush Forever (Government of Western Australia 2000).*

1.3 Condition requirements

This section lists the conditions of approval (as they relate to flora and vegetation) from both the Australian Government and the Western Australian Government for the Sandy Ridge Facility.

1.3.1 Ministerial conditions – Australian Government

There are no conditions of approval regarding flora and vegetation attached to the approval from the Australian Government (EPBC 2015/7478).

1.3.2 Ministerial conditions – Western Australian Government

The conditions of approval from the Western Australian Government (MS 1078) and how they are addressed in this Flora and Vegetation Management Plan (FVMP) are provided in Table 1-6.

Table 1-6 Conditions of approval attached to MS 1078

Condition No.	Condition	Compliance – FVMP
10-1	The proponent shall manage the implementation of the proposal to meet the following environmental objectives: (1) Avoid direct impacts to *Calytrix creswellii*, *Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp. where practicable; and (2) Manage indirect impacts to *Calytrix creswellii, Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp.	Chapter 2, Table 2-1.
10-2	Prior to the commencement of ground disturbing activities, the proponent shall prepare and submit a Targeted Flora Survey Plan for *Calytrix Creswellii*, *Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp. to the CEO.	Chapter 2, Table 2-1. Targeted Flora Survey Plan submitted to DWER on 1 November 2017 (refer to Appendix C).
10-3	The Targeted Flora Survey Plan required by condition 10-2 shall: (1) Detail the methodology for the targeted survey. (2) Quantify the number of *Calytrix creswellii*, *Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp found within the development envelope. (3) Meet the requirements of EPA Flora and Vegetation Guidance.	Chapter 2, Table 2-1. Chapter 2, Table 2-1. Targeted Flora Survey Plan submitted to DWER on 1 November 2017 (refer to Appendix C).
10-4	The proponent shall undertake the Targeted Flora Survey in accordance with the Targeted Flora Survey Plan as required by condition 10-2.	Chapter 2, Table 2-1. Targeted Flora Survey undertaken on 12-13 November 2017. Targeted Flora Survey provided as Appendix B.
10-5	Prior to commencement of ground disturbing activities, and after completion of the Targeted Flora Survey, the proponent shall submit a Flora and Vegetation Management Plan to the CEO.	Chapter 2, Table 2-1
10-6	The Flora and Vegetation Management Plan shall include detailed information on potential direct and indirect impacts to *Calytrix creswellii*, *Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp. and include the following:	Chapter 2, Table 2-1.

Condition No.	Condition	Compliance – FVMP
	(1) Targeted flora survey results required by condition 10-4. (2) Avoidance of direct impacts where practicable. (3) Mitigation, monitoring and management measures for indirect impacts, including those for fire, dust suppression and water quality, and weeds.	
10-7	After receiving notice in writing from the CEO that the Flora and Vegetation Management Plan satisfies the requirements of condition 10-6, the proponent shall: (1) Implement the Flora and Vegetation Management Plan, or any subsequent revisions as approved by the CEO. (2) Continue to implement the Flora and Vegetation Management Plan, or any subsequent revisions as approved by the CEO, until the CEO has confirmed by notice in writing that the proponent has demonstrated the objectives specified in condition 10-1 has been met and therefore the implementation of the management plan is no longer required.	Chapter 2, Table 2-1.
10-8	The proponent may review and revise the Flora and Vegetation Management Plan or any subsequent revisions as approved by the CEO.	Chapter 2, Table 2-1.
10-9	The proponent shall review and revise the Flora and Vegetation Management Plan or any subsequently approved revisions, as and when directed by the CEO.	Chapter 2, Table 2-1.

1.4 Rationale and approach

Extensive flora and vegetation assessments have been undertaken for the PER and the Request for a Change to Proposal under the Section 45C of the EP Act (collectively referred to as the PER) and to satisfy Condition 10-4 in MS 1078. These assessments have been used to develop the FVMP. They include:

- *Sandy Ridge Project, Exploration Tenement E16/440 Level 1 Flora and Vegetation Survey* (PGV Environmental 2016) – included in Appendix A.3 of the PER.
- *Sandy Ridge Project, Exploration Tenement E16/440 Level 2 Flora and Vegetation Survey* (PGV Environmental 2016) – included in Appendix A.3 of the PER.
- *Sandy Ridge Project, Exploration Tenement E16/440 Targeted Significant Flora Survey* (PGV Environmental 2017) – submitted to WA EPA to satisfy Condition 10-4 in MS 1078.
- *Sandy Ridge Facility – Borefield Flora and Vegetation Survey 2018* (Western Botanical 2018) – included as Appendix B of the Request for a Change to Proposal under the Section 45C of the EP Act.

The key assumptions used to develop the FVMP include:

- *Lepidosperma* sp. (*Lepidosperma lyonsii* and 'unknown *Lepidosperma'*) recorded within the development envelope during the field surveys for the PER were identified as *Lepidosperma* aff. *lyonsii* during the targeted flora survey required as per Condition 10-4 in MS 1078. This

taxon is not a conservation-significant species (that is, it is not listed under the BC Act, EPBC Act or by the DBCA).

- The locations of conservation-significant flora species are as per the survey results undertaken for the PER.
- The boundaries of vegetation associations/communities are as per the survey results undertaken for the PER.

The Western Australian Herbarium is currently re-assessing the Priority status of *Lepidosperma lyonsii* and the relationship of it to *L.* aff. *lyonsii (*Anthea Jones, DBCA Species & Communities *pers. comm*. 18 June 2019). Despite this reassessment, Tellus has taken the precautionary approach and will manage *L.* aff. *lyonsii* as if it were Priority 4 until advised otherwise by DBCA.

Risks to flora and vegetation were assessed in detail using a risk-based approach in the PER (refer to Chapter 8 of the PER). The risk assessment identified hazards and the nature of the hazard (beneficial, neutral, adverse); evaluated the likelihood of the hazard occurring; and evaluated the consequence of the potential impacts (scale, geographic extent, duration, ecological and social sensitivity, reversibility, cumulative effects and likelihood of occurrence etc.). The risks identified in the risk assessment as they relate to flora and vegetation are those that are identified for mitigation/management within this FVMP (refer to Chapter 2).

1.5 Index of Biodiversity Surveys for Assessments (IBSA)

If any further biological surveys are conducted on-site related to MS 1078, survey data will be submitted in accordance with IBSA requirements.

2 ENVIRONMENTAL MANAGEMENT PLAN PROVISIONS/REQUIREMENTS

2.1 Flora and vegetation provisions/requirements

The flora and vegetation provisions/requirements that will be implemented during construction and operation of the Sandy Ridge Facility are listed in Table 2-1. These include:

- Condition 10-1 through Condition 10-9 of MS 1078.
- Commitments made by Tellus in the PER.
- Best practice mitigation/management measures.

Roles and responsibilities as they relate to these provisions/requirements are detailed in Appendix D.

Table 2-1 Provisions/requirements of FVMP

Reference (MS 1078/PER)	Provision/requirements	How to implement	When to implement	Responsibility	Environmental criteria (trigger/threshold level)	Response actions (trigger level/threshold contingency actions)	Monitoring	Reporting	Outcome
Pre-development provisions/requirements									
Targeted surveys for conservation-significant species									
- Condition 10-2 MS 1078 - Section 10.2.4 of PER.	Prepare and submit a Targeted Flora Survey Plan for *Calytrix Creswellii*, *Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp. to the CEO.	Suitably qualified biologists/ecologists to prepare and submit a Targeted Flora Survey Plan to CEO.	Pre-construction.	Tellus Perth Manager – HSECQ.	N/A. Targeted Flora Survey Plan submitted to DWER on 1 November 2017.	N/A	N/A	N/A	Record of the locations of *Calytrix Creswellii*, *Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp. recorded within and in the vicinity of the development envelope.
Condition 10-3 MS 1078.	Ensure that the Targeted Flora Survey Plan required by Condition 10-2 of MS 1078: (1) Details the methodology for the targeted survey. (2) Quantifies the number of *Calytrix creswellii*, *Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp. found within the development envelope. (3) Meets the requirements of EPA Flora and Vegetation Guidance.	Suitably qualified biologists/ecologists to prepare and submit a Targeted Flora Survey Plan to CEO.	Pre-construction.	Tellus Perth Manager – HSECQ.	N/A. Targeted Flora Survey Plan submitted to DWER on 1 November 2017.	N/A	N/A	N/A	Record of the location of *Calytrix Creswellii*, *Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp. recorded within and in the vicinity of the development envelope.
Condition 10-4 MS 1078.	Undertake Targeted Flora Survey in accordance with the Targeted Flora Survey Plan as required by Condition 10-2 of MS 1078.	Suitably qualified biologists/ecologists to undertake Targeted Flora Survey in accordance with approved Targeted Flora Survey Plan.	Pre-construction.	Tellus Perth Manager – HSECQ.	N/A. Targeted Flora Survey undertaken on 12-13 November 2017. Targeted Flora Survey provided as Appendix C.	N/A	N/A	N/A	Record of the location of *Calytrix Creswellii*, *Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp. recorded within and in the vicinity of the development envelope.
Flora and Vegetation Management Plan									
Condition 10-5 MS 1078.	Submit Flora and Vegetation Management Plan to the CEO prior to the commencement of ground disturbing activities, and after completion of the Targeted Flora Survey.	Submit FVMP to the CEO.	Pre-construction.	Tellus Perth Manager – HSECQ	Non-compliance with Condition 10-5 MS 1078.	Submit FVMP to CEO.	N/A	N/A	Avoid disturbance to flora and vegetation outside of the approved disturbance footprint during construction and operation; and avoid direct and indirect impacts to conservation-significant species during construction and operation.
Condition 10-6 MS 1078.	Include detailed information on potential direct and indirect impacts to *Calytrix creswellii*, *Lepidosperma lyonsii*, and the	Ensure the required details are included within the Flora and Vegetation Management Plan.	Pre-construction.	Tellus Perth Manager – HSECQ.	Refer to Section 1.2.2, and Appendix B of this FVMP.	N/A	N/A	N/A	Avoid disturbance to flora and vegetation outside of the approved

Reference (MS 1078/PER)	Provision/requirements	How to implement	When to implement	Responsibility	Environmental criteria (trigger/threshold level)	Response actions (trigger level/threshold contingency actions)	Monitoring	Reporting	Outcome
	undescribed *Lepidosperma* sp. within the Flora and Vegetation Management Plan. Include the following information: (1) Targeted flora survey results required by condition 10-4 of MS 1078. (2) Avoidance of direct impacts where practicable. (3) Mitigation, monitoring and management measures for indirect impacts, including those for fire, dust suppression and water quality, and weeds.								disturbance footprint during construction and operation; and avoid direct and indirect impacts to conservation-significant species during construction and operation.
Condition 10-7 MS 1078.	Ensure that notice in writing is received from the CEO that the Flora and Vegetation Management Plan satisfies the requirements of Condition 10-6 of MS 1078. Then: (1) Implement the Flora and Vegetation Management Plan, or any subsequent revisions as approved by the CEO. (2) Continue to implement the Flora and Vegetation Management Plan, or any subsequent revisions as approved by the CEO, until the CEO has confirmed by notice in writing that the proponent has demonstrated the objectives specified in Condition 10-1 of MS 1078 has been met and therefore the implementation of the management plan is no longer required.	- Proponent to ensure that notice in writing is received that the Flora and Vegetation Management Plan satisfies the requirements of Condition 10-6 of MS 1078. Append approval to Flora and Vegetation Management Plan. - Implement Flora and Vegetation Management Plan throughout construction and operation of the Sandy Ridge Facility.	Pre-construction, construction, operation.	Tellus Perth Manager – HSECQ.	- Notice in writing is not received by CEO regarding compliance with Condition 10-6 of MS 1078. - FVMP is not implemented during construction or operation.	-Liaise with CEO regarding compliance with Condition 10-6 of MS 1078. - Investigation raised in line with incident report procedure housed within EMS. - Cause investigated as part of the procedure and addressed to ensure the likelihood of reoccurrence is reduced. - If significant incident, report to appropriate agency in WA Government. - Commence rehabilitation immediately.	-Inspections carried out as detailed in Table 6-1. - Monitoring carried out as detailed in Table 6-2.	- Reporting carried out as detailed in Table 2-4..	Avoid disturbance to flora and vegetation outside of the approved disturbance footprint during construction and operation; and avoid direct and indirect impacts to conservation-significant species during construction and operation.
Condition 10-8 MS 1078.	Review and revise the Flora and Vegetation Management Plan or any subsequent revisions as approved by the CEO.	Revisions to Flora and Vegetation Management Plan to be approved by the CEO.	Pre-construction, construction, operation.	Tellus Perth Manager – HSECQ.	N/A	N/A	N/A	N/A	Avoid disturbance to flora and vegetation outside of the approved disturbance footprint during construction and operation; and avoid direct and indirect impacts to conservation-significant species during construction and operation.
Condition 10-9 MS 1078.	Review and revise the Flora and Vegetation Management Plan or any subsequent approved revisions, as and when directed by the CEO.	Revisions to Flora and Vegetation Management Plan to be made when directed by the CEO.	Pre-construction, construction, operation.	Tellus Perth Manager – HSECQ.	N/A	N/A	N/A	N/A	Avoid disturbance to flora and vegetation outside of the approved disturbance footprint

Reference (MS 1078/PER)	Provision/requirements	How to implement	When to implement	Responsibility	Environmental criteria (trigger/threshold level)	Response actions (trigger level/threshold contingency actions)	Monitoring	Reporting	Outcome
									during construction and operation; and avoid direct and indirect impacts to conservation-significant species during construction and operation.
Pre-construction surveys for conservation-significant species									
Section 7.2.5 of Request for Change of Proposal under Section 45C of EP Act.	Undertake pre-construction surveys for the eight conservation-significant flora species that may possibly occur within the groundwater abstraction area and vicinity. The species include: (1) *Austrostipa blackii.* (2) *Cryptandra crispula.* (3) *Elachanthus pusillus.* (4) *Gompholobium cinereum.* (5) *Goodenia jaurdiensis.* (6) *Hibbertia lepidocalyx* subsp. *tuberculata.* (7) *Notisia intonsa.* (8) *Stenanthemum newbeyi*	Suitably qualified biologists/ecologists to undertake pre-construction surveys for conservation-significant species within the groundwater abstraction area.	Pre-construction	Tellus Perth Manager – HSECQ.	- Additional conservation-significant species are recorded within the groundwater abstraction area.	- Determine if avoidance is possible. If so, erect exclusion fencing around conservation-significant species.	- Quarterly inspection of exclusion demarcation around conservation-significant flora species to ensure it is intact (refer to Table 6-1). - Weekly monitoring of vegetation removal in active areas and establishment of no-go zones/exclusion demarcation and ongoing post vegetation removal through to site operation (refer to Table 6-2).	- Monthly environmental report prepared in relation to compliance with environmental management controls on site. Include results of inspections and monitoring. Identify any improvement opportunities or non-conformances (refer to Table 2-4).	Avoid (where practicable) conservation-significant species located within the groundwater abstraction area.
Direct impact provisions/requirements									
Vegetation clearing									
Section 10.2.4 of PER.	Develop and implement specific vegetation clearing procedures to minimise impacts on flora (including conservation significant flora). Procedures to include: (1) Delineation of clearing boundaries with high visibility flagging tape. (2) Clearing authorisation requirements. (3) Supervision of clearing activities by environmental staff.	Implement Vegetation Clearing Procedures (refer to Appendix E). Clearing to be supervised by HSEQ Environmental Personnel or suitable delegate.	Pre-construction.	Tellus Perth Manager – HSECQ,	- Vegetation Clearing Procedures not implemented.	- Investigation raised in line with incident report procedure housed within EMS. - Cause investigated as part of the procedure and addressed to ensure the likelihood of reoccurrence is reduced. - If significant incident, report to appropriate agency in WA Government. - Commence rehabilitation immediately.	- Prior to shift commencement, inspect flora and vegetation mitigation/management controls, where applicable. Works not to commence unless inspections are found to be satisfactory (refer to Table 6-1). - Newly cleared areas will be inspected at the end of each shift, including an inspection of demarcation of conservation-significant flora species to ensure it is in-tact (refer to Table 6-1).	- Monthly environmental report prepared in relation to compliance with environmental management controls on site. Include results of inspections and monitoring. Identify any improvement opportunities or non-conformances (refer to Table 2-4). - Annual report prepared in relation to compliance with FVMP (refer to Table 2-4).	Avoid disturbance to flora and vegetation outside of the approved disturbance footprint during construction; and avoid direct and indirect impacts to conservation-significant species during construction.
Section 10.2.4 of the PER	Ensure that clearing is kept to a minimum and undertaken progressively, where possible.	- Vegetation removal will be undertaken when construction works are to be undertaken. Vegetation removal will be staged and deferred until necessary.	Construction.	Tellus Perth Manager – HSECQ, and contractor	- Vegetation cleared more than 14 days prior to construction activities in the area.	- Investigation raised in line with incident report procedure housed within EMS. - Cause investigated as part of the procedure and addressed to ensure the	- Ongoing monitoring of vegetation clearing, ensuring vegetation clearing is undertaken progressively, prior to construction (and not undertaken in advance of	- Monthly environmental report prepared in relation to compliance with environmental management controls on site. Include	Maintain flora and vegetation within the approved disturbance footprint for as long as possible during construction.

Reference (MS 1078/PER)	Provision/requirements	How to implement	When to implement	Responsibility	Environmental criteria (trigger/threshold level)	Response actions (trigger level/threshold contingency actions)	Monitoring	Reporting	Outcome
		- Clearing to be supervised by HSEQ Environmental Personnel or suitable delegate.				likelihood of reoccurrence is reduced.	construction) (refer to Table 6-2).	results of inspections and monitoring. Identify any improvement opportunities or non-conformances (refer to Table 2-4). - Annual report prepared in relation to compliance with FVMP (refer to Table 2-4).	
Exclusion zones (conservation-significant species)									
- Condition 10-2 MS 1078 - Section 10.2.4 of PER - Section 7.2.5 of Request for Change of Proposal under Section 45C of EP Act.	Avoid direct and indirect impacts to recorded populations of *Calytrix creswellii* located within the mine infrastructure area and *Banksia arborea* located within the groundwater abstraction area.	- Educate contractors of the presence of the species via inductions, toolbox talks, training (refer to Chapter 7). - Physically demarcate plants in the field and record plant locations on clearing plans to avoid accidental clearing. - Implement Vegetation Clearing Procedures (refer to Appendix E). - Implement procedures outlined in this plan with regards to weeds and also those procedures outlined in the Bushfire Management Plan, Soil and Water Management Plan and Air Quality Management Plan to manage indirect impacts to conservation-significant species.	Pre-construction, construction, operation.	Sandy Ridge Site Technician and Contractor.	- Clearing of recorded populations of *Calytrix creswellii* and *Banksia arborea*.	- Investigation raised in line with incident report procedure housed within EMS. - Cause investigated as part of the procedure and addressed to ensure the likelihood of reoccurrence is reduced. - Report incident to appropriate agency in WA Government.	- Weekly inspection of exclusion demarcation around conservation-significant flora species to ensure it is in-tact (refer to Table 6-1) in active areas. - Weekly vegetation retention monitoring (conservation-significant species, in particular) (refer to Table 6-2) in active areas.	- Monthly environmental report prepared in relation to compliance with environmental management controls on site. Include results of inspections and monitoring. Identify any improvement opportunities or non-conformances (refer to Table 2-4). - Annual report prepared in relation to compliance with FVMP (refer to Table 2-4).	Avoid direct and indirect impacts to *Calytrix creswellii* and *Banksia arborea* .
- Condition 10-2 MS 1078 - Section 10.2.4 of the PER.	Avoid direct and indirect impacts to recorded populations of *Lepidosperma* aff. *lyonsii,* where practicable. Note. *Lepidosperma* sp. *(Lepidosperma lyonsii* and 'unknown *Lepidosperma')* recorded within the development envelope during the field surveys for the PER were later identified as *Lepidosperma* aff. *lyonsii.* This species is not a conservation-significant species (i.e., it is not listed under the BC Act, EPBC Act or by the DBCA).	Educate contractors of the presence of the species via inductions, toolbox talks, training (refer to Chapter 7). Physically demarcate plants in the field and record plant locations on clearing plans to avoid accidental clearing. Implement Vegetation Clearing Procedures (refer to Appendix E). Implement procedures outlined in this plan with regards to weeds and also those	Pre-construction, construction, operation.	Sandy Ridge Site Technician and Contractor.	- Unnecessary clearing of recorded populations of *Lepidosperma* aff. *lyonsii.*	- Investigation raised in line with incident report procedure housed within EMS. - Cause investigated as part of the procedure and addressed to ensure the likelihood of reoccurrence is reduced.	- Weekly inspection of exclusion demarcation around conservation-significant flora species to ensure it is in-tact (refer to Table 6-1) in active areas. - Weekly vegetation retention monitoring (conservation-significant species, in particular) (refer to Table 6-2) in active areas.	- Monthly environmental report prepared in relation to compliance with environmental management controls on site. Include results of inspections and monitoring. Identify any improvement opportunities or non-conformances (refer to Table 2-4). - Annual report prepared in relation to compliance with	Avoid direct and indirect impacts to *Lepidosperma* aff. *lyonsii.*, where practicable.

Reference (MS 1078/PER)	Provision/requirements	How to implement	When to implement	Responsibility	Environmental criteria (trigger/threshold level)	Response actions (trigger level/threshold contingency actions)	Monitoring	Reporting	Outcome
		procedures outlined in the Bushfire Management Plan, Soil and Water Management Plan and Air Quality Management Plan to manage indirect impacts to *Lepidosperma* aff. *lyonsii.*						FVMP (refer to Table 2-4).	
Indirect impact provisions/requirements									
Vegetation health									
Section 10.2.4 of PER.	Monitor vegetation health either side of the surface water diversion levees to determine if water ponding or water starvation is occurring and adversely affecting vegetation.	Physically inspect vegetation and record signs of water ponding/water starvation on a weekly basis.	Construction, operation.	Sandy Ridge Site Technician.	Vegetation health monitoring results show a significant decrease in vegetation health at monitoring sites in the vicinity of the surface water diversion levees.	- Investigation raised in line with incident report procedure housed within EMS. - Cause investigated as part of the procedure and addressed to ensure the likelihood of reoccurrence is reduced. - If significant, remediation actions to be undertaken and monitoring to be increased in frequency, if appropriate.	Inspection of surface water diversion levees after significant rain events to determine if water starvation or water ponding is occurring (refer to Table 2-2).	- Monthly environmental report prepared in relation to compliance with environmental management controls on site. Include results of inspections and monitoring. Identify any improvement opportunities or non-conformances (refer to Table 2-4). - Annual report prepared in relation to compliance with FVMP (refer to Table 2-4).	Avoid indirect impacts to flora and vegetation from water pooling/water starvation.
Section 10.2.4 of PER.	Conduct weekly inspections of leak detection telemetry to confirm there are no leaks along the water pipeline from Carina to Site and carry out any necessary repairs.	Inspect leak detection telemetry on a weekly basis. Make necessary repairs, if needed.	Construction, operation.	Sandy Ridge Site Technician.	Vegetation health monitoring results show a significant decrease in vegetation health at monitoring sites in the vicinity of the water pipeline.	- Investigation raised in line with incident report procedure housed within EMS. - Cause investigated as part of the procedure and addressed to ensure the likelihood of reoccurrence is reduced. - If significant, remediation actions to be undertaken and monitoring to be increased in frequency, if appropriate.	Weekly inspection of water pipeline telemetry to identify leaks and to conduct necessary repairs (refer to Table 2-2).	- Monthly environmental report prepared in relation to compliance with environmental management controls on site. Include results of inspections and monitoring. Identify any improvement opportunities or non-conformances (refer to Table 2-4). - Annual report prepared in relation to compliance with FVMP (refer to Table 2-4).	Avoid indirect impacts to flora and vegetation from leaks of saline water.
Best practice.	Monitor vegetation health in vicinity of saline water dust suppression to determine if dust suppression is adversely affecting vegetation.	Physically inspect areas subject to saline dust suppression to record adverse effects on flora on a weekly basis.	Construction.	Sandy Ridge Site Technician.	Vegetation health monitoring results show a significant decrease in vegetation health at monitoring sites in the vicinity of dust suppression.	- Investigation raised in line with incident report procedure housed within EMS. - Cause investigated as part of the procedure and addressed to ensure the	Weekly monitoring of areas subject to dust suppression (refer to Table 2-2).	- Monthly environmental report prepared in relation to compliance with environmental management controls on site. Include	Avoid indirect impacts to flora and vegetation from dust suppression using saline water.

Reference (MS 1078/PER)	Provision/requirements	How to implement	When to implement	Responsibility	Environmental criteria (trigger/threshold level)	Response actions (trigger level/threshold contingency actions)	Monitoring	Reporting	Outcome
						likelihood of reoccurrence is reduced. - If significant, remediation actions to be undertaken and monitoring to be increased in frequency, if appropriate.		results of inspections and monitoring. Identify any improvement opportunities or non-conformances (refer to Table 2-4). - Annual report prepared in relation to compliance with FVMP (refer to Table 2-4).	
Best practice.	Adhere to the designated traffic access and transport routes and ensure that vehicle movements (including contractors and sub-contractors) are compliant with the approved transport routes.	Physically observe from strategic locations on a weekly basis.	Construction, operation.	Sandy Ridge Site Technician.	Non-conformance with designated traffic access and transport routes.	- Investigation raised in line with incident report procedure housed within EMS. - Cause investigated as part of the procedure and addressed to ensure the likelihood of reoccurrence is reduced.	Weekly inspection of adherence to the designated traffic access and transport routes (this may include observation from strategic locations) (refer to Table 2-2.	- Monthly environmental report prepared in relation to compliance with environmental management controls on site. Include results of inspections and monitoring. Identify any improvement opportunities or non-conformances (refer to Table 2-4). - Annual report prepared in relation to compliance with FVMP (refer to Table 2-4).	Avoid indirect impacts to flora and vegetation from traffic movements within the development envelope.
Weed management									
Best practice.	Implement weed-specific site inductions for employees, contractors and sub-contractors.	Include a weed-specific module in site inductions and include the requirement to enter/exit the site through recognised vehicle access points; requirement to ensure vehicles/mobile equipment are clear of mud, soil and seeds prior to entering the site, with an accompanying declaration during construction; and the requirement that all on-site personnel are to use existing approved roads and tracks only.	Construction, operation.	Sandy Ridge Site Technician.	Weeds recorded within (or in close proximity) of the development envelope that were not previously recorded on-site.	If weeds become established on-site, seek advice on the most effective control means for weed species from the appropriate agency within the WA Government. Implement weed control and record weed control activities (including weed species, location, date and type of control methods used) via a Weed Control Form within the EMS.	-Spot inspections of vehicles/plant arriving to site -Weekly monitoring of weeds (if applicable). To be undertaken prior to implementation of control measures and ongoing post weed control (if required) through to site operation (refer to Table 2-3).	- Monthly environmental report prepared in relation to compliance with environmental management controls on site. Include results of inspections and monitoring. Identify any improvement opportunities or non-conformances (refer to Table 2-4). - Annual report prepared in relation to compliance with FVMP (refer to Table 2-4).	Avoid introducing weeds on-site during construction and operation.

Reference (MS 1078/PER)	Provision/requirements	How to implement	When to implement	Responsibility	Environmental criteria (trigger/threshold level)	Response actions (trigger level/threshold contingency actions)	Monitoring	Reporting	Outcome
Best practice.	Ensure mobile equipment is clean of mud, soil and seeds prior to entry to site.	Ensure all vehicles and plant arriving on site are clear of mud, soil and seeds prior to entry to site. Track through a Weed & Seed inspection form.	Construction.	Contractor.	Weeds recorded within (or in close proximity) of the development envelope that were not previously recorded on-site.	If weeds become established on-site, seek advice on the most effective control means for weed species from the appropriate agency within the WA Government. Implement weed control and record weed control activities (including weed species, location, date and type of control methods used) via a Weed Control Form within the EMS.	Weekly monitoring of weeds (if applicable). To be undertaken prior to implementation of control measures and ongoing post weed control (if required) through to site operation (refer to Table 2-3).	- Monthly environmental report prepared in relation to compliance with environmental management controls on site. Include results of inspections and monitoring. Identify any improvement opportunities or non-conformances (refer to Table 2-4). - Annual report prepared in relation to compliance with FVMP (refer to Table 2-4).	Avoid introducing weeds on-site during construction.
Best practice.	Inspect earthworks equipment prior to commencement of work to ensure that they have been washed down and are clean of mud, soil and seeds.	Prior to use, inspect earthworks equipment/vehicles to ensure that they are clean of mud, soil and seeds.	Construction.	Contractor.	Weeds recorded within (or in close proximity) of the development envelope that were not previously recorded on-site.	If weeds become established on-site, seek advice on the most effective control means for weed species from the appropriate agency within the WA Government. Implement weed control and record weed control activities (including weed species, location, date and type of control methods used) via a Weed Control Form within the EMS.	Weekly monitoring of weeds (if applicable). To be undertaken prior to implementation of control measures and ongoing post weed control (if required) through to site operation (refer to Table 2-3).	- Monthly environmental report prepared in relation to compliance with environmental management controls on site. Include results of inspections and monitoring. Identify any improvement opportunities or non-conformances (refer to Table 2-4). - Annual report prepared in relation to compliance with FVMP (refer to Table 2-4).	Avoid introducing weeds on-site during construction.
Best practice.	Monitor construction sites and operational areas regularly for weed species.	Inspect construction sites (including stockpiles) weekly for weed species. Record the locations of any populations on a Weed Control Form (refer to Appendix F). Weed control forms housed within Environmental Management System.	Construction, operation.	Sandy Ridge Site Technician.	Weeds recorded within (or in close proximity) of the development envelope that were not previously recorded on-site.	If weeds become established on-site, seek advice on the most effective control means for weed species from the appropriate agency within the WA Government. Implement weed control and record weed control activities (including weed species, location, date and type of control methods used) via a Weed Control Form within the EMS.	Weekly monitoring of weeds (if applicable). To be undertaken prior to implementation of control measures and ongoing post weed control (if required) through to site operation (refer to Table 2-3).	- Monthly environmental report prepared in relation to compliance with environmental management controls on site. Include results of inspections and monitoring. Identify any improvement opportunities or non-conformances (refer to Table 2-4).	Avoid introducing weeds on-site during construction and operation.

Reference (MS 1078/PER)	Provision/requirements	How to implement	When to implement	Responsibility	Environmental criteria (trigger/threshold level)	Response actions (trigger level/threshold contingency actions)	Monitoring	Reporting	Outcome
								- Annual report prepared in relation to compliance with FVMP (refer to Table 2-4).	
Best practice.	Control weed species, if weeds become established on-site.	If weeds become established on-site, seek advice on the most effective control means for weed species from the appropriate agency within the WA Government. Implement weed control and record weed control activities (including weed species, location, date and type of control methods used) via a Weed Control Form within the Environmental Management System.	Construction, operation.	Sandy Ridge Site Technician.	Weeds recorded within (or in close proximity) of the development envelope that were not previously recorded on-site.	If weeds become established on-site, seek advice on the most effective control means for weed species from the appropriate agency within the WA Government. Implement weed control and record weed control activities (including weed species, location, date and type of control methods used) via a Weed Control Form within the EMS.	Weekly monitoring of weeds (if applicable). To be undertaken prior to implementation of control measures and ongoing post weed control (if required) through to site operation (refer to Table 2-3).	- Monthly environmental report prepared in relation to compliance with environmental management controls on site. Include results of inspections and monitoring. Identify any improvement opportunities or non-conformances (refer to Table 2-4). - Annual report prepared in relation to compliance with FVMP (refer to Table 2-4).	Avoid introducing weeds on-site during construction and operation.
Bushfire management									
Section 10.2.4 of PER.	Develop and implement Bushfire Risk Management Plan. Reduce bushfire related impacts to flora and vegetation by (among other measures): - Developing fire breaks around assets (prevention). - Assigning designated smoking areas (prevention). - Prohibiting open flames within 20 m of flammable material (prevention). - Ensuring that any hot works to be undertaken are done so only with a permit (prevention). - Undertaking bushfire load assessments annually to assess bushfire potential and the need for pro-active controls (prevention). - Implementing bushfire suppression techniques in case of bushfire (suppression). Refer to Bushfire Risk Management Plan in Appendix G.	Implement the steps required to prevent bushfires outlined in the Bushfire Management Plan. Implement the Emergency Response Management Plan.	Pre-construction, construction, operation.	Tellus Perth Manager – HSECQ. Sandy Ridge Site Technician and Contractor.	Bushfire resulting from construction activities.	- Investigation raised in line with incident report procedure housed within EMS. - Cause investigated as part of the procedure and addressed to ensure the likelihood of reoccurrence is reduced. - Bushfire reported to appropriate agency within WA Government.	Refer to Bushfire Risk Management Plan.	Refer to Bushfire Risk Management Plan.	Avoid bushfires during construction and operation.
Dust management									

Reference (MS 1078/PER)	Provision/requirements	How to implement	When to implement	Responsibility	Environmental criteria (trigger/threshold level)	Response actions (trigger level/threshold contingency actions)	Monitoring	Reporting	Outcome
Section 10.2.4 of PER.	Develop and implement Air Quality Management Plan. Reduce dust related impacts to flora and vegetation by: - Limiting vehicle speeds to reduce dust generation. - Damping down earthworks during dry, windy weather conditions. - Cover loads. - Keeping stockpiles to a minimum height using gentle slopes. Refer to Air Quality Management Plan in Appendix H.	Implement the steps required to minimise adverse effects of dust on vegetation outlined in the Air Quality Management Plan.	Pre-construction, construction, operation.	Tellus Perth Manager – HSECQ Sandy Ridge Site Technician and Contractor.	Significant increase in dust levels from construction activities.	- Investigation raised in line with incident report procedure housed within EMS. - Cause investigated as part of the procedure and addressed to ensure the likelihood of reoccurrence is reduced.	Refer to Air Quality Management Plan.	Refer to Air Quality Management Plan.	Avoid the generation of excessive dust during construction and operation.
Soil and water management									
Best practice.	Develop and implement Erosion and Sedimentation Control Plan. Reduce sedimentation and erosion impacts to flora and vegetation by: - Damping down earthworks during dry, windy weather conditions. - Cover loads. - Keeping stockpiles to a minimum height using gentle slopes. - Revegetating long-term stockpiles. Refer to Erosion and Sedimentation Management Plan in Appendix I.	Implement the steps required to minimise adverse effects of soil and water contamination on vegetation outlined in the Erosion and Sedimentation Control Plan.	Pre-construction, construction, operation.	Tellus Perth Manager – HSECQ Sandy Ridge Site Technician and Contractor.	Significant erosion and sedimentation from construction activities.	- Investigation raised in line with incident report procedure housed within EMS. - Cause investigated as part of the procedure and addressed to ensure the likelihood of reoccurrence is reduced.	Refer to Erosion and Sedimentation Control Plan.	Refer to Erosion and Sedimentation Control Plan.	Avoid erosion and sedimentation during construction and operation.

2.2 Inspections and monitoring

Site inspections and monitoring will be undertaken by contractors and by a suitably qualified Site HSE Officer (e.g. Sandy Ridge Site Technician or HSECQ Manager – Perth).

Specific environmental inspections, including timing and responsibilities are provided in Table 2-1. The findings (including photographs) of the environmental inspections will be recorded and housed within an Environmental Management System (EMS) (refer to Appendix J). Any improvement opportunities or non-conformances will be reported on a monthly basis via the EMS.

Table 2-2 Flora and vegetation inspections – Sandy Ridge Facility

Requirement	Timing	Responsibility
Inspect flora and vegetation mitigation/management controls, where applicable. Works not to commence unless inspections are found to be satisfactory.	Prior to shift commencement.	Contractor or Sandy Ridge Site Technician.
Prior to arrival onsite, inspect earthworks equipment/vehicles to ensure that they have been washed down and are clean of mud, soil and seeds.	Prior to mobilisation to site.	Contractor or Sandy Ridge Site Technician.
Inspect vegetation clearing boundaries in active clearing area to ensure they are intact.	Daily	Sandy Ridge Site Technician.
Inspect exclusion demarcation around conservation-significant flora species to ensure it is in-tact.	Daily when clearing activities are occurring in the area, monthly post clearing.	Sandy Ridge Site Technician.
Inspect surface water diversion levees to determine if water starvation or water ponding is occurring.	To be completed within 1-day post rain events.	Sandy Ridge Site Technician.
Inspect adherence to the designated traffic access and transport routes (this may include observation from strategic locations).	Weekly.	Sandy Ridge Site Technician.
Inspect water pipeline to identify leaks and to conduct necessary repairs.	Weekly.	Sandy Ridge Site Technician.

Monitoring requirements, including timing and responsibilities are provided in Table 2-2.

The results of the monitoring will be kept in a written record within the EMS. This will include reporting opportunities of non-conformances on a monthly basis.

Table 2-3 Flora and vegetation monitoring requirements – Sandy Ridge Facility

Requirement	Timing	Responsibility
Vegetation retention monitoring (conservation-significant species, in particular).	Daily during clearing. Prior to vegetation removal, no-go zones/exclusion boundaries will be established where conservation significant species are close to areas to be cleared. Compliance with no-go zones/exclusion boundaries will be monitored daily during clearing.	Sandy Ridge Site Technician.

Requirement	Timing	Responsibility
	Weekly post vegetation removal until the end of construction.	
Vegetation and conservation significant species condition monitoring.	Quarterly during construction then annually in Spring during operations.	HSECQ Manager - Perth
Monitoring of weeds (if applicable).	Weekly. Prior to implementation of control measures and ongoing post weed control (if required) through to site operation.	Sandy Ridge Site Technician.
Monitoring of vegetation clearing., ensuring vegetation clearing is undertaken progressively, prior to construction (and not undertaken in advance of construction)	Daily. Undertaken, through to the cessation of clearing activities.	Sandy Ridge Site Technician.
Monitoring of surface water diversion levees.	Weekly. Prior to installation of diversion levees and ongoing post installation of diversion levees through to site operation.	Sandy Ridge Site Technician.
Monitoring areas subject to dust suppression.	Weekly. Post dust suppression.	Sandy Ridge Site Technician.

2.2.1 Vegetation and Conservation Species Condition Monitoring

Tellus propose to monitor the condition of vegetation and conservation significant species that are adjacent to the development footprint (see row 2 in Table 2-3). During construction, this monitoring will be quarterly. Once construction is complete and operations are underway, monitoring will be annually in Spring.

Condition of Vegetation

Measurable environmental criteria utilising a Vegetation Condition Scale recording the condition of vegetation at reference points adjacent to infrastructure (Monitored Vegetation) and comparing this to 'control' sites within the same vegetation unit, but at some distance from infrastructure will be implemented. A suggested scale is presented below:

Score Interpretation

0 Vegetation dead. Cause of vegetation death is to be identified if possible

1 Vegetation stressed, reduced foliar cover, lack of flowering and fruiting. Stressor is to be identified if possible.

2 Vegetation healthy and normal for prevailing seasonal conditions, in a vegetative state.

3 Vegetation flowering and fruiting and normal for prevailing seasonal conditions.

Trigger Criteria

If Monitored Vegetation in close proximity to infrastructure is on average one or more Scores below the average Control condition of similar vegetation, the reasons for such a difference in condition will be investigated.

Threshold Criteria

If more than 10% of the Monitored Vegetation in close proximity to infrastructure is on average one or more Scores below the average Control condition of similar vegetation, this will be considered as triggering the Threshold Criteria.

Response Action

If a Trigger Criterion is met for any Monitored Vegetation, the factors contributing to a reduced Condition of that Monitored Vegetation will be investigated. If the reduction in Condition is attributable to impacts from Infrastructure development or operational factors, mechanisms to address the impacts will be investigated and implemented.

Threshold Contingency Actions

If Threshold Criteria are exceeded for any Monitored Vegetation, impacts contributing to the reduction in Condition of the Monitored Vegetation will be implemented within 7 days.

A monitoring protocol utilising the above, repeated on a quarterly basis with a commensurate standardised photographic record at each site, will be used to assess Vegetation Condition over time.

Note that the Keighery (1994) scale is inappropriate for such a measure and is only broadly applicable for vegetation description in baseline vegetation surveys.

Condition of Conservation Species

The condition of Conservation Significant Flora species adjacent to infrastructure will be monitored in a similar fashion to Vegetation Condition. Populations of Lepidosperma lyonsii, Lepidosperma aff. lyonsii and Calytrix creswellii (Monitored Species) occurring in close proximity to infrastructure will be mapped, plants labelled and photographed in a standardised format for repetitive assessment on a quarterly basis using the following scale:

Score	Interpretation
0	Target species dead. Cause of plant death is to be identified if possible.

1 Target species stressed, reduced foliar cover, lack of flowering and fruiting. Stressor is to be identified if possible.

2 Target species healthy and normal for prevailing seasonal conditions, in a vegetative state.

3 Target species flowering and fruiting and normal for prevailing seasonal conditions.

Trigger Criteria

If a Monitored Species in close proximity to infrastructure is on average one or more Scores below the average Control condition, the reasons for such a difference in condition will be investigated.

Threshold Criteria

If more than 10% of the population of a Monitored Species in close proximity to infrastructure is on average one or more Scores below the average Control condition, this will be considered as triggering the Threshold Criteria.

Response Action

If a Trigger Criterion is met for any Monitored Species, the factors contributing to a reduced Condition Assessment will be investigated. If the reduction in Condition is attributable to impacts from Infrastructure development or operation, mechanisms to address the impacts will be investigated and implemented.

Threshold Contingency Actions

If Threshold Criteria are exceeded for any Monitored Species, impacts contributing to the reduction in Condition of the Monitored Species will be implemented within 7 days.

A monitoring protocol utilising the above, repeated on a quarterly basis with a commensurate standardised photographic record at each site, will be used to assess the Condition of Monitored Species over time.

2.3 Reporting

Information on flora and vegetation management activities will be included in a monthly Environmental Report. This report will be prepared by the HSECQ department within Tellus. The report will outline compliance with the management controls on-site, the results of inspections and monitoring, and any improvement opportunities or non-conformances.

Compliance with this FVMP will be audited annually and reported in the Compliance Assessment Report required by condition 4 of MS 1078.

This report will be prepared by the HSECQ department within Tellus. A summary of reporting requirements required under this FVMP is provided in Table 2-3.

Table 2-4 Flora and vegetation reporting requirements – Sandy Ridge Facility

Requirement	Timing	Responsibility
Prepare environmental report in relation to compliance with environmental management controls on site. Include results of inspections and monitoring. Identify any improvement opportunities or non-conformances.	Monthly.	Tellus Perth Manager – HSECQ
Prepare annual report in relation to compliance with the Flora and Vegetation Management Plan (consistent with the approved Compliance Assessment Plan).	Annually.	Tellus Perth Manager – HSECQ
Report any non-compliance within seven days of the non-compliance being known as per condition 4-5 of MS 1078.	Within 7 days	Tellus Perth Manager – HSECQ
Report pollution incidents resulting in offsite impacts to the appropriate agency within the WA Government.	As required.	All.
Record complaints and stakeholder interactions.	As required.	All.

3 ADAPTIVE MANAGEMENT AND REVIEW OF ENVIRONMENTAL MANAGEMENT PLAN

3.1 Review

As per Condition 10-8 of MS 1078, this FVMP will be reviewed and revised periodically. At a minimum, this FVMP will be revised to address flora and vegetation management aspects related to rehabilitation and closure no less than five years prior to the rehabilitation of the first cell.

3.2 Continuous improvement

Continuous improvement of this FVMP will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement. The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance.
- Determine the cause or causes of non-conformances and deficiencies.
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies.
- Verify the effectiveness of the corrective and preventative actions.
- Document any changes in procedures resulting from process improvement.
- Make comparisons with objectives and targets.

3.3 Change management

Further refinements may result from detailed design refinement or changes identified during construction and operation. Any design changes or changes in the scope of works will be managed using Tellus' Change Management Procedure (DOCID-88105952-697).

4 STAKEHOLDER CONSULTATION

A summary of the stakeholder and government authority consultation completed to date which has informed the FVMP is presented in Table 4-1. Consultation will continue with the relevant stakeholders and government agencies where there is a variation to the FVMP. This consultation will be documented in the subsequent revisions of the FVMP.

Table 4-1 Stakeholder consultation summary

Stakeholder/government authority	Date	Summary
Environmental Protection Authority Services	1 November 2017	Tellus submits proposed Targeted Flora Survey Plan to Environmental Protection Authority Services.
Environmental Protection Authority Services	3 November 2017	Environmental Protection Authority Services provides feedback on the Targeted Flora Survey Plan to Tellus from Terrestrial Ecosystems Branch.
DWER EPA Services	2 March 2018	Tellus summarises consultation between Tellus and Environmental Protection Authority Services of DWER with the objective of avoiding duplication of a Targeted Survey for potentially conservation-significant flora at Sandy Ridge.
DWER EPA Services	14 March 2019	Meeting to provide status update on the development of management plans required to be submitted prior to commencing ground disturbance at Sandy Ridge. Tellus advised conditions 10-5 and condition 11-2 are understood to require submission, not approval of management plans prior to ground disturbance.
DWER EPA Services	2 April 2019	DWER EPA Services recommends that FVMP is compiled as per the template provided in 'Instructions on how to prepare *Environmental Protection Act 1986* Part IV Environmental Management Plans' WA EPA 2018.
DWER EPA Services	3 April 2019	Tellus requests deviation from provisions table in Chapter 2 of 'Instructions on how to prepare *Environmental Protection Act 1986* Part IV Environmental Management Plans' WA EPA 2018. Deviation required to include additional subject matter. DWER EPA Services accepts proposed deviation.

5 REFERENCES

Parks and Wildlife Service (PaWS), 2017, 'The Western Australian Herbarium. *FloraBase*.' Accessed at http://florabase.dpaw.wa.gov.au/

Western Australian Herbarium, 1998, *Banksia arborea*. Accessed at: https://florabase.dpaw.wa.gov.au/browse/profile/32685

APPENDIX A: MINISTERIAL APPROVALS

Minister for Environment; Disability Services
Deputy Leader of the Legislative Council

Statement No. 1078

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
(Environmental Protection Act 1986)

SANDY RIDGE FACILITY

Proposal: The proposal is to construct and operate a dual open cut kaolin clay mine and a near-surface geological waste repository accepting Class IV and Class V waste, approximately 75 kilometres north east of Koolyanobbing.

Proponent: Tellus Holdings Ltd
Australian Company Number 138 119 829

Proponent Address: Suite 2, Level 10, 151 Castlereagh Street
SYDNEY NSW 2000

Assessment Number: 2057

Report of the Environmental Protection Authority: 1611

Pursuant to section 45 of the *Environmental Protection Act 1986* (EP Act) it has been agreed that the proposal described and documented in Table 2 of Schedule 1 may be implemented and that the implementation of the proposal is subject to the following implementation conditions and procedures:

1 Proposal Implementation

1-1 When implementing the proposal, the proponent shall not exceed the authorised extent of the proposal as defined in Table 2 of Schedule 1, unless amendments to the proposal and the authorised extent of the proposal have been approved under the EP Act.

2 Contact Details

2-1 The proponent shall notify the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty-eight (28) days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

Published on:

Level 12, Dumas House, 2 Havelock Street, West Perth, Western Australia, 6005.
Telephone +61 8 6552 5800 Facsimile +61 8 6552 5801 Email: Minister.Dawson@dpc.wa.gov.au

3 Time Limit for Proposal Implementation

3-1 The proponent shall not commence implementation of the proposal after five (5) years from the date on this Statement, and any commencement, prior to this date, must be substantial.

3-2 Any commencement of implementation of the proposal, on or before five (5) years from the date of this Statement, must be demonstrated as substantial by providing the CEO with written evidence, on or before the expiration of five (5) years from the date of this Statement.

4 Compliance Reporting

4-1 The proponent shall prepare and maintain a Compliance Assessment Plan which is submitted to the CEO at least six (6) months prior to the first Compliance Assessment Report required by condition 4-6, or prior to implementation of the proposal, whichever is sooner.

4-2 The Compliance Assessment Plan shall indicate:

(1) the frequency of compliance reporting;

(2) the approach and timing of compliance assessments;

(3) the retention of compliance assessments;

(4) the method of reporting of potential non-compliances and corrective actions taken;

(5) the table of contents of Compliance Assessment Reports; and

(6) public availability of Compliance Assessment Reports.

4-3 After receiving notice in writing from the CEO that the Compliance Assessment Plan satisfies the requirements of condition 4-2, the proponent shall assess compliance with conditions in accordance with the Compliance Assessment Plan required by condition 4-1.

4-4 The proponent shall retain reports of all compliance assessments described in the Compliance Assessment Plan required by condition 4-1 and shall make those reports available when requested by the CEO.

4-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of that non-compliance being known.

4-6 The proponent shall submit to the CEO the first Compliance Assessment Report fifteen (15) months from the date of issue of this Statement addressing the twelve (12) month period from the date of issue of this Statement and then annually from the date of submission of the first Compliance Assessment Report, or as otherwise agreed in writing by the CEO.

The Compliance Assessment Report shall:

(1) be endorsed by the proponent's CEO or a person delegated to sign on the CEO's behalf;

(2) include a statement as to whether the proponent has complied with the conditions;

(3) identify all potential non-compliances and describe corrective and preventative actions taken;

(4) be made publicly available in accordance with the approved Compliance Assessment Plan; and

(5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1.

5 Public Availability of Data

5-1 Subject to condition 5-2, within a reasonable time period approved by the CEO of the issue of this Statement and for the remainder of the life of the proposal, the proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)) relevant to the assessment of this proposal and implementation of this Statement.

5-2 If any data referred to in condition 5-1 contains particulars of:

(1) a secret formula or process; or

(2) confidential commercially sensitive information;

the proponent may submit a request for approval from the CEO to not make these data publicly available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publicly available.

6 Boundary for Waste Generation

6-1 The proponent shall ensure that only wastes generated within Western Australia, other Australian States and Territories, and the Australian Exclusive Economic Zone are accepted at the Sandy Ridge Facility.

7 Waste Management System

7-1 The proponent shall manage the proposal to meet the following objective:

(1) ensure that detailed records are kept of all wastes accepted on site.

7-2 The proponent shall implement and maintain a Waste Management System to record all wastes accepted on site.

7-3 The Waste Management System shall:

(1) detail monitoring procedures to track and record incoming waste to the site;

(2) record the origins, quantity, and the physical and chemical characteristics of all waste accepted on site;

(3) provide details about any treatment of the waste undertaken on site;

(4) provide details about the waste characteristics, quantity, storage duration and specific coordinates for the location of each waste package stored in the waste cells and temporary storage area; and

(5) be reviewed every five (5) years to ensure that all data stored in the Waste Management System remain compatible with contemporary information technology.

7-4 The proponent shall continue to record all wastes accepted on site as required by condition 7-2 until cessation of waste receival operations at the Sandy Ridge Facility.

7-5 The proponent shall retain and maintain the data required by condition 7-2 and provide the data to the Western Australian Government at the completion of Phase I of the Institutional Control Period.

7-6 The proponent shall provide the data required by condition 7-2 to the CEO when requested within four (4) weeks of the request date.

8 Independent Annual Audit

8-1 The proponent shall manage the implementation of the proposal to meet the following objectives:

(1) ensure that only permitted wastes are accepted at the facility for placement in the repository; and

(2) that the facility is managed in accordance with all regulatory requirements.

8-2 The proponent shall engage an independent waste expert approved by the CEO to undertake an annual audit of the waste disposal operations at the Sandy Ridge Facility. The first audit shall be undertaken twelve (12) months from the date of waste acceptance. The audit shall address site operations, including whether:

(1) each waste is uniquely identified;

(2) the origin, quantity and characterisation of each waste is recorded;

(3) the waste acceptance criteria and procedures have been adhered to;

(4) all required regulatory approvals and permits were in place for transport and disposal of the waste;

(5) there is a clear and documented chain of custody from client to waste receival;

(6) the final location of each waste in the waste cell is accurately recorded in three dimensions (northing, easting and elevation);

(7) all regulatory requirements have been met; and

(8) other options have become available to reuse, recycle or recover wastes that are being accepted at the Sandy Ridge Facility.

8-3 The proponent shall provide the annual audit report required by condition 8-2 to the CEO within twelve (12) weeks of the audit date until the CEO has confirmed by notice, in writing, that provision of the annual audit report is no longer required.

8-4 In the event that the annual audit report identifies issues with waste acceptance, waste tracking or compliance with regulatory requirements, the proponent shall immediately notify the CEO, and other relevant regulators where a non-compliance against other legislation has occurred, and implement investigations to identify the cause.

8-5 Should the cause identified in condition 8-4 result in a potential risk to human health or a sensitive environmental receptor, then the proponent shall commence remedial actions immediately until otherwise advised by the CEO.

9 Terrestrial Environmental Quality

9-1 The proponent shall manage the implementation of the proposal to meet the following environmental objective:

(1) ensure that impacts to soil quality are minimised.

9-2 Prior to the commencement of waste receival, the proponent shall prepare and submit a Leachate Monitoring and Management Plan to the CEO, to demonstrate that the environmental objective in condition 9-1 will be met.

9-3 The Leachate Monitoring and Management Plan shall specify:

(1) monitoring procedures and protocols, including monitoring location points and frequency of monitoring (minimum every six (6) months);

(2) mitigation and management measures;

(3) an adaptive management framework, including trigger criteria, monitoring design and methodologies, and trigger management actions;

(4) incident reporting;

(5) review periods; and

(6) implementation reporting and auditing.

9-4 After receiving notice in writing from the CEO that the Leachate Monitoring and Management Plan satisfies the requirements of condition 9-1, the proponent shall:

(1) implement the Leachate Monitoring and Management Plan, or any subsequent revisions as approved by the CEO; and

(2) continue to implement the Leachate Monitoring and Management Plan, or any subsequent revisions as approved by the CEO, until the CEO has confirmed by notice in writing that the proponent has demonstrated the objective specified in condition 9-1 has been met and therefore the implementation of the management plan is no longer required.

9-5 The proponent may review and revise the Leachate Monitoring and Management Plan or any subsequently revisions as approved by the CEO.

9-6 The proponent shall review and revise the Leachate Monitoring and Management Plan or any subsequently approved revisions, as and when directed by the CEO.

10 Flora and Vegetation

10-1 The proponent shall manage the implementation of the proposal to meet the following environmental objectives:

(1) avoid direct impacts to *Calytrix creswellii*, *Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp. where practicable; and

(2) manage indirect impacts to *Calytrix creswellii*, *Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp.

10-2 Prior to the commencement of ground disturbing activities, the proponent shall prepare and submit a Targeted Flora Survey Plan for *Calytrix creswellii*, *Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp. to the CEO.

10-3 The Targeted Flora Survey Plan required by condition 10-2 shall:

(1) detail the methodology for the targeted survey;

(2) quantify the number of *Calytrix creswellii*, *Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp. found within the development envelope; and

(3) meet the requirements of EPA Flora and Vegetation Guidance.

10-4 The proponent shall undertake the Targeted Flora Survey in accordance with the Targeted Flora Survey Plan as required by condition 10-2.

10-5 Prior to commencement of ground disturbing activities, and after completion of the Targeted Flora Survey, the proponent shall submit a Flora and Vegetation Management Plan to the CEO.

10-6 The Flora and Vegetation Management Plan shall include detailed information on potential direct and indirect impacts to *Calytrix creswellii*, *Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp. and include the following:

(1) targeted flora survey results required by condition 10-4;

(2) avoidance of direct impacts where practicable; and

(3) mitigation, monitoring and management measures for indirect impacts, including those for fire, dust suppression and water quality, and weeds.

10-7 After receiving notice in writing from the CEO that the Flora and Vegetation Management Plan satisfies the requirements of condition 10-6, the proponent shall:

(1) implement the Flora and Vegetation Management Plan, or any subsequent revisions as approved by the CEO; and

(2) continue to implement the Flora and Vegetation Management Plan, or any subsequent revisions as approved by the CEO, until the CEO has confirmed by notice in writing that the proponent has demonstrated the objectives specified in condition 10-1 have been met and therefore the implementation of the management plan is no longer required.

10-8 The proponent may review and revise the Flora and Vegetation Management Plan, or any subsequent revisions as approved by the CEO.

10-9 The proponent shall review and revise the Flora and Vegetation Management Plan or any subsequently approved revisions, as and when directed by the CEO.

11 Terrestrial Fauna

11-1 The proponent shall manage the implementation of the proposal to meet the following environmental objective:

(1) ensure that impacts to terrestrial fauna are minimised.

11-2 Prior to the commencement of ground disturbing activities, the proponent shall prepare and submit a Construction Environmental Management Plan to the CEO, to demonstrate that the environmental objective in condition 11-1 will be met.

11-3 The Construction Environmental Management Plan shall include:

(1) results from a pre-clearing survey;

(2) avoidance, mitigation and management measures, including but not limited to recording sightings of conservation significant species including the Malleefowl and Rainbow Bee-eater; detailed clearing procedures, implementation of a boundary fence, control measures for feral fauna, and restricting vehicle speed limits;

(3) an adaptive management framework, including trigger criteria, monitoring design and methodologies, and trigger management actions;

(4) incident reporting;

(5) review periods; and

(6) implementation reporting and auditing.

11-4 After receiving notice in writing from the CEO that the Construction Environmental Management Plan satisfies the requirements of condition 11-1, the proponent shall:

(1) implement the Construction Environmental Management Plan, or any subsequent revisions as approved by the CEO; and

(2) continue to implement the Construction Environmental Management Plan, or any subsequent revisions as approved by the CEO, until the CEO has confirmed by notice in writing that the proponent has demonstrated the objective specified in condition 11-1 has been met and therefore the implementation of the management plan is no longer required.

11-5 The proponent may review and revise the Construction Environmental Management Plan, or any subsequent revisions as approved by the CEO.

11-6 The proponent shall review and revise the Construction Environmental Management Plan, or any subsequently approved revisions, as and when directed by the CEO.

12 Waste Facility Decommissioning and Closure

12-1 Within six (6) months of the date of this Statement or as otherwise agreed in writing by the CEO, and after consulting with, and obtaining the advice of the Radiological Council and the Department of Planning, Lands, and Heritage, the proponent shall update and submit the Waste Facility Decommissioning and Closure Plan (Plan) to the CEO demonstrating how the site will be rehabilitated, remediated and decommissioned to ensure it is physically safe to members of the public and non-human biota, and is geotechnically and geomorphically stable, and chemically and radiologically non-polluting, in the long term.

12-2 The Plan shall:

(1) specify the environmental objective in condition 12-1;

(2) detail outcomes based upon completion criteria that would need to be quantitative or semi-quantitative;

(3) specify rehabilitation, remediation and decommissioning actions that would result in the site meeting the completion criteria of condition 12-2(2) above;

(4) specify modelling or projection techniques that are being developed and used to predict the site would meet the completion criteria of condition 12-2(2) above in the long term;

(5) specify monitoring to measure the effectiveness of remediation, rehabilitation and decommissioning actions against completion criteria, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring;

(6) provide the format and timing to demonstrate the objective in condition 12-1 has been met for the reporting period in the Compliance Assessment Report required by condition 4-6 including, but not limited to:

(a) verification of the implementation of rehabilitation, remediation and decommissioning actions; and

(b) reporting on the effectiveness of rehabilitation, remediation and decommissioning actions against completion criteria.

12-3 After receiving notice in writing from the CEO that the Plan satisfies the requirements of conditions 12-1 and 12-2, the proponent shall implement the Plan.

12-4 The proponent shall review and revise the Plan required by conditions 12-1 and 12-2 at intervals not exceeding three years, or as otherwise agreed by the CEO, and submit the Plan to the CEO. The revision of the Plan shall include, in addition to the requirements of condition 12-2:

(1) an estimate of the liability represented by the site should it require closure when the revised Plan is implemented;

(2) actions that would need to be undertaken should the site require closure when the revised Plan is implemented; and

(3) the matters set out in condition 12-4(1) and condition 12-4(2) must be reviewed by an independent person with suitable expertise.

12-5 The proponent shall implement the latest revision of the Plan, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 12-4.

12-6 The proponent shall not commence Phase I of the Institutional Control Period until a Plan that satisfies the requirements of condition 12-4 has been approved by the CEO.

12-7 After receiving notice in writing from the CEO that the final Plan satisfies the requirements of conditions 12-4, the proponent shall implement the final Plan.

12-8 The proponent shall not stop implementing the final Plan until it has demonstrated the completion criteria of the final Plan will be met in the long term.

13 Financial assurance requirement

13-1 Pursuant to Part VA of the EP Act, the proponent must provide to the CEO financial assurance in the form of:

(1) a current insurance policy or policies (**Insurance Policies**); and

(2) a bank guarantee (**Bank Guarantee**),

before accepting any waste at the site (collectively, **Financial Assurance**).

13-2 The Financial Assurance may be called upon or used in accordance with section 86E of the EP Act if the proponent fails to comply with the EP Act, or these conditions.

13-3 The Financial Assurance or any part of it shall be discharged by the CEO and the Minister when the CEO has given the proponent written notice pursuant to section 86F(1) of the EP Act.

Insurance Policies

13-4 The Insurance Policies must:

(1) be with an insurer authorised by the Australian Prudential Regulation Authority to conduct insurance business in Australia;

(2) be in the name, or in favour of the Minister and the CEO, or list the Minister and CEO as 'insured parties';

(3) be in a form acceptable to the CEO, and provide for payment of any costs incurred by the Minister or the CEO:

(a) pursuant to Part VA of the EP Act; or

(b) as a consequence of a breach of these conditions by the proponent; and

(4) provide policy limits of not less than AUD$50 million in respect of any one event, and AUD$50 million in the aggregate for any three year period of cover.

13-5 The proponent must maintain the Insurance Policies and not cancel them, allow them to lapse, or do or allow anything to be done which will adversely affect the Insurance Policies.

13-6 The proponent must not vary the Insurance Policies without the prior written approval of the CEO.

13-7 Each 1 July, and each time the Insurance Policies are renewed, the proponent must provide a certificate of currency or alternative evidence in a form acceptable to the CEO of the existence of the Insurance Policies.

13-8 Within 15 months of accepting waste at the site, and thereafter every 3 years or such other period agreed with the CEO, or upon request by the CEO in the event of a change of circumstance at the site material to any matter relating to the EP Act, the proponent must review and provide a report to the CEO in relation to the adequacy of the Insurance Policies.

Bank Guarantee

13-9 The Bank Guarantee shall:

(1) be in the form of an unconditional and irrevocable bank guarantee in favour of the Minister and the CEO from a guarantor acceptable to the CEO;

(2) be for AUD$6.12 million; and

(3) be substituted every five years after the provision of the first Bank Guarantee with the fixed initial amount of each successive guarantee being indexed to inflation (being the Consumer Price Index, Perth).

13-10 The proponent may by agreement with the CEO terminate its liability under the Bank Guarantee by paying to the Minister or the CEO the amount of the Bank Guarantee remaining unpaid, and the CEO will hold that amount as security for any liability of the proponent arising pursuant to the EP Act or these conditions in an interest bearing account nominated by the CEO, with interest accruing for the benefit of the Minister and / or the CEO.

Hon Stephen Dawson MLC
MINISTER FOR ENVIRONMENT

26 JUN 2018

Schedule 1

Table 1: Summary of the Proposal

Proposal Title	Sandy Ridge Facility
Short Description	The proposal is to construct and operate a dual open cut kaolin clay mine and a near-surface geological waste repository accepting Class IV and Class V waste, approximately 75 kilometres north east of Koolyanobbing in the Shire of Coolgardie over 25 years.

Table 2: Location and authorised extent of physical and operational elements

Column 1	Column 2	Column 3
Element	**Location**	**Authorised Extent**
Mine pits/waste cells	Figure 1	Clearing up to 202.3 hectares of native vegetation within a 1,004.2 hectare development envelope
Associated infrastructure	Figure 1	Clearing up to 73.75 hectares of native vegetation with a 1,004.2 hectare development envelope
Class IV & V waste accepted at gate		up to 100,000 tonnes per annum
Temporary waste storage on surface		up to 15,000 tonnes
Maximum temporary storage time		up to 12 months
Waste (including treated waste) disposed to waste cells		up to 280,000 tonnes per annum
Water use		up to 0.18 gigalitres per annum

Table 3: Abbreviations and Definitions

Acronym or Abbreviation	Definition or Term
Australian Exclusive Economic Zone	An area beyond and adjacent to the territorial sea, subject to the specific legal regime established in Part V of the *Sea and Submerged Lands Act 1973*, under which the rights and jurisdiction of the coastal State and the rights and freedoms of other States are governed by the relevant provisions of this Convention.
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the *Environmental Protection Act 1986*, or his delegate.
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986*
EPA Flora and Vegetation Guidance	EPA 2016, *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment*, EPA, Western Australia, or any future updates to EPA flora and vegetation survey guidance.
Geomorphically stable	Reflects baseline conditions.
Long term	1000 years
Phase I of the Institutional Control Period	That portion of the Institutional Control Period for which the proponent is responsible.

Acronym or Abbreviation	Definition or Term
Phase II of the Institutional Control Period	That portion of the Institutional Control Period for which the Western Australian Government is responsible.
Waste acceptance criteria and procedures	The documented criteria specifying the types of waste that can be accepted at the facility and the procedures for accepting that waste that have been agreed under: • Part V of the EP Act; and • Permitting under the *Radiation Safety Act 1975.*
Waste expert	A person with a minimum of 15 years of experience in the assessment and/or operation of waste facilities.

Figures (attached)

Figure 1 Sandy Ridge Development Envelope

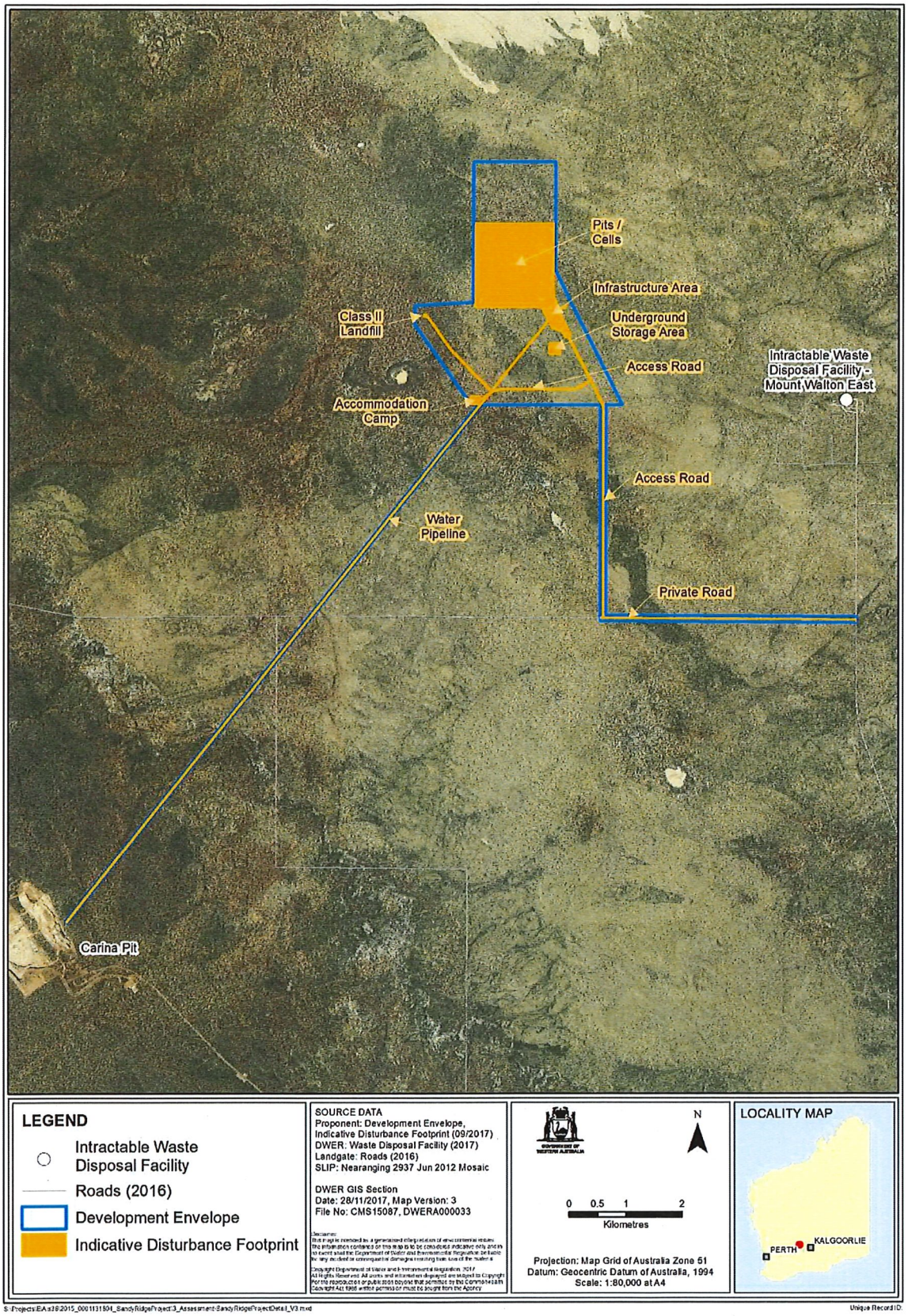


Figure 1: Sandy Ridge Development Envelope

Schedule 2

Coordinates defining the mine site development envelope are held by the Department of Water and Environmental Regulation, Document Reference Number 2017-1510204047942.

Australian Government
Department of the Environment and Energy

EPBC Ref: 2015/7478

Mr Duncan van der Merwe
Group Managing Director
Tellus Holdings Ltd
Suite 2, Level 10
151 Castlereagh Street
SYDNEY NSW 2000

Dear Mr van der Merwe

Decision on approval
Sandy Ridge Project, Shire of Coolgardie, Western Australia

I am writing to you in relation to the proposal to construct and operate an open-cut kaolin clay mine, arid near-surface geological waste repository within the mine voids, and associated infrastructure for the storage, treatment, recovery and permanent isolation (disposal) of hazardous and intractable wastes (including low level radioactive wastes), approximately 75 km north-east of Koolyanobbing in the Shire of Coolgardie, Western Australia. Thank you for Tellus Holding Ltd's comments on the proposed decision.

I have considered the proposal in accordance with Part 9 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and have decided to grant an approval to Tellus Holdings Ltd. The details of my decision are attached. The proposal must be undertaken in accordance with the conditions specified in the approval.

I would appreciate your assistance by informing me when you provide the information specified in the conditions and who will be the contact person responsible for the administration of the approval decision.

Please note, any plans required as conditions of approval will be regarded as public documents unless you provide sufficient justification to warrant commercial-in-confidence status.

You should also note that this EPBC Act approval does not affect obligations to comply with any other laws of the Commonwealth, state or territory that are applicable to the action. Neither does this approval confer any right, title or interest that may be required to access land or waters to take the action.

The Department has an active audit program for proposals that have been referred or approved under the EPBC Act. The audit program aims to ensure that proposals are implemented as planned and that there is a high degree of compliance with any associated conditions. Please note that your project may be selected for audit by the Department at any time and all related records and documents may be subject to scrutiny. Information about the Department's compliance monitoring and auditing program is enclosed.

I have also written to the following parties to advise them of this decision:

- Senator the Hon Matt Canavan, Minister for Resources and Northern Australia
- The Hon Greg Hunt MP, Minister for Health

- Senator the Hon Nigel Scullion, Minister for Indigenous Affairs
- The Hon Michael McCormack MP, Minister for Infrastructure and Transport
- The Honourable Roger Cook MLA, WA Deputy Premier; Minister for Health; Mental Health
- Mr Mike Rowe, Director General of the WA Department of Water and Environmental Regulation and delegated contact for Stephen Dawson MLC, Minister for Environment; Disability Services; Electoral Affairs.

If you have any questions about this decision, please contact the project manager, Tom Schindl, by email to Thomas.Schindl@environment.gov.au, or telephone 02 6159 7341 and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

Chris Videroni
A/g Assistant Secretary
Assessments (WA, SA, NT) and Post Approvals Branch
7 January 2019

Australian Government
Department of the Environment and Energy

APPROVAL

Sandy Ridge Project, Shire of Coolgardie, Western Australia (EPBC 2015/7478)

This decision is made under sections 130(1) and 133(1) of the *Environment Protection and Biodiversity Conservation Act 1999 (Cth).* Note that section 134(1A) of the **EPBC Act** applies to this approval, which provides in general terms that if the **approval holder** authorises another person to undertake any part of the action, the **approval holder** must take all reasonable steps to ensure that the other person is informed of any conditions attached to this approval, and that the other person complies with any such condition.

Details

Person to whom the approval is granted (approval holder)	Tellus Holdings Ltd
ACN or ABN of approval holder	ACN: 138 119 829
Action	Construct and operate an open-cut kaolin clay mine, arid near-surface geological waste repository within the mine voids, and associated infrastructure for the storage, treatment, recovery and permanent isolation (disposal) of hazardous and intractable wastes (including low level radioactive wastes), approximately 75 km north-east of Koolyanobbing in the Shire of Coolgardie, Western Australia [As described in EPBC referral 2015/7478 subject to the variations of the action accepted by the Minister under section 156B on Friday, 22 December 2017 and Friday, 9 November 2018].

Proposed Approval decision

My decision on whether or not to approve the taking of the action for the purposes of the controlling provision for the action is as follows.

Controlling Provisions

Nuclear actions	
Section 21	Approve
Section 22A	Approve

Period for which the approval has effect

This approval has effect until 31 December 2048

Decision-maker

Name and position	Chris Videroni A/g Assistant Secretary, Assessments (WA, SA, NT) and Post Approvals Branch Department of the Environment and Energy
Signature	
Date of decision	07 January 2019

Conditions of approval

This approval is subject to the conditions under the EPBC Act as set out in ANNEXURE A.

ANNEXURE A – CONDITIONS OF APPROVAL

Part A – Conditions specific to the action

1. To manage the impacts of the action on the **environment**, the **approval holder** must comply with conditions 1 and 9 attached to the **WA approval** to the extent those conditions apply to the taking of the action specified in this approval.

2. (1) To enable the early detection of any leachate and to protect the **environment** from impacts from leachate to deep groundwater, the **approval holder** must submit a deep groundwater monitoring and management plan. The deep groundwater monitoring and management plan must commit the **approval holder** to undertake monitoring and management of potential impacts to the groundwater within the weathered granite and granite hard rock (bedrock) as specified below. The **approval holder** must not **commence waste receival** unless the **Minister** has approved the deep groundwater monitoring and management plan in writing. If the **Minister** approves the deep groundwater monitoring and management plan then the approved deep groundwater monitoring and management plan must be implemented.

   (2) The deep groundwater monitoring and management plan must specify:

   a. monitoring procedures and protocols, including monitoring location points and frequency of monitoring (minimum every six (6) months);
   b. mitigation and management measures;
   c. an adaptive management framework, including early warning triggers, trigger criteria, monitoring design and methodologies, and trigger management actions;
   d. **incident** reporting;
   e. review periods; and
   f. implementation reporting and auditing by a **suitably qualified person**.

   (3) To be capable of detecting any potential contamination of groundwater, the deep groundwater monitoring and management plan must include parameters collected during at least 12 months of baseline monitoring of groundwater and soil quality undertaken prior to **commencing waste receival**.

3. To exclude potential floodwaters from the site and to prevent the release of potentially contaminated floodwaters to the **environment**, the **approval holder** must ensure that any surface water that enters or leaves the **action area** cannot spread contaminants out of the **action area.** To meet this objective the **approval holder** must ensure that monitoring of the action's impacts is capable of detecting any contaminants before they can be transported out of the **action area**.

4. To ensure a nationally consistent approach to the environmental regulation of **PFAS**, the **approval holder** must implement the **PFAS National Environmental Management Plan**.

5. The **approval holder** must ensure waste emplacement is undertaken as described in the action description of this approval notice. The **approval holder** must not emplace waste by borehole disposal (commonly referred to as the BOSS method).

Part B – Standard administrative conditions

Notification of date of commencement of the action

6. The **approval holder** must notify the **Department** in writing of the date of **commencement of the action** within 10 **business days** after the date of **commencement of the action.**

Compliance records

7. The **approval holder** must maintain accurate and complete **compliance records**.
8. If the **Department** makes a request in writing, the **approval holder** must provide electronic copies of **compliance records** to the **Department** within the timeframe specified in the request.

Note: **Compliance records** may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the **EPBC Act**, and or used to verify compliance with the conditions. Summaries of the result of an audit may be published on the **Department**'s website or through the general media.

Annual compliance reporting

9. The **approval holder** must prepare a **compliance report** for each 12 month period following the date of **commencement of the action**, or as otherwise agreed to in writing by the **Minister**. The **approval holder** must:
    a. publish each **compliance report** on the **website** within 60 **business days** following the relevant 12 month period;
    b. notify the **Department** by email that a **compliance report** has been published on the **website** within five **business days** of the date of publication;
    c. keep all **compliance reports** publicly available on the **website** until this approval expires;
    d. exclude or redact **sensitive ecological data** from **compliance reports** published on the **website**; and
    e. where any **sensitive ecological data** has been excluded from the version published, submit the full **compliance report** to the **Department** within 5 **business days** of publication.

Note: **Compliance reports** may be published on the **Department**'s website.

Reporting non-compliance

10. The **approval holder** must notify the **Department** in writing of any: **incident;** non-compliance with the conditions; or non-compliance with the commitments made in **plans**. The notification must be given as soon as practicable, and no later than two **business days** after becoming aware of the **incident** or non-compliance. The notification must specify:
    a. the condition which is or may be in breach; and
    b. a short description of the **incident** and/or non-compliance.
11. The **approval holder** must provide to the **Department** the details of any **incident** or non-compliance with the conditions or commitments made in **plans** as soon as practicable and no later than 10 **business days** after becoming aware of the **incident** or non-compliance, specifying:

a. any corrective action or investigation which the **approval holder** has already taken or intends to take in the immediate future;

b. the potential impacts of the **incident** or non-compliance; and

c. the method and timing of any remedial action that will be undertaken by the **approval holder**.

Independent audit

12. The **approval holder** must ensure that **independent audits** of compliance with the conditions are conducted as requested in writing by the **Minister**.
13. For each **independent audit**, the **approval holder** must:

    a. provide the name and qualifications of the independent auditor and the draft audit criteria to the **Department**;

    b. only commence the **independent audit** once the audit criteria have been approved in writing by the **Department**; and

    c. submit an audit report to the **Department** within the timeframe specified in the approved audit criteria.

14. The **approval holder** must publish the audit report on the **website** within 10 **business days** of receiving the **Department's** approval of the audit report and keep the audit report published on the **website** until the end date of this approval.

Completion of the action

15. Within 30 days after the **completion of the action**, the **approval holder** must notify the **Department** in writing and provide **completion data**.

Part C - Definitions

16. In these conditions, except where contrary intention is expressed, the following definitions are used:

    a. **Action area** is the area within the Development Envelope shown in Attachment B, which is the area enclosed by a line drawn from the first coordinate in Attachment A to the next and so on consecutively, with the final coordinate drawn from the final coordinate to the first. Due to the **action area** lying over two metric rectangular grid (MGA) zone boundaries, Attachment A provides coordinates for both MGA zone 50 and 51.

    b. **Approval holder** is the person to whom the approval is granted.

    c. **Business days** means a day that is not a Saturday, a Sunday or a public holiday in the state or territory of the action.

    d. **Cleared area/s** means the total area/s (in hectares) within the **action area** where the action has caused loss or lasting modification of habitat.

    e. **Commencement of the action** means the first instance of any specified activity associated with the action including clearance of vegetation and **construction** of any infrastructure. Commencement does not include minor physical disturbance necessary to:

        i. undertake pre-clearance surveys or monitoring programs;

        ii. install signage and /or temporary fencing to prevent unapproved use of the project area;

iii. protect environmental and property assets from fire, weeds and pests, including erection or **construction** of fencing and signage, and maintenance or use of existing surface access tracks, if agreed in writing by the **Department**; and

f. **Commence/commencing waste receival** means the first instance any wastes accepted to the **action area**.

g. **Completion data** means an environmental report and spatial data information clearly detailing the date, location, the approved Sandy Ridge development envelope, and actual total **cleared area/s**. The **Department's** preferred spatial data format is shapefile.

h. **Completion of the action** means the day on which all specified activities associated with the action have permanently ceased.

i. **Compliance records** means all documentation or other material in whatever form required to demonstrate compliance with the conditions of approval in the approval holder's possession or that are within the approval holder's power to obtain lawfully;

j. **Compliance report(s)** means written reports:

i. providing accurate and complete details of compliance, **incidents**, and non-compliance with the conditions and the **plans**;

ii. consistent with the **Department's** *Annual Compliance Report Guidelines* (2014);

iii. include a shapefile of any clearance of any **protected matters**, or their habitat, undertaken within the relevant 12 month period; and

iv. annexing a schedule of all **plans** prepared and in existence in relation to the conditions during the relevant 12 month period.

k. **Construction** means the erection of a building or structure that is or is to be fixed to the ground and wholly or partially fabricated on-site; the alteration, maintenance, repair or demolition of any building or structure; preliminary site preparation work which involves breaking of the ground (including pile driving); the laying of pipes and other prefabricated materials in the ground, and any associated excavation work; but excluding the installation of fences and signage.

l. **Department** means the Australian Government agency responsible for administering the **EPBC Act** or any other agency responsible for administering the **EPBC Act** from time to time

m. **Environment** means the environment as defined under section 528 of the **EPBC Act**.

n. **EPBC Act** means the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

o. **Incident(s)** means any event which has the potential to, or does, impact on **protected matter(s).**

p. **Independent audit/s** means an audit conducted by an independent and **suitably qualified person** as detailed in the *Environment Protection and Biodiversity Conservation Act 1999 Independent Audit and Audit Report Guidelines* (2015).

q. **Minister** means the Australian Government Minister administering the **EPBC Act** including any delegate thereof.

r. **PFAS** means per-and poly-fluoroalkyl substances.

s. **PFAS National Environmental Management Plan** means the *PFAS National Environmental Management Plan (HEPA 2018)* or as amended.

t. **Plan(s)** means any of the documents required to be prepared, approved by the **Minister**, and/or implemented by the approval holder and published on the **website** in accordance with these conditions (includes action management plans and/or strategies);

u. **Protected matter(s)** means a matter protected under a controlling provision in Part 3 of the **EPBC Act** for which this approval has effect.

v. **Sensitive ecological data** means data as defined in the Australian Government Department of the Environment (2016) *Sensitive Ecological Data – Access and Management Policy V1.0*.

w. **Suitably qualified person** means a person who has professional qualifications, training, skills and/or experience related to the nominated subject matter and can give authoritative independent assessment, advice and analysis on performance relative to the subject matter using the relevant protocols, standards, methods and/or literature.

x. **WA approval** means the Ministerial Statement issued under the Western Australian *Environmental Protection Act 1986*; titled 'Statement that a proposal may be implemented (*Environmental Protection Act 1986*), Sandy Ridge Facility, Statement 1079 published on 27 June 2018 as amended and in force from time to time.

y. **Website** means a set of related web pages located under a single domain name attributed to the approval holder and available to the public.

Attachment A

Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**

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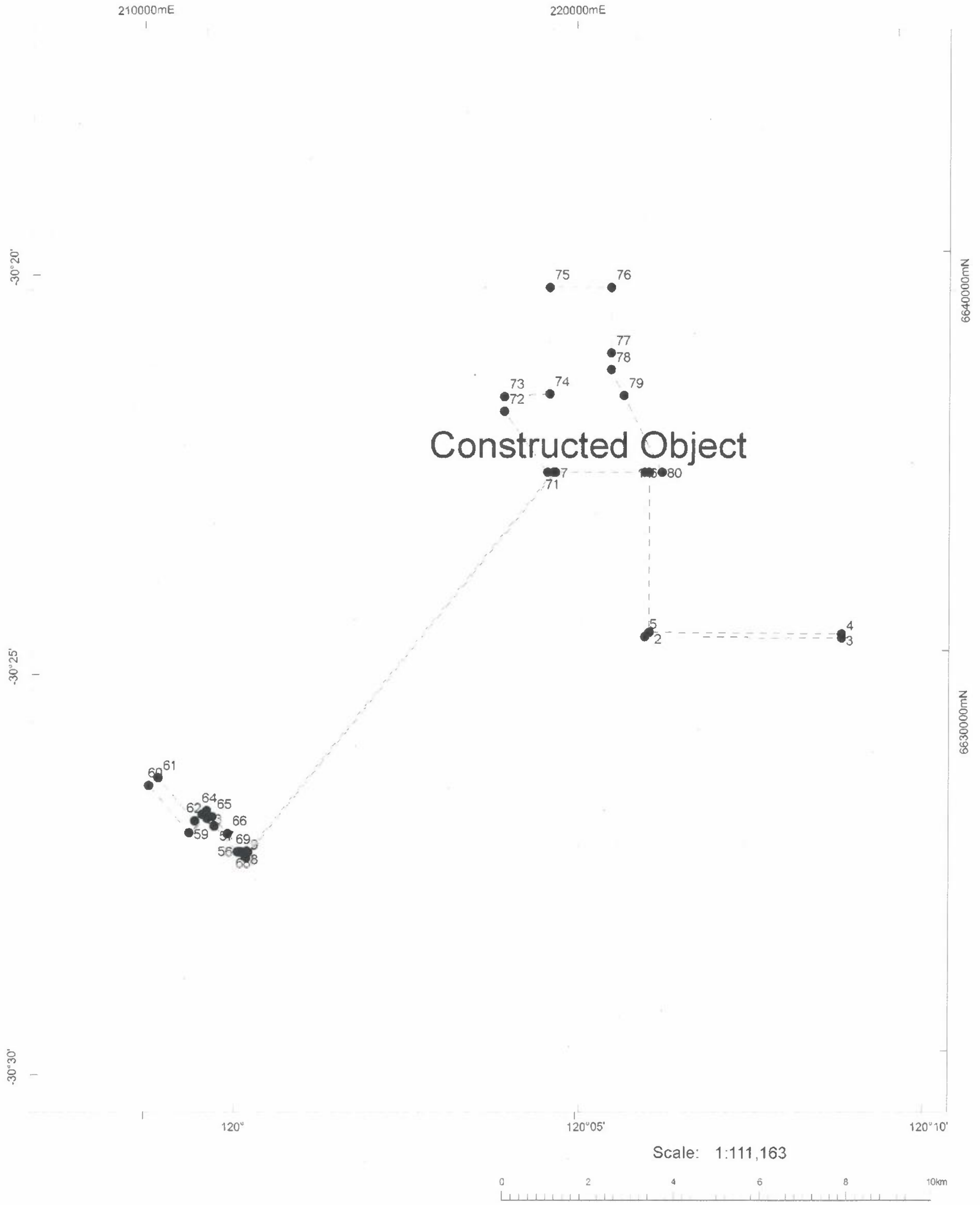
Page: 1

Object Description : Constructed Object
Estimated area : 1060.9133 (Ha)
Datum : GDA94



Department of
Mines and Petroleum

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Page: 2

The numeric precision shown does not reflect the spatial accuracy of the ground position.

Object Description : Constructed Object

Estimated area : 1060.9133 (Ha)

Datum : GDA94

1 Main Polygon description.

	Geographic coordinates		Grid coordinates			Azimuths and distances	
Id	Latitude (South)	Longitude (East)	Zone	Northing(m)	Easting(m)	Mid Azimuth	Spheroidal dist. (m)
1	30° 22' 40.1114	120° 06' 15.1303	50	6635259.901	798324.422		
1	30° 22' 40.1114	120° 06' 15.1303	51	6635790.945	221712.765		
2	30° 24' 40.4010	120° 06' 11.5783	50	6631557.090	798127.915	181° 27' 58.77 (1° 27' 58.77)	3705.436
2	30° 24' 40.4010	120° 06' 11.5783	51	6632083.449	221712.765	181° 27' 58.77 (1° 27' 58.77)	3705.436
3	30° 24' 45.1846	120° 08' 57.9838	50	6631286.894	802566.735	91° 53' 58.51 (271° 53' 58.51)	4443.866
3	30° 24' 45.1846	120° 08' 57.9838	51	6632048.996	226158.900	91° 53' 58.51 (271° 53' 58.51)	4443.866
4	30° 24' 48.4292	120° 08' 57.8895	50	6631187.015	802561.431	181° 26' 38.20 (1° 26' 38.20)	99.947
4	30° 24' 48.4292	120° 08' 57.8895	51	6631948.997	226158.899	181° 26' 38.20 (1° 26' 38.20)	99.947
5	30° 24' 43.5374	120° 06' 07.7399	50	6631463.289	798022.782	271° 53' 59.41 (91° 53' 59.41)	4543.811
5	30° 24' 43.5374	120° 06' 07.7399	51	6631984.219	221612.768	271° 53' 59.41 (91° 53' 59.41)	4543.811
6	30° 22' 40.0284	120° 06' 11.3883	50	6635265.198	798224.550	1° 28' 00.76 (181° 28' 00.76)	3804.608
6	30° 22' 40.0284	120° 06' 11.3883	51	6635790.945	221612.768	1° 28' 00.76 (181° 28' 00.76)	3804.608
7	30° 22' 38.2776	120° 04' 52.7747	50	6635376.490	796126.400	271° 28' 17.02 (91° 28' 17.02)	2099.651
7	30° 22' 38.2776	120° 04' 52.7747	51	6635790.945	219511.933	271° 28' 17.02 (91° 28' 17.02)	2099.651
8	30° 27' 21.0476	120° 00' 16.5305	50	6626864.726	788517.108	220° 15' 15.11 (40° 15' 15.11)	11409.689
8	30° 27' 21.0476	120° 00' 16.5305	51	6626888.163	212365.142	220° 15' 15.11 (40° 15' 15.11)	11409.689
9	30° 27' 21.1675	120° 00' 16.4132	50	6626861.118	788513.882	220° 16' 29.73 (40° 16' 29.73)	4.836
9	30° 27' 21.1675	120° 00' 16.4132	51	6626884.389	212362.113	220° 16' 29.73 (40° 16' 29.73)	4.836
10	30° 27' 20.8300	120° 00' 16.3180	50	6626871.581	788511.616	346° 15' 27.11 (166° 15' 27.11)	10.698
10	30° 27' 20.8300	120° 00' 16.3180	51	6626894.717	212359.295	346° 15' 27.11 (166° 15' 27.11)	10.698
11	30° 27' 20.6098	120° 00' 16.2451	50	6626878.416	788509.851	343° 59' 39.89 (163° 59' 39.89)	7.054
11	30° 27' 20.6098	120° 00' 16.2451	51	6626901.447	212357.169	343° 59' 39.89 (163° 59' 39.89)	7.054
12	30° 27' 20.3910	120° 00' 16.1580	50	6626885.217	788507.707	340° 58' 47.24 (160° 58' 47.24)	7.127
12	30° 27' 20.3910	120° 00' 16.1580	51	6626908.126	212354.667	340° 58' 47.24 (160° 58' 47.24)	7.127
13	30° 27' 20.2370	120° 00' 16.0918	50	6626890.008	788506.067	339° 34' 54.57 (159° 34' 54.57)	5.060
13	30° 27' 20.2370	120° 00' 16.0918	51	6626912.823	212352.775	339° 34' 54.57 (159° 34' 54.57)	5.060
14	30° 27' 19.9984	120° 00' 15.9749	50	6626897.441	788503.144	337° 00' 12.97 (157° 00' 12.97)	7.981
14	30° 27' 19.9984	120° 00' 15.9749	51	6626920.089	212349.461	337° 00' 12.97 (157° 00' 12.97)	7.981
15	30° 27' 19.8164	120° 00' 15.8761	50	6626903.117	788500.654	334° 47' 54.67 (154° 47' 54.67)	6.194
15	30° 27' 19.8164	120° 00' 15.8761	51	6626925.626	212346.674	334° 47' 54.67 (154° 47' 54.67)	6.194
16	30° 27' 19.6436	120° 00' 15.7646	50	6626908.518	788497.821	330° 47' 28.96 (150° 47' 28.96)	6.095
16	30° 27' 19.6436	120° 00' 15.7646	51	6626930.869	212343.558	330° 47' 28.96 (150° 47' 28.96)	6.095
17	30° 27' 19.4855	120° 00' 15.6528	50	6626913.466	788494.967	328° 29' 56.31 (148° 29' 56.31)	5.708
17	30° 27' 19.4855	120° 00' 15.6528	51	6626935.658	212340.445	328° 29' 56.31 (148° 29' 56.31)	5.708
18	30° 27' 19.3276	120° 00' 15.5281	50	6626918.421	788491.768	325° 37' 45.45 (145° 37' 45.45)	5.893
18	30° 27' 19.3276	120° 00' 15.5281	51	6626940.436	212336.988	325° 37' 45.45 (145° 37' 45.45)	5.893
19	30° 27' 19.1299	120° 00' 15.3574	50	6626924.629	788487.375	323° 11' 40.69 (143° 11' 40.69)	7.600
19	30° 27' 19.1299	120° 00' 15.3574	51	6626946.402	212332.271	323° 11' 40.69 (143° 11' 40.69)	7.600
20	30° 27' 18.6042	120° 00' 14.8867	50	6626941.157	788475.245	322° 12' 03.82 (142° 12' 03.82)	20.488

Department of
Mines and Petroleum

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The numeric precision shown does not reflect the spatial accuracy of the ground position.

Object Description : Constructed Object

Estimated area : 1060.9133 (Ha)

Datum : GDA94

1 Main Polygon description.

	Geographic coordinates		Grid coordinates			Azimuths and distances	
Id	Latitude (South)	Longitude (East)	Zone	Northing(m)	Easting(m)	Mid Azimuth	Spheroidal dist. (m)
20	30° 27' 18.6042	120° 00' 14.8867	51	6626962.263	212319.281	322° 12' 03.82 (142° 12' 03.82)	20.488
21	30° 27' 18.2821	120° 00' 14.5968	50	6626951.286	788467.772	322° 03' 19.84 (142° 03' 19.84)	12.579
21	30° 27' 18.2821	120° 00' 14.5968	51	6626971.981	212311.281	322° 03' 19.84 (142° 03' 19.84)	12.579
22	30° 27' 18.0958	120° 00' 14.4194	50	6626957.149	788463.193	320° 29' 04.75 (140° 29' 04.75)	7.434
22	30° 27' 18.0958	120° 00' 14.4194	51	6626977.592	212306.397	320° 29' 04.75 (140° 29' 04.75)	7.434
23	30° 27' 17.9424	120° 00' 14.2654	50	6626961.986	788459.207	318° 59' 11.91 (138° 59' 11.91)	6.263
23	30° 27' 17.9424	120° 00' 14.2654	51	6626982.210	212302.160	318° 59' 11.91 (138° 59' 11.91)	6.263
24	30° 27' 17.7622	120° 00' 14.0721	50	6626967.671	788454.197	317° 05' 37.88 (137° 05' 37.88)	7.573
24	30° 27' 17.7622	120° 00' 14.0721	51	6626987.622	212296.856	317° 05' 37.88 (137° 05' 37.88)	7.573
25	30° 27' 17.6627	120° 00' 13.9358	50	6626970.833	788450.641	310° 06' 42.34 (130° 06' 42.34)	4.755
25	30° 27' 17.6627	120° 00' 13.9358	51	6626990.590	212293.137	310° 06' 42.34 (130° 06' 42.34)	4.755
26	30° 27' 17.6012	120° 00' 13.8406	50	6626972.796	788448.152	306° 44' 09.14 (126° 44' 09.14)	3.167
26	30° 27' 17.6012	120° 00' 13.8406	51	6626992.418	212290.547	306° 44' 09.14 (126° 44' 09.14)	3.167
27	30° 27' 17.5203	120° 00' 13.6966	50	6626975.391	788444.376	302° 58' 19.03 (122° 58' 19.03)	4.579
27	30° 27' 17.5203	120° 00' 13.6966	51	6626994.809	212286.638	302° 58' 19.03 (122° 58' 19.03)	4.579
28	30° 27' 17.3909	120° 00' 13.4323	50	6626979.565	788437.428	299° 28' 21.70 (119° 28' 21.70)	8.100
28	30° 27' 17.3909	120° 00' 13.4323	51	6626998.608	212279.478	299° 28' 21.70 (119° 28' 21.70)	8.100
29	30° 27' 17.2302	120° 00' 13.0451	50	6626984.787	788427.227	295° 35' 16.38 (115° 35' 16.38)	11.453
29	30° 27' 17.2302	120° 00' 13.0451	51	6627003.282	212269.014	295° 35' 16.38 (115° 35' 16.38)	11.453
30	30° 27' 17.0593	120° 00' 12.6350	50	6626990.345	788416.423	295° 41' 49.59 (115° 41' 49.59)	12.141
30	30° 27' 17.0593	120° 00' 12.6350	51	6627008.258	212257.931	295° 41' 49.59 (115° 41' 49.59)	12.141
31	30° 27' 16.9710	120° 00' 12.3952	50	6626993.233	788410.094	293° 00' 14.61 (113° 00' 14.61)	6.952
31	30° 27' 16.9710	120° 00' 12.3952	51	6627010.806	212251.458	293° 00' 14.61 (113° 00' 14.61)	6.952
32	30° 27' 16.8976	120° 00' 12.1804	50	6626995.648	788404.424	291° 33' 20.92 (111° 33' 20.92)	6.159
32	30° 27' 16.8976	120° 00' 12.1804	51	6627012.917	212245.668	291° 33' 20.92 (111° 33' 20.92)	6.159
33	30° 27' 16.8305	120° 00' 11.9630	50	6626997.867	788398.677	289° 35' 13.06 (109° 35' 13.06)	6.157
33	30° 27' 16.8305	120° 00' 11.9630	51	6627014.828	212239.811	289° 35' 13.06 (109° 35' 13.06)	6.157
34	30° 27' 16.7754	120° 00' 11.7578	50	6626999.711	788393.245	287° 13' 42.68 (107° 13' 42.68)	5.732
34	30° 27' 16.7754	120° 00' 11.7578	51	6627016.381	212234.289	287° 13' 42.68 (107° 13' 42.68)	5.732
35	30° 27' 16.7311	120° 00' 11.5665	50	6627001.212	788388.178	284° 58' 21.69 (104° 58' 21.69)	5.281
35	30° 27' 16.7311	120° 00' 11.5665	51	6627017.610	212229.149	284° 58' 21.69 (104° 58' 21.69)	5.281
36	30° 27' 16.6988	120° 00' 11.3965	50	6627002.326	788383.667	282° 21' 17.15 (102° 21' 17.15)	4.643
36	30° 27' 16.6988	120° 00' 11.3965	51	6627018.484	212224.585	282° 21' 17.15 (102° 21' 17.15)	4.643
37	30° 27' 16.6866	120° 00' 11.3187	50	6627002.758	788381.601	280° 16' 22.01 (100° 16' 22.01)	2.109
37	30° 27' 16.6866	120° 00' 11.3187	51	6627018.805	212222.499	280° 16' 22.01 (100° 16' 22.01)	2.109
38	30° 27' 16.6752	120° 00' 11.2512	50	6627003.156	788379.809	281° 00' 04.82 (101° 00' 04.82)	1.834
38	30° 27' 16.6752	120° 00' 11.2512	51	6627019.107	212220.689	281° 00' 04.82 (101° 00' 04.82)	1.834
39	30° 27' 16.6607	120° 00' 11.1041	50	6627003.708	788375.895	276° 30' 12.48 (96° 30' 12.48)	3.950
39	30° 27' 16.6607	120° 00' 11.1041	51	6627019.451	212216.751	276° 30' 12.48 (96° 30' 12.48)	3.950
40	30° 27' 16.6525	120° 00' 10.9998	50	6627004.034	788373.119	275° 10' 46.69 (95° 10' 46.69)	2.793

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Object Description : Constructed Object

Estimated area : 1060.9133 (Ha)

Datum : GDA94

1 Main Polygon description.

	Geographic coordinates		Grid coordinates			Azimuths and distances	
Id	Latitude (South)	Longitude (East)	Zone	Northing(m)	Easting(m)	Mid Azimuth	Spheroidal dist. (m)
40	30° 27' 16.6525	120° 00' 10.9998	51	6627019.629	212213.961	275° 10' 46.69 (95° 10' 46.69)	2.793
41	30° 27' 16.6490	120° 00' 10.9463	50	6627004.180	788371.693	274° 18' 54.04 (94° 18' 54.04)	1.432
~~41~~	~~30° 27' 16.6490~~	~~120° 00' 10.9463~~	~~51~~	~~6627019.699~~	~~212212.530~~	~~274° 18' 54.04 (94° 18' 54.04)~~	~~1.432~~
42	30° 27' 16.6475	120° 00' 10.9139	50	6627004.249	788370.832	273° 04' 17.89 (93° 04' 17.89)	0.863
42	30° 27' 16.6475	120° 00' 10.9139	51	6627019.722	212211.666	273° 04' 17.89 (93° 04' 17.89)	0.863
43	30° 27' 16.6445	120° 00' 10.8675	50	6627004.375	788369.594	274° 17' 57.13 (94° 17' 57.13)	1.242
43	30° 27' 16.6445	120° 00' 10.8675	51	6627019.783	212210.424	274° 17' 57.13 (94° 17' 57.13)	1.242
44	30° 27' 16.6435	120° 00' 10.7631	50	6627004.481	788366.808	270° 38' 25.76 (90° 38' 25.76)	2.786
44	30° 27' 16.6435	120° 00' 10.7631	51	6627019.740	212207.636	270° 38' 25.76 (90° 38' 25.76)	2.786
45	30° 27' 16.6439	120° 00' 10.6592	50	6627004.542	788364.035	269° 44' 13.55 (89° 44' 13.55)	2.771
45	30° 27' 16.6439	120° 00' 10.6592	51	6627019.654	212204.864	269° 44' 13.55 (89° 44' 13.55)	2.771
46	30° 27' 16.6462	120° 00' 10.5787	50	6627004.526	788361.887	268° 03' 33.80 (88° 03' 33.80)	2.147
46	30° 27' 16.6462	120° 00' 10.5787	51	6627019.524	212202.719	268° 03' 33.80 (88° 03' 33.80)	2.147
47	30° 27' 16.6541	120° 00' 10.4412	50	6627004.382	788358.211	266° 14' 02.04 (86° 14' 02.04)	3.676
47	30° 27' 16.6541	120° 00' 10.4412	51	6627019.185	212199.056	266° 14' 02.04 (86° 14' 02.04)	3.676
48	30° 27' 16.6615	120° 00' 10.3527	50	6627004.216	788355.842	264° 28' 42.01 (84° 28' 42.01)	2.373
48	30° 27' 16.6615	120° 00' 10.3527	51	6627018.894	212196.700	264° 28' 42.01 (84° 28' 42.01)	2.373
49	30° 27' 16.6764	120° 00' 10.1902	50	6627003.872	788351.494	263° 56' 29.07 (83° 56' 29.07)	4.359
49	30° 27' 16.6764	120° 00' 10.1902	51	6627018.319	212192.376	263° 56' 29.07 (83° 56' 29.07)	4.359
50	30° 27' 16.6884	120° 00' 10.0728	50	6627003.587	788348.351	263° 18' 08.19 (83° 18' 08.19)	3.153
50	30° 27' 16.6884	120° 00' 10.0728	51	6627017.867	212189.252	263° 18' 08.19 (83° 18' 08.19)	3.153
51	30° 27' 16.7018	120° 00' 09.9569	50	6627003.257	788345.247	262° 24' 33.08 (82° 24' 33.08)	3.119
51	30° 27' 16.7018	120° 00' 09.9569	51	6627017.373	212186.171	262° 24' 33.08 (82° 24' 33.08)	3.119
52	30° 27' 16.7284	120° 00' 09.7567	50	6627002.578	788339.883	261° 15' 55.16 (81° 15' 55.16)	5.404
52	30° 27' 16.7284	120° 00' 09.7567	51	6627016.411	212180.849	261° 15' 55.16 (81° 15' 55.16)	5.404
53	30° 27' 16.7511	120° 00' 09.6157	50	6627001.980	788336.101	259° 29' 23.19 (79° 29' 23.19)	3.826
53	30° 27' 16.7511	120° 00' 09.6157	51	6627015.613	212177.105	259° 29' 23.19 (79° 29' 23.19)	3.826
54	30° 27' 16.7787	120° 00' 09.4744	50	6627001.229	788332.308	257° 17' 03.17 (77° 17' 03.17)	3.864
54	30° 27' 16.7787	120° 00' 09.4744	51	6627014.662	212173.357	257° 17' 03.17 (77° 17' 03.17)	3.864
55	30° 27' 16.8136	120° 00' 09.3194	50	6627000.265	788328.145	255° 26' 10.37 (75° 26' 10.37)	4.270
55	30° 27' 16.8136	120° 00' 09.3194	51	6627013.478	212169.251	255° 26' 10.37 (75° 26' 10.37)	4.270
56	30° 27' 16.8801	120° 00' 09.0224	50	6626990.420	788320.163	255° 30' 54.23 (75° 30' 54.23)	8.185
56	30° 27' 16.8801	120° 00' 09.0224	51	6627011.220	212161.378	255° 30' 54.23 (75° 30' 54.23)	8.185
57	30° 26' 57.0809	119° 59' 49.5439	50	6627622.105	787816.544	319° 33' 27.82 (139° 33' 27.82)	801.126
57	30° 26' 57.0809	119° 59' 49.5439	51	6627607.282	211625.361	319° 33' 27.82 (139° 33' 27.82)	801.126
58	30° 26' 51.2034	119° 59' 43.5892	50	6627807.362	787662.429	318° 43' 24.64 (138° 43' 24.64)	240.830
58	30° 26' 51.2034	119° 59' 43.5892	51	6627784.098	211461.629	318° 43' 24.64 (138° 43' 24.64)	240.830
59	30° 27' 01.7811	119° 59' 27.5801	50	6627492.863	787226.555	232° 40' 13.04 (52° 40' 13.04)	537.157
59	30° 27' 01.7811	119° 59' 27.5801	51	6627446.903	211043.059	232° 40' 13.04 (52° 40' 13.04)	537.157
60	30° 26' 25.4740	119° 58' 53.8875	50	6628634.987	786356.918	321° 11' 57.63 (141° 11' 57.63)	1434.637

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Object Description : Constructed Object

Estimated area : 1060.9133 (Ha)

Datum : GDA94

1 Main Polygon description.

	Geographic coordinates		Grid coordinates			Azimuths and distances	
Id	Latitude (South)	Longitude (East)	Zone	Northing(m)	Easting(m)	Mid Azimuth	Spheroidal dist. (m)
60	30° 26' 25.4740	119° 58' 53.8875	51	6628541.282	210114.012	321° 11' 57.63 (141° 11' 57.63)	1434.637
61	30° 26' 20.1151	119° 59' 02.0993	50	6628794.266	786580.450	53° 00' 56.44 (233° 00' 56.44)	274.306
61	30° 26' 20.1151	119° 59' 02.0993	51	6628712.203	210328.782	53° 00' 56.44 (233° 00' 56.44)	274.306
62	30° 26' 52.6938	119° 59' 32.9355	50	6627768.990	787376.890	140° 38' 40.53 (320° 38' 40.53)	1297.472
62	30° 26' 52.6938	119° 59' 32.9355	51	6627730.625	211178.527	140° 38' 40.53 (320° 38' 40.53)	1297.472
63	30° 26' 48.1396	119° 59' 39.4294	50	6627904.680	787553.916	51° 00' 43.04 (231° 00' 43.04)	222.908
63	30° 26' 48.1396	119° 59' 39.4294	51	6627875.521	211348.103	51° 00' 43.04 (231° 00' 43.04)	222.908
64	30° 26' 45.4808	119° 59' 43.3184	50	6627983.827	787659.878	51° 43' 26.50 (231° 43' 26.50)	132.175
64	30° 26' 45.4808	119° 59' 43.3184	51	6627960.181	211449.715	51° 43' 26.50 (231° 43' 26.50)	132.175
65	30° 26' 50.1208	119° 59' 47.9199	50	6627837.645	787778.891	139° 19' 49.03 (319° 19' 49.03)	188.385
65	30° 26' 50.1208	119° 59' 47.9199	51	6627820.521	211576.320	139° 19' 49.03 (319° 19' 49.03)	188.385
66	30° 27' 03.1130	120° 00' 00.9120	50	6627428.245	788114.995	139° 05' 40.35 (319° 05' 40.35)	529.362
66	30° 27' 03.1130	120° 00' 00.9120	51	6627429.538	211933.682	139° 05' 40.35 (319° 05' 40.35)	529.362
67	30° 27' 17.9611	120° 00' 15.9149	50	6626960.238	788503.209	138° 48' 05.06 (318° 48' 05.06)	607.683
67	30° 27' 17.9611	120° 00' 15.9149	51	6626982.801	212346.193	138° 48' 05.06 (318° 48' 05.06)	607.683
68	30° 27' 16.5327	120° 00' 17.3752	50	6627003.199	788543.349	41° 31' 53.47 (221° 31' 53.47)	58.758
68	30° 27' 16.5327	120° 00' 17.3752	51	6627027.832	212383.995	41° 31' 53.47 (221° 31' 53.47)	58.758
69	30° 27' 17.3186	120° 00' 18.2137	50	6626978.395	788565.083	137° 15' 02.52 (317° 15' 02.52)	32.958
69	30° 27' 17.3186	120° 00' 18.2137	51	6627004.217	212407.015	137° 15' 02.52 (317° 15' 02.52)	32.958
70	30° 22' 38.2347	120° 04' 50.8555	50	6635379.207	796075.177	40° 15' 15.11 (220° 15' 15.11)	11260.956
70	30° 22' 38.2347	120° 04' 50.8555	51	6635790.945	219460.644	40° 15' 15.11 (220° 15' 15.11)	11260.956
71	30° 22' 38.1178	120° 04' 45.6280	50	6635386.607	795935.657	271° 28' 39.19 (91° 28' 39.19)	139.621
71	30° 22' 38.1178	120° 04' 45.6280	51	6635790.945	219320.942	271° 28' 39.19 (91° 28' 39.19)	139.621
72	30° 21' 51.6221	120° 04' 09.7871	50	6636844.837	795017.249	326° 14' 28.82 (146° 14' 28.82)	1722.175
72	30° 21' 51.6221	120° 04' 09.7871	51	6637198.348	218326.700	326° 14' 28.82 (146° 14' 28.82)	1722.175
73	30° 21' 40.4937	120° 04' 10.1192	50	6637187.388	795035.410	1° 28' 56.29 (181° 28' 56.29)	342.801
73	30° 21' 40.4937	120° 04' 10.1192	51	6637541.348	218326.700	1° 28' 56.29 (181° 28' 56.29)	342.801
74	30° 21' 39.4708	120° 04' 49.0984	50	6637190.627	796077.495	88° 15' 59.84 (268° 15' 59.84)	1041.383
74	30° 21' 39.4708	120° 04' 49.0984	51	6637599.746	219367.045	88° 15' 59.84 (268° 15' 59.84)	1041.383
75	30° 20' 19.2232	120° 04' 51.4826	50	6639660.809	796208.412	1° 28' 33.80 (181° 28' 33.80)	2471.963
75	30° 20' 19.2232	120° 04' 51.4826	51	6640073.123	219367.045	1° 28' 33.80 (181° 28' 33.80)	2471.963
76	30° 20' 20.4253	120° 05' 45.4272	50	6639584.499	797648.732	91° 28' 17.81 (271° 28' 17.81)	1441.348
76	30° 20' 20.4253	120° 05' 45.4272	51	6640073.123	220809.210	91° 28' 17.81 (271° 28' 17.81)	1441.348
77	30° 21' 09.7241	120° 05' 44.0234	50	6638066.933	797569.732	181° 24' 53.08 (1° 24' 53.08)	1518.568
77	30° 21' 09.7241	120° 05' 44.0234	51	6638553.702	220810.628	181° 24' 53.08 (1° 24' 53.08)	1518.568
78	30° 21' 22.2478	120° 05' 43.6668	50	6637681.414	797549.661	181° 24' 53.55 (1° 24' 53.55)	385.774
78	30° 21' 22.2478	120° 05' 43.6668	51	6638167.711	220810.991	181° 24' 53.55 (1° 24' 53.55)	385.774
79	30° 21' 42.0678	120° 05' 54.3910	50	6637063.047	797819.446	154° 51' 45.18 (334° 51' 45.18)	674.189
79	30° 21' 42.0678	120° 05' 54.3910	51	6637564.574	221113.094	154° 51' 45.18 (334° 51' 45.18)	674.189
80	30° 22' 40.3509	120° 06' 25.9344	50	6635244.605	798612.778	154° 51' 35.72 (334° 51' 35.72)	1982.579

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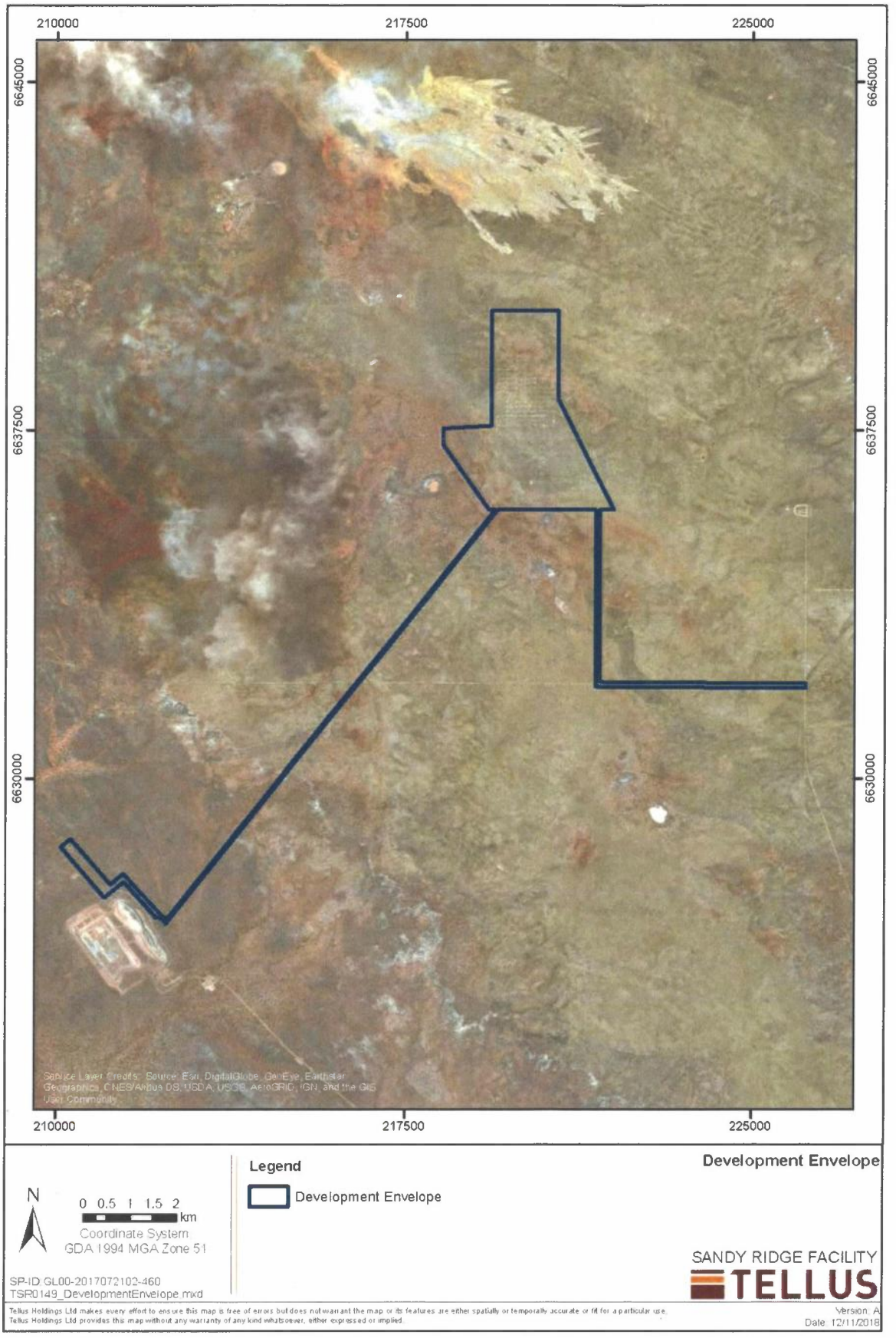
1 Main Polygon description.

	Geographic coordinates		Grid coordinates			Azimuths and distances	
Id	Latitude (South)	Longitude (East)	Zone	Northing(m)	Easting(m)	Mid Azimuth	Spheroidal dist. (m)
80	30° 22' 40.3509	120° 06' 25.9344	51	6635790.945	222001.485	154° 51' 35.72 (334° 51' 35.72)	1982.579
81	30° 22' 40.1114	120° 06' 15.1303	50	6635259.901	798324.422	271° 27' 52.51 (91° 27' 52.51)	288.559
81	30° 22' 40.1114	120° 06' 15.1303	51	6635790.945	221712.765	271° 27' 52.51 (91° 27' 52.51)	288.559

Attachment B



APPENDIX B: TARGETED FLORA SURVEY

SANDY RIDGE PROJECT,
EXPLORATION TENEMENT E16/440

TARGETED SIGNIFICANT FLORA SURVEY

Prepared for:	Tellus Holdings P/L
Report Date:	12 February 2018
Version:	2
Report No.	2017-360

pgv ENVIRONMENTAL

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1 INTRODUCTION

1.1 Purpose

Tellus Holdings Ltd (Tellus) is proposing to develop a kaolin mine with complementary storage and waste isolation business on Exploration Tenement E16/440 (the site). The site is located in the Shire of Coolgardie and is approximately 140km north-west of Kalgoorlie and 75km north-east of Koolyanobbing. The site boundary is shown in Figure 1.

The mining tenement area and potential water pipeline and access road alignments were surveyed by PGV Environmental in 2015. The 2015 survey identified two Priority species *Calytrix creswellii* (P3), *Lepidosperma lyonsii* (P4) and an 'unknown *Lepidosperma'* that is likely to have conservation significance on the site. Priority plant species are not protected by State or Commonwealth environmental legislation but are recognised as having conservation significance.

The Sandy Ridge proposal was assessed by the Environmental Protection Authority as a Public Environmental Review. The extent of these species is required to determine the impact that the project might have on these species, as well as to inform the project design team to minimise any potential impacts on the species.

PGV Environmental was commissioned by Tellus Holdings Ltd to undertake a targeted survey of *Calytrix creswellii, Lepidosperma lyonsii* and the 'unknown *Lepidosperma'* within and outside of the mining tenement.

1.2 Scope of Works

The scope of works for the targeted survey included the following tasks:

- Review previous surveys of the site and nearby;
- Identify potential locations of additional *Calytrix creswellii, Lepidosperma lyonsii* and the 'unknown *Lepidosperma'* plants on and around the tenement based on vegetation types, soil types and landform;
- Undertake a field survey to map populations of *Calytrix creswellii, Lepidosperma lyonsii* and the 'unknown *Lepidosperma'* on and around the tenement;
- The field survey will map the location and extent of each population found using a hand-held GPS. The number of plants at each population will be recorded and, where appropriate, a specimen will be taken for identification and potential lodgement at the WA Herbarium.

The objective of the survey and report is to demonstrate, where possible, that any conservation significant species recorded on the site are not restricted to the Sandy Ridge site and to advise Tellus on any potential design changes that would reduce the impact on conservation significant species.

2 TARGETED SPECIES

2.1 *Calytrix creswellii*

Calytrix creswellii is in the myrtle family Myrtaceae and is endemic to Western Australia. The shrub has a spreading habit and typically grows to a height of 0.25 to 1m. Flowering is between September and December producing white star shaped flowers (Plate 1).

Plate 1: *Calytrix creswellii* (PaWS, 2017)

Calytrix creswellii typically occurs on sandplains in the Goldfields-Esperance region of Western Australia scattered through an area north west of Kalgoorlie where it grows on sandy and sometimes gravelly soils over laterite (PaWS, 2017).

Calytrix creswellii is a Priority 3 species in Western Australia.

2.2 *Lepidosperma lyonsii*

Lepidosperma lyonsii is a tufted rhizomatous, perennial, herb (sedge). The leaves are 0.31-0.53m high and culms and leaves are distichous (Florabase) (Plate 2).

Plate 2: *Lepidosperma lyonsii* (P4)

Lepidosperma lyonsii generally grows on pale orange skeletal sandy loam with banded ironstone gravel and rock or well-drained shallow stony loamy with quartz. The species occurs typically on gentle hill slopes and has been recorded on the upper slopes of large hills.

Lepidosperma lyonsii is a Priority 4 species in Western Australia.

2.3 'unknown *Lepidosperma*'

The 'unknown *Lepidosperma*' was recorded by PGV Environmental in the 2015 survey. The plant is very similar to *L. lyonsii* and according to Russell Barrett (email to PGV Environmental on 3 April 2017) probably belongs to the "difficult" *Lepidosperma lyonsii* species complex (Plate 3 and 4). The resin on the culms is yellowish which puts the specimen in the *L. lyonsii* complex as compared to other possibilities in the region such as *L. sanguinolentum* which has blood-red resin.

Plate 3: Culms and leaf base of the 'unknown *Lepidosperma*'

Plate 4: Inflorescence of the 'unknown *Lepidosperma*'

3 METHODOLOGY

3.1 Site Survey

The targeted flora survey was undertaken on 12 to 13 November 2017 by Dr Paul van der Moezel and an assistant.

The survey included inspecting populations previously recorded in 2015 to quantify the size of the population in terms of plant numbers and coverage as well as inspecting as many tracks as possible within tenement E16/440 to identify any new populations. The survey was conducted approximately 20-30m on each side of the tracks. The main survey effort was focussed on areas containing sandplain soils with *Acacia/Allocasuarina/Callitris preissii* Open Heath with Spinifex (*Triodia scariosa*) as this was considered to be the preferred soil type for the *Lepidosperma* species and *Calytrix creswellii*.

Tracks (up to 30m either side) outside the tenement were surveyed and included the main north-south track approximately 300m to the west of the tenement boundary, the 300m portion of five east-west tracks that extend from this track to the tenement boundary and the portion of the access track to the tenement from the Mt Dimer access road (approximately 3.8km).

The areas covered by the survey are shown on Figure 2.

The number of individuals were counted at each population recorded as well as an estimate of the area covered by the population.

The *Lepidosperma* plants were readily visible in the open heath vegetation. *Calytrix creswellii* plants at Site SR 3 were not in flower and no flowering plants of this species were observed in the survey area. *Calytrix creswellii* normally flowers between September and December. Therefore, the survey was undertaken in the right season to be able to identify this species.

Samples of *Lepidosperma* were taken from five separate populations for identification and lodging at the Western Australian Herbarium (Department of Parks and Wildlife flora collecting licence SL012219). The Accession Number for the lodgements is 7507. Photographs of specimens were sent to Dr Russell Barrett for identification. Dr Barrett is the recognised expert in *Lepidosperma* taxonomy and has previously assisted in the identification of specimens from the Sandy Ridge project site. Dr Barrett provided his preliminary identification on 30 January 2018. The results are discussed in Section 4.3.

3.2 Survey Limitations

The Sandy Ridge tenement E16/440 is very large at 1004.2ha. Due to the large size, remoteness and low density of tracks throughout large parts of the site, it was unfeasible to survey the whole site on foot thoroughly as well as areas outside the tenement in a cost-effective manner.

The highest density of tracks, and therefore the area that was able to be surveyed more thoroughly is the central portion where the mine pits/storage cells are proposed to be located. The northern and southern parts of the site contain fewer tracks than the central area and were covered at a much lower rate.

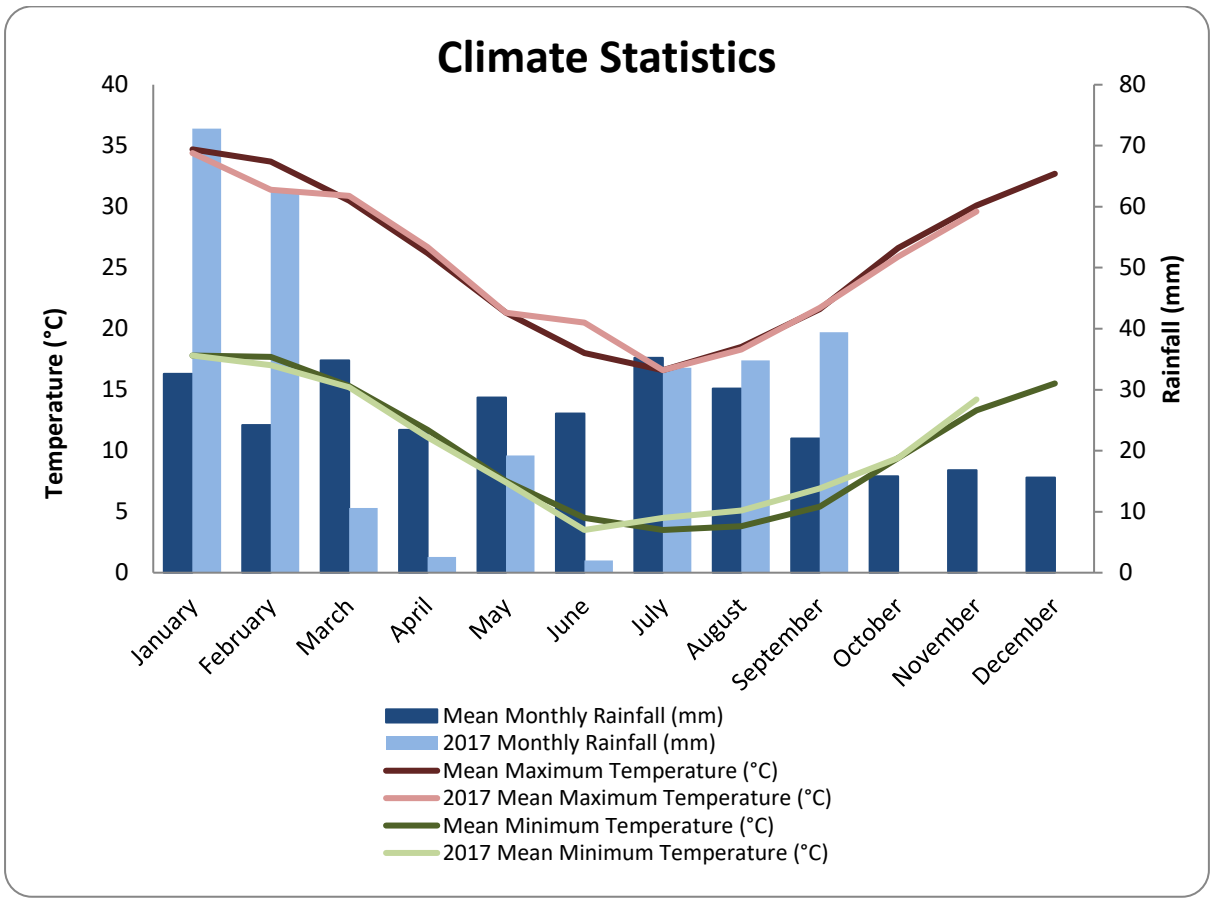
4 RESULTS

4.1 Seasonal Conditions

Climate statistics from the Bureau of Meteorology (BOM, 2016) can be used to compare seasonal conditions for surveys (Graph 1). The statistics have been collected from Southern Cross Airfield (BOM Site Number 012320) which has been collecting data from 1996.

There was a less than average rainfall in June 2017, however July, August and September 2017 had higher than average rainfall. The maximum and minimum temperatures in 2017 have been comparable to the averages (Graph 1).

Graph 1: Mean climate statistics compared to 2017



Seasonal conditions for the 2017 survey are not likely to have impacted on the reliability of the targeted survey.

4.2 *Calytrix creswellii*

Plants identified as *Calytrix creswellii* in the 2015 survey at quadrat SR3 were not in flower at the time of this survey. More than 100 plants were recorded in the 2017 survey in the vicinity of SR3 and was considered to be very common in the area (Plate 5).

Plate 5: Calytrix creswellii at SR3

4.3 *Lepidosperma lyonsii* and 'unknown *Lepidosperma*'

4.3.1 Species Identification

Photographs of the specimens collected in 2017 were sent to Dr Russell Barrett who currently works at the Royal Botanic Gardens in Sydney. Dr Barrett considered that the specimens appear to be part of the *L. lyonsii* complex. He stated that there are likely to be three species in the *L. lyonsii* complex in the area around Sandy Ridge including *L. lyonsii* and *L. jacksonense* which occur on rocky substrates and *L.* aff. *lyonsii* which occurs on sandplain soils. Another *Lepidosperma* that occurs on sandplains, *L. resinosum* var. *pleianthemum* was considered by Dr Barrett, however that species is known from the Wheatbelt around Tammin and may not extend as far as the Sandy Ridge area.

Dr Barrett recommended that until further taxonomic work is undertaken the *Lepidosperma* species recorded from the sandplain soils in and around the Sandy Ridge tenement should be referred to as *Lepidosperma* aff. *lyonsii*. This includes *Lepidosperma lyonsii* and 'unknown *Lepidosperma'* specimens recorded in 2015.

4.3.2 Population Size

The four populations recorded in 2015 within the tenement and at the southern end of the proposed access track off the Mt Dimer Road contained between 2 and 31 plants (Table 1). The *Lepidosperma* plants tended to occur in a fairly well-defined group rather than be scattered over a wide area. The term 'population' is used here to define individual groups of plants.

Four additional populations were recorded in the tenement in 2017 (Figure 3). New populations 1,2 and 3 were close to the SR 5 populations and ranged in size from 2 – 16 plants. A large population of 171 plants covering an area of around 180m x 80m was recorded approximately 220m south of SR14 either side of the current access track into the tenement from the Mt Dimer road.

Table 1: *Lepidosperma* Populations within the Tenement and Proposed Access Road

Population No.	Recorded	Co-ordinates*		No. Plants	Population Size (m)
SR 5	2015	51 219681 E	6637892 N	2	3 x 2
SR 5 Nearby	2015	51 219620 E	6637877 N	31	60 x 30
SR 14	2015	51 221283 E	6636388 N	23	30 x 30
SR 15	2015	51 221663 E	6632074 N	2	5 x 2
New population 1	2017	51 219746 E	6638181 N	2	5 x 2
New population 2	2017	51 219715 E	6638403 N	4	40 x 20
New population 3	2017	51 219878 E	6638020 N	16	70 x 50
New population 4	2017	51 221347 E	6636168 N	171	150 x 80
Total Number				**251**	

* centre point of population

Three new populations of *Lepidosperma* were recorded outside the tenement (Figure 3). One population of 20 plants was recorded either side of the north-south track to the west of the tenement. Two populations were recorded adjacent to the current access track from Mt Dimer road. One was a relatively large population of 75 plants and the other was a very large population of around 250 plants near the southern end of the track.

Table 2: *Lepidosperma* Populations outside the Tenement

Population No.	Recorded	Co-ordinates		No. Plants	Population Size (m)
New population 5	2017	51 219062 E	6637937 N	20	60 x 50
New population 6	2017	51 221435 E	6635570 N	75	80 x 50
New population 7	2017	51 221315 E	6633084 N	250	150 x 50
Total Number				**345**	

4.4 Population Descriptions

- **SR 5**

Vegetation Type: *Acacia resinimarginea* Shrubland over *Triodia scariosa* Open Grassland

Soil Type: Light orange-brown loamy sand

Number of Plants: 2 on the edge of the track

Area: 3m x 2m

- **SR 5 Nearby**

Vegetation Type: *Acacia resinimarginea* Shrubland over *Triodia scariosa* Open Grassland

Soil Type: Light orange-brown loamy sand

Number of Plants: 31

Area: 60m x 30m

- **SR 14**

Vegetation Type: *Callitris preissii/Acacia resinimarginea* Tall Shrubland with scattered *Triodia scariosa*

Soil Type: Light yellow-brown loamy sand

Number of Plants: 23

Area: 30m x 30m

Plate 6: *Lepidosperma* aff. *lyonsii* at SR14

- **SR 15**

Vegetation Type: *Eucalyptus pileata* Open Shrub Mallee over *Melaleuca uncinata* Open Shrubland over *Triodia scariosa* Open Grassland

Soil Type: Light orange-red sand

Number of Plants: 2

Area: 5m x 2m

- **New Population 1**

Vegetation Type: *Acacia resinimarginea* Open Heath over *Triodia scariosa* Open Grassland

Soil Type: Light yellow-brown loamy sand

Number of Plants: 2

Area: 5m x 2m

- **New Population 2**

Vegetation Type: *Acacia resinimarginea/Eucalyptus pileata* Open Heath

Soil Type: Yellow loamy sand

Number of Plants: 4

Area: 40m x 20m

- **New Population 3**

Vegetation Type: *Acacia resinimarginea* Tall Shrubland (with burnt *Callitris preissii*) over *Triodia scariosa* Open Grassland

Soil Type: Yellow loamy sand

Number of Plants: 16

Area: 70m x 50m

Plate 7: New Population 3

- **New Population 4**

Vegetation Type: *Acacia resinimarginea/Acacia neurophylla/Allocasuarina corniculata* Open Heath over *Triodia scariosa* Open Grassland

Soil Type: Yellow loamy sand

Number of Plants: 171

Area: 150m x 80m

Plate 8: New Population 4

- **New Population 5**

Vegetation Type: *Callitris preissii/Acacia resinimarginea/Leptospermum roei* Tall Shrubland over *Triodia scariosa* Open Grassland

Soil Type: Yellow-orange loamy sand

Number of Plants: 20

Area: 60m x 50m

Plate 9: New Population 5

- **New Population 6**

Vegetation Type: *Eucalyptus pileata* Shrub Mallee over *Triodia scariosa* Open Grassland

Soil Type: Yellow-orange loamy sand

Number of Plants: 75

Area: 80m x 50m

Plate 10: New Population 6

- **New Population 7**

Vegetation Type: *Eucalyptus pileata* Shrub Mallee with *Callitris preissii/Acacia resinimarginea* Open Heath over *Triodia scariosa* Open Grassland

Soil Type: Yellow-orange loamy sand

Number of Plants: 250 approx.

Area: 150m x 50m

Plate 11: New Population 7

5 DISCUSSION

5.1 *Calytrix creswellii* P3

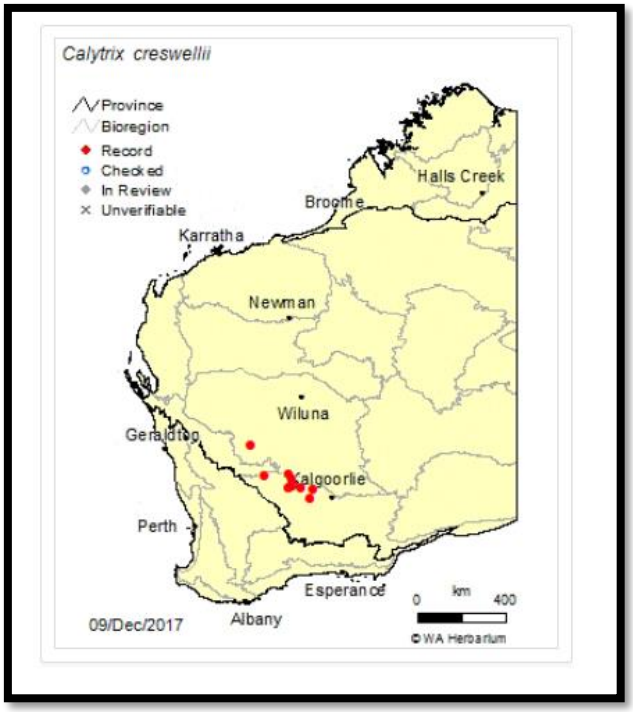
Calytrix creswellii is a small shrub species that grows on yellow sandplains in the Eastern Murchison and Southern Cross IBRA Subregions (Florabase) (Plate 12). The species was widely recorded in the sandplain surveys undertaken for the Carina Iron Ore project by Mattiske Consulting (2012). The survey areas are approximately 60km south-south-east of the Sandy Ridge tenement E16/440.

Mattiske Consulting recorded 50 populations of *Calytrix creswellii* ranging in populations size from 1 to up to 100.

There are 16 records of *Calytrix creswellii* on the Western Australian Herbarium database. Four of the records occur within 20km of tenement E16/440 and range in population size from 21 – 348 (total 429) plants. A further two populations occur within 50km of the tenement and range in population size from 42 – 250 plants. The number of herbarium records underestimates the actual number of populations that have been recorded in the region as not all populations recorded have samples taken for lodgement at the herbarium

The herbarium records and survey data suggest that *Calytrix creswellii* is likely to be widespread in the yellow sandplain soils of the Eastern Murchison and Southern Cross IBRA Subregions. While no additional populations of the species were recorded during the 2017 survey, the significance of the population recorded in 2015 is considered low in relation to the regional and sub-regional extent of the species.

Plate 12: Distribution of *Calytrix creswellii* (P3) (Florabase)



5.2 *Lepidosperma* aff. *lyonsii*

Lepidosperma lyonsii was described by R. Barrett in 2007. In 2007 the new species was recorded as occurring on a variety of soil types including pale orange sandy loam skeletal soils with banded ironstone gravel and rocks; well-drained, stony loamy sand on a moderately exposed quartz hill; and in well-drained, shallow, stony loamy and on the upper slopes of a large quartz hill.

None of these soil types match the yellow sandplain soils on which the *Lepidosperma* specimens were recorded in the 2015 or 2017 Sandy Ridge tenement surveys.

In correspondence between PGV Environmental and Dr Barrett in April 2017 Dr Barrett confirmed that *L. lyonsii* is restricted to the banded iron formation and related geologies in the Mt Jackson area indicating that specimens recorded on the yellow sandplain in the Sandy Ridge tenement area are not likely to be the Priority 4 species *L. lyonsii*.

Photographs of the *Lepidosperma* specimens collected in 2017 were examined by Dr Barrett who concluded that the species appear to be part of the difficult *L. lyonsii* species complex, which has a mix of highly localised and widespread taxa ranging from Mt Jackson south to Ravensthorpe and from about Tammin east to Queen Victoria Spring and Cape Arid.

Dr Barrett recommended that until further taxonomic work is undertaken the *Lepidosperma* species recorded from the sandplain soils in and around the Sandy Ridge tenement should be referred to as *Lepidosperma* aff. *lyonsii*.

Due to the difficulty in assigning a species name to the *Lepidosperma* specimens in and around the Sandy Ridge tenement, *Lepidosperma* aff. *lyonsii* does not have a conservation code assigned to it. Dr Barrett indicated that the specimens matched other specimens he had seen from the Jaurdi area on yellow sandplains which suggests the species is not a newly collected species.

The sandplain soils with *Acacia/Allocasuarina* vegetation are extensive in the region around the Sandy Ridge tenement. *Lepidosperma* aff. *lyonsii* is highly likely to be more widespread in the region and further taxonomic work and field surveys may find the species is relatively common. A related survey undertaken by PGV Environmental in November 2017 of potential borrow pit sites along the IWDF Access Road recorded nine populations of *Lepidosperma* in yellow sandplain soils which Dr Barrett identified as being *Lepidosperma* aff. *lyonsii*. The IWDF Access Road survey extended for a distance of around 75km north to south with the southernmost record of *Lepidosperma* aff. *lyonsii* being at the intersection of the access road with Great Eastern Highway, approximately 100km south of the Sandy Ridge tenement. These records support the statement that *Lepidosperma* aff. *lyonsii* is highly likely to be widespread in the region.

The 2017 survey for *Lepidosperma* plants found seven new populations in addition to the four populations recorded in 2015. Four of new populations were in the tenement and three outside. All populations were recorded in yellow loamy sand with *Acacia/Allocasuarina* Open Heath, Shrub Mallee and Tall Shrubland vegetation usually containing *Triodia scariosa*.

The sizes of the new populations ranged from 2 – 250 plants. The largest population of around 250 plants was located to the south of the tenement on land that will not be impacted by the Sandy Ridge

proposal. The second largest population of 171 plants was recorded within the south-east corner of the tenement in an area where an access road is provisionally planned (Figure 2).

Fifty-five plants from five populations occur in the mine pit/waste storage area and avoidance of impact on these populations may not be possible. Twenty-five plants were recorded in SR14 and SR15 which are located on proposed access roads.

A total of 596 *Lepidosperma* aff. *lyonsii* plants have been recorded in the 2015 and 2017 surveys in and around the Sandy Ridge tenement. Out of the total of 596 *Lepidosperma* aff. *lyonsii* plants recorded, 55 or 9% are likely to be impacted by the Sandy Ridge proposal. Some plants may also be impacted by proposed access roads Given the extent of the sandplain habitat in which the plants were recorded, and the recent recording of the species from the IWDF Access Road survey, it is highly likely that there are further populations of *Lepidosperma* aff. *lyonsii* outside the tenement in sandplain Heath and Shrubland vegetation containing Spinifex (*Triodia scariosa*).

There may also be additional populations in the tenement that were not surveyed due to the constraints of the survey (very large tenement with a paucity of access tracks). Such areas would include the sandplain area south of the mine pit/storage cells that is likely to only contain a few access tracks and otherwise would largely be left intact. The level of impact on *Lepidosperma* aff. *lyonsii*, therefore, is highly likely to be a lot less than 9% in the local area.

6 CONCLUSIONS

A targeted flora survey was undertaken on 12 to 13 November 2017 for the species *Calytrix creswellii, Lepidosperma lyonsii* and 'unknown *Lepidosperma*' of the *L. lyonsii* complex. The results of the survey were as follows:

- No additional populations of *Calytrix creswellii* P3 were recorded during the survey. An assessment of the DBCA database and other flora survey reports indicates numerous records of *Calytrix creswellii* in the region. Therefore, the significance of the population recorded in the tenement in 2015 is considered low in relation to the regional and sub-regional extent of the species;

- Seven additional populations of *Lepidosperma* were recorded during this survey, four of which were inside the tenement and three outside in the surrounding area. Identification of the *Lepidosperma* specimens by Dr Russell Barrett indicated that the species is in the *L. lyonsii* complex and should be referred to as *Lepidosperma* aff. *lyonsii* until further taxonomic work is undertaken.

- The habitat in which the *Lepidosperma* aff. *lyonsii* plants were recorded was consistently *Acacia/Allocasuarina* Open Heath to Tall Shrubland on sandplain soils. *Callitris preissii* was also a common shrub species and *Triodia scariosa* was almost always present in low to high densities;

- The sandplain soils with *Acacia/Allocasuarina* vegetation are extensive in the region. *Lepidosperma* aff. *lyonsii* is highly likely to be more widespread in the region than recorded in the two Sandy Ridge surveys. This is supported by the findings of the 2017 IWDF Access Road survey in which 9 additional populations were recorded; and

- A total of 596 *Lepidosperma* plants have been recorded within and in close proximity to the Sandy Ridge tenement area in 2015 and 2017. Five of the populations, containing a total of 55 plants (9%), are located in the mine pit/storage cells area and may be impacted by clearing. At least 91% of the *Lepidosperma* aff. *lyonsii* plants recorded in the survey should not be impacted by the mining proposal. It is highly likely that there would be other populations of *Lepidosperma* aff. *lyonsii* in areas that were not covered by the survey and in areas that will not be impacted by the Sandy Ridge proposal. The level of impact therefore would be lower than 9%.

7 REFERENCES

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PGV Environmental (2017). Sandy Ridge Project, IWDF Access Road Borrow Pit Sites Flora and Vegetation Survey. Prepared for Tellus Holdings. Report No. 2017-359, 9 February 2018.

FIGURES

PINPOINT CARTOGRAPHICS (08) 9562 7136 2017-360-f01.dgn

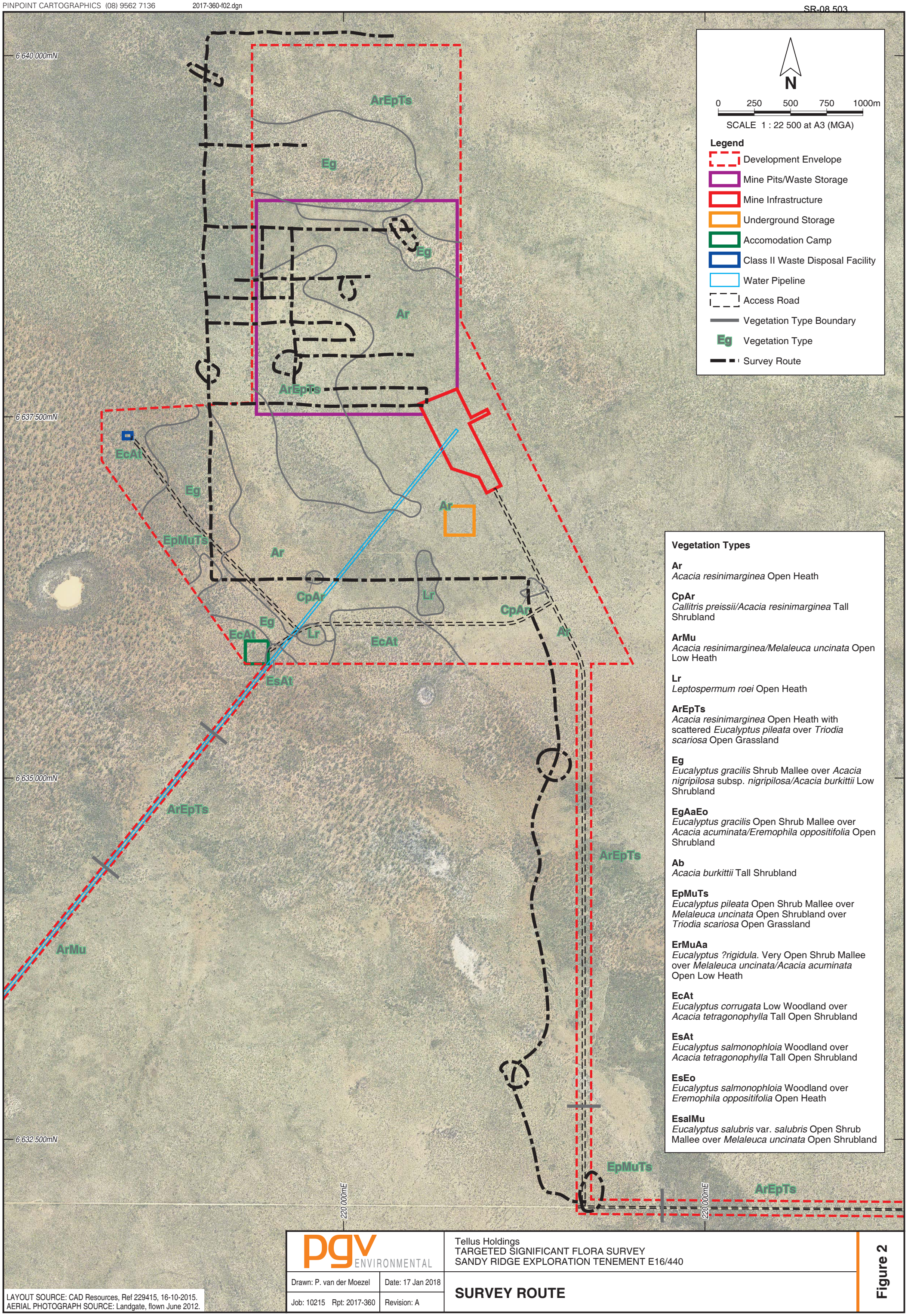
pgv ENVIRONMENTAL

Tellus Holdings
TARGETED SIGNIFICANT FLORA SURVEY
SANDY RIDGE EXPLORATION TENEMENT E16/440

Drawn: P. van der Moezel	Date: 17 Jan 2018
Job: 10215 Rpt: 2017-360	Revision: A

REGIONAL LOCATION

Figure 1



Vegetation Types

Ar
Acacia resinimarginea Open Heath

CpAr
Callitris preissii/Acacia resinimarginea Tall Shrubland

ArMu
Acacia resinimarginea/Melaleuca uncinata Open Low Heath

Lr
Leptospermum roei Open Heath

ArEpTs
Acacia resinimarginea Open Heath with scattered *Eucalyptus pileata* over *Triodia scariosa* Open Grassland

Eg
Eucalyptus gracilis Shrub Mallee over *Acacia nigripilosa* subsp. *nigripilosa/Acacia burkittii* Low Shrubland

EgAaEo
Eucalyptus gracilis Open Shrub Mallee over *Acacia acuminata/Eremophila oppositifolia* Open Shrubland

Ab
Acacia burkittii Tall Shrubland

EpMuTs
Eucalyptus pileata Open Shrub Mallee over *Melaleuca uncinata* Open Shrubland over *Triodia scariosa* Open Grassland

ErMuAa
Eucalyptus ?rigidula. Very Open Shrub Mallee over *Melaleuca uncinata/Acacia acuminata* Open Low Heath

EcAt
Eucalyptus corrugata Low Woodland over *Acacia tetragonophylla* Tall Open Shrubland

EsAt
Eucalyptus salmonophloia Woodland over *Acacia tetragonophylla* Tall Open Shrubland

EsEo
Eucalyptus salmonophloia Woodland over *Eremophila oppositifolia* Open Heath

EsalMu
Eucalyptus salubris var. *salubris* Open Shrub Mallee over *Melaleuca uncinata* Open Shrubland

LAYOUT SOURCE: CAD Resources, Ref 229415, 16-10-2015.
AERIAL PHOTOGRAPH SOURCE: Landgate, flown June 2012.

pgv ENVIRONMENTAL

Drawn: P. van der Moezel | Date: 17 Jan 2018
Job: 10215 Rpt: 2017-360 | Revision: A

Tellus Holdings
TARGETED SIGNIFICANT FLORA SURVEY
SANDY RIDGE EXPLORATION TENEMENT E16/440

SURVEY ROUTE

Figure 2

6 640 000mN
6 637 500mN
6 635 000mN
6 632 500mN
220 000mE
220 000mE

N

0 250 500 750 1000m

SCALE 1 : 22 500 at A3 (MGA)

Legend

- Development Envelope
- Mine Pits/Waste Storage
- Mine Infrastructure
- Underground Storage
- Accomodation Camp
- Class II Waste Disposal Facility
- Water Pipeline
- Access Road
- Vegetation Type Boundary
- Eg — Vegetation Type

Priority Flora

- *Calytrix creswellii*
- *Lepidosperma* sp.
- *Lepidosperma lyonsii*
- 23 — Number of Plants

Vegetation Types

Ar
Acacia resinimarginea Open Heath

CpAr
Callitris preissii/Acacia resinimarginea Tall Shrubland

ArMu
Acacia resinimarginea/Melaleuca uncinata Open Low Heath

Lr
Leptospermum roei Open Heath

ArEpTs
Acacia resinimarginea Open Heath with scattered *Eucalyptus pileata* over *Triodia scariosa* Open Grassland

Eg
Eucalyptus gracilis Shrub Mallee over *Acacia nigripilosa* subsp. *nigripilosa/Acacia burkittii* Low Shrubland

EgAaEo
Eucalyptus gracilis Open Shrub Mallee over *Acacia acuminata/Eremophila oppositifolia* Open Shrubland

Ab
Acacia burkittii Tall Shrubland

EpMuTs
Eucalyptus pileata Open Shrub Mallee over *Melaleuca uncinata* Open Shrubland over *Triodia scariosa* Open Grassland

ErMuAa
Eucalyptus ?rigidula. Very Open Shrub Mallee over *Melaleuca uncinata/Acacia acuminata* Open Low Heath

EcAt
Eucalyptus corrugata Low Woodland over *Acacia tetragonophylla* Tall Open Shrubland

EsAt
Eucalyptus salmonophloia Woodland over *Acacia tetragonophylla* Tall Open Shrubland

EsEo
Eucalyptus salmonophloia Woodland over *Eremophila oppositifolia* Open Heath

EsalMu
Eucalyptus salubris var. *salubris* Open Shrub Mallee over *Melaleuca uncinata* Open Shrubland

LAYOUT SOURCE: CAD Resources, Ref 229415, 16-10-2015.
AERIAL PHOTOGRAPH SOURCE: Landgate, flown June 2012.

pgv ENVIRONMENTAL

Drawn: P. van der Moezel | Date: 17 Jan 2018
Job: 10215 Rpt: 2017-360 | Revision: A

Tellus Holdings
TARGETED SIGNIFICANT FLORA SURVEY
SANDY RIDGE EXPLORATION TENEMENT E16/440

LOCATIONS OF *LEPIDOSPERMA LYONSII* ON AND AROUND THE TENEMENT

Figure 3

APPENDIX C: TARGETED FLORA SURVEY PLAN AND CORRESPONDENCE

Dr Robert Hughes
Principal Environment Officer
DWER – EPA Services
168 St Georges Tce
Perth WA 6000

CC: Ms. Emma Gaunt, Appeals Convenor

Via email

2 March 2018

Dear Robert,

Sandy Ridge Facility EPA Assessment 2057 and Report 1611 – Targeted Flora Survey Draft Conditions 10-2, 10-3 and 10-4.

I am writing to you to summarise the consultation between Tellus Holdings Ltd (Tellus) and Environmental Protection Authority Services (EPAS) of Department of Water and Environmental Regulation (DWER), with the objective of avoiding duplication of a targeted survey for potentially conservation significant flora at Sandy Ridge Facility.

Below is a timeline summary of the key activities related to conservation signification flora at Sandy Ridge.

Table 1. Summary of consultation on targeted flora survey at Sandy Ridge.

Date	Activity	Document
2015	Baseline flora and vegetation surveys conducted at Sandy Ridge, recording *Calytrix cresewellii*, *Lepidosperma lyonsii* and an unknown *Lepidosperma* taxon.	Refer to Appendix A.3 of the PER
27 October 2017	Tellus and EPAS meet to discuss early draft of proposed EPA conditions, including requirements related to a targeted flora survey. Tellus advised EPASU that the survey had been commissioned and was scheduled to commence 9 November 2017 to make use of Spring survey season. EPAS advised Tellus to submit survey plan for review by Terrestrial Ecosystems Branch (EPASU) to avoid later survey duplication.	Enclosure 1 EMAIL summary of meeting enclosed (our ref: TSR-3-PO-02200-AP-EML-0001).
1 November 2017	Tellus submit proposed targeted flora survey plan to EPAS for review.	Enclosure 2 EMAIL enclosed (our ref: TSR-3-PO-02200-AP-EML-0002).
3 November 2017	EPAS provide feedback on the targeted flora survey plan to Tellus from Terrestrial Ecosystems Branch. Tellus obtain clarification on the feedback: from Ms Kelly Freeman to revise the survey plan.	Enclosure 3 EMAIL enclosed (our ref: TSR-3-PO-02200-AP-EML-0003).

12-13 November 2017	PGV Environmental conduct survey as per the revised survey plan.	To be submitted upon issue of Ministerial Statement.
17 November 2017	EPA formally issue Tellus with draft Sandy Ridge Facility Report and Recommendations for comment.	Via email from Leanne Zheng.
24 November 2017	Tellus submit their review comments on the draft EPA conditions to EPAS, advising that the survey is complete and requesting draft conditions 10-2, 10-3 and 10-4 be deleted.	Enclosure 4 Letter (our ref: TSR-3-PO-02200-AP-LET-0001).
28 November 2017	Tellus and EPAS meet to discuss Tellus' submission on the draft EPA conditions. Tellus present map showing recorded locations of the flora of potential conservation significance. EPAS advise relevant conditions have been reworded to remove the requirement for the survey plan and report to be approved by the CEO.	
5 December 2017	Sandy Ridge Facility Report and Recommendations (Report 1611) is published, retaining conditions pertaining to targeted survey plan and subsequent survey being required prior to ground disturbance.	Refer to EPA Report 1611.
21 February 2018	Minister for Environment invites Tellus to consult on EPA Report 1611.	

Tellus understands that the careful wording of draft conditions 10-2, 10-3 and 10-4 cater for the fact that Tellus has proactively complied with the proposed conditions, prior to the conditions coming into effect.

Tellus respectfully requests DWER's confirmation of the above liaison and outcomes to avoid duplication of a targeted survey for potentially conservation significant flora at Sandy Ridge Facility. Tellus will submit the completed targeted survey report to EPAS when the Ministerial Statement is issued to meet conditions 10-2, 10-3 and 10-4.

Yours sincerely,

Richard Phillips
General Manager
Health, Safety, Environment, Community, Compliance and Quality
e: richie@tellusholdings.com **t:** +61 2 8257 3395

enclosures:

1. Tellus emailed EPA Services - TSR-3-PO-02200-AP-EML-0001.
2. Tellus emailed submission of targeted survey plan - TSR-3-PO-02200-AP-EML-0002.
3. EPA Services advice on targeted survey plan - TSR-3-PO-02200-AP-EML-0003.
4. Tellus comments of draft EPA conditions - TSR-3-PO-02200-AP-LET-0001.

enclosure 1

Julie Mahony

From: Julie Mahony
Sent: Friday, 27 October 2017 2:16 PM
To: Richard Surtherland - OEPA (Richard.Sutherland@dwer.wa.gov.au); Leanne Zheng (leanne.zheng@dwer.wa.gov.au); Michael Ingram; Richie Phillips; Robert Hughes (robert.hughes@dwer.wa.gov.au)
Cc: Steve Cosgrove (steve.cosgrove@jtsi.wa.gov.au)
Subject: Tellus OEPA meeting summary 27 October 2017 - draft conditions

Good afternoon
Please find below my summary of the meeting held this morning between Tellus Holdings and DWER EPA Services to discuss the draft EPA conditions for Sandy Ridge Project. Please let me know if you have any comments.

1. Attendees: Richard Sutherland (EPA), Robert Hughes (EPA), Leanne Zheng (EPA), Michael Ingram (Tellus), Richie Phillips (Tellus – phone) & Julie Mahony (Tellus)
2. Tellus acknowledged the draft conditions are preliminary and not for formal consultation
3. Waste Acceptance heading: Tellus queried the term "permanent isolation" and whether it could be adjusted to allow for recovery of deposited wastes if future technology supports their re-use. EPA indicated that re-wording to that effect could be done.
4. Waste Acceptance heading: EPA agreed Waste Acceptance Management Plan does not refer to a specific new document but may be based on Tellus' WAC suite of documents. The intent of the drafted condition is to require annual independent audit of Sandy Ridge. The specifics of the management documents are proposed to be regulated under Part V EP Act (i.e. works approval/licence) conditions.
5. Flora and Vegetation heading: Tellus advised that they have commissioned a targeted flora survey for the two Priority flora species, due to commence 9 November 2017 and queried the implications of the draft condition. EPA suggested Tellus provide their survey plan to EPA for review by Terrestrial Ecosystems Branch. This could avoid Tellus having to re-do survey later. EPA advised the wording of the draft condition would assist Tellus to commence works as soon as possible.
6. Radiological Council have not yet provided their submission to EPA (Tellus understood this to be due to EPA by Monday 23 October 2017). RP advised that he would be speaking with Hazel Upton of Radiation Health Unit on another matter and would query with her the Rad Council submission. EPA offered to attend that meeting with RP.
7. EPA advised that they require confirmation that existing legislation can be used to apply a financial bond for Sandy Ridge and that until this legal advice is provided, EPA is unlikely to issue their report for the Minister. Tellus to get status update from Steve Cosgrove of Jobs, Tourism, Science and Innovation on their legal investigations with DPLH/DWER legal representatives. (*note subsequent to meeting – Tellus to send summary of potential legal solution for consideration, in separate email*).
8. EPA suggested a State Agreement Act (SAA) addressing financial bonding and land access arrangements may be a more timely option. Part IV Ministerial approval would still be required but SAA could be drafted in parallel to reduce timeframes and may be quicker than the lease through DPLH.

Kind regards
Julie

Julie Mahony
Manager
Health, Safety, Environment, Community, Compliance & Quality
Tellus Holdings Ltd

Perth Office:
Level 34, Exchange Tower, 2 The Esplanade
Perth, WA, 6000
Mob: +61 448 955 529
E-mail: julie.mahony@tellusholdings.com

Corporate Sydney Office:
Suite 2, Level 10, 151 Castlereagh Street,
Sydney, NSW, 2000
Tel: +61 2 8257 3395 / Fax: +61 2 8233 6199
www.tellusholdings.com

enclosure 2

Julie Mahony

From: Julie Mahony
Sent: Wednesday, 1 November 2017 3:17 PM
To: Richard Surtherland - OEPA (Richard.Sutherland@dwer.wa.gov.au); Leanne Zheng (leanne.zheng@dwer.wa.gov.au)
Cc: Richie Phillips
Subject: PLEASE REVIEW - Sandy Ridge targeted flora survey scope
Attachments: 10215_018_pvdm V2_EPA.pdf

Good afternoon Richard and Leanne
As discussed in our meeting on 27 October 2017, Tellus has commissioned a targeted flora survey at Sandy Ridge to assess the distribution of Calytrix creswellii and Lepidosperma sp.. Subsequent to our commissioning a consultant botanist to conduct the survey, Tellus was provided preliminary draft EPA conditions which included the requirement for the survey scope to be approved by the CEO.

To allow Tellus to continue with logistics required to complete the survey during the current Spring season, Tellus would very much appreciate it if EPA could consider the proposed survey scope (attached) and indicate their support as soon as possible. Tellus notes that the consultant is scheduled to commence the survey on **9 November 2017**, with accommodation and travel arrangements already booked. The botanist has confirmed that he believes that the attached scope meets the EPAs objectives.

Please note that the attached scope of works also addresses a separate survey for road borrow pits, which is not directly related to the targeted survey (except that the botanist will keep a look out for the two priority species). Additionally, for commercial reasons I have deleted the survey fee amounts.
If you have any questions, please let me know.
Kind regards
Julie

Julie Mahony
Manager
Health, Safety, Environment, Community, Compliance & Quality
Tellus Holdings Ltd

Perth Office:
Level 34, Exchange Tower, 2 The Esplanade
Perth, WA, 6000
Mob: +61 448 955 529
E-mail: julie.mahony@tellusholdings.com

Corporate Sydney Office:
Suite 2, Level 10, 151 Castlereagh Street,
Sydney, NSW, 2000
Tel: +61 2 8257 3395 / Fax: +61 2 8233 6199
www.tellusholdings.com

Unit 1, 61 Guthrie Street
Osborne Park WA 6017

31 October 2017

Sophy Townsend

Tellus Holdings Ltd
Suite 2, Level 10
151 Castelreagh Street
Sydney NSW 2000

Dear Sophy,

RE: Targeted Flora and Borrow Pit Surveys and Clearing Permit – Fee Proposal

Following is PGV Environmental's fee proposal to undertake further flora survey work in relation to the Sandy Ridge project as well as to assist Tellus Holdings in the preparation of a clearing permit for the borrow pit sites.

1 Background

The background to the surveys is adequately described in detail in the Biological Survey Brief issued by Tellus Holdings and is summarised as follows:

- ***Borrow Pits***

Tellus Holdings proposes to upgrade the IWDF access road to service the new Sandy Ridge Facility located approximately 95km north of the Great Eastern Highway. The work will require expanding 14 historic borrow pits along the IWDF access road to obtain material for the upgrade. Expanding the pits will require clearing up to 166ha of native vegetation. A survey is required to determine key flora, vegetation, soil and fauna habitat values.

- ***Clearing Permit***

Clearing native vegetation to expand the borrow pits will require a clearing permit because the works are not approved as part of the current assessment of the Sandy Ridge project under Part IV of the *Environmental Protection Act 1986*.

- ***Targeted Flora Survey***

A targeted survey for *Calytrix creswellii, Lepidosperma lyonsii* and the 'unknown *Lepidosperma*' is required to determine the extent of any of these species in the Sandy Ridge tenement to assist with project design and to quantify any potential impact on the species.

2 Scope of Work

Borrow Pit Survey

The 14 borrow pits required to be surveyed are located either side of the IWDF access road, from the intersection with Great Eastern Highway up to almost 85km to the north. The survey area for each site ranges from 8 – 19ha. The survey area is shown in the pink box on Figures 1-15 of the Biological Survey Brief. The survey area covers a larger area than the proposed disturbance footprint.

The borrow pit survey will include the following tasks:

- Review of existing reports that have been done on or nearby the IWDF access road;
- Database searches of the Department of Biodiversity Conservation and Attractions (DBCA) Declared Rare and Priority Flora database and Threatened Ecological Communities database; EPBC Protected Matters Search Tool; NatureMap (20km radius);
- Identify the pre-European vegetation type/s and land systems;
- Examination of aerial photography to delineate broad vegetation types and condition of each pit;
- Undertake a field survey of each borrow pit. The survey will include an inventory of all native and introduced species in the survey areas, description and mapping of vegetation types and condition and sampling from permanent 20m x 20m quadrats;
- Vegetation mapping will be done using the NVIS (ESCAVI 2003) classification system. The mapping will be suitable for use by the fauna consultant to identify fauna habitats;
- Quadrat data will be presented in Excel format;
- Any populations of Threatened or Priority flora will be recorded using a hand-held GPS and the number of plants counted or estimated. Where Threatened or Priority flora are recorded in a survey area, the extent of the population outside the survey area will also be surveyed and mapped;
- The findings of the survey will be presented in a stand-alone report separate to the Targeted Flora Survey (see below). The report will outline the background, scope of work, methodology and results of the survey and will identify any areas that need to be avoided for clearing. The report will discuss the legislative process at State and Federal level to gain approval to clear the vegetation; and
- Preparation of a stand-alone memo to Tellus that includes advice on whether the proposed clearing should be referred to the EPA or DoEE.

Targeted Flora Survey

The targeted flora survey will address the scope of work contained in the Biological Survey Brief, with the addition of *Calytrix creswellii*, as well as emails between DBCA Herbarium staff (Mike Hislop) and Tellus.

The targeted survey will include the following tasks:

- Review previous surveys of the site and nearby;

- Identify potential locations of additional *Calytrix creswellii, Lepidosperma lyonsii* and the 'unknown *Lepidosperma*' plants on and around the tenement based on vegetation types, soil types and landform;
- Undertake a field survey to map populations of *Calytrix creswellii, Lepidosperma lyonsii* and the 'unknown *Lepidosperma*' on and around the tenement;
- The field survey will map the location and extent of each population found using a hand-held GPS. The number of plants at each population will be recorded and, where appropriate, a specimen will be taken for identification and potential lodgement at the WA Herbarium;
- The findings of the survey will be presented in a stand-alone report. The report will include the background, scope of work, methodology and results of the survey, including a map of all populations recorded;
- The objective of the survey and report will be to demonstrate, where possible, that any conservation significant species recorded on the site are not restricted to the Sandy Ridge site and to advise Tellus on any potential design changes that would reduce the impact on conservation significant species.

The Sandy Ridge development footprint is very large, 1004.2ha. Due to the size, remoteness and paucity of tracks throughout the site it will be unfeasible to survey the whole site thoroughly as well as areas outside the tenement in a cost-effective manner. Our experience with access on the site is there is a main north-south track that runs through the southern part of the tenement and then approximately 300m to the west of the northern half of the tenement. A series of east-west tracks run off this track into the tenement. Some of the east-west tracks are also interconnected.

The internal tracks will be utilised to cover as much of the tenement as possible. The northern and southern parts of the site contain fewer tracks than the central area and are likely to be more sparsely covered than the central area.

The areas outside of the tenement to be surveyed will focus on the portion of the north-south track that is outside of the tenement and contains likely target vegetation types and soil types. In addition, the area to the south of the tenement is accessible by vehicle and on foot along the access track off the Mt Dimer road. Target areas will be surveyed in this region.

If no *Calytrix creswellii, Lepidosperma lyonsii* and the 'unknown *Lepidosperma*' specimens are found in the north-west and southern areas outside the tenement, the search will look further outside these areas.

Clearing Permit

A Purpose Permit would be required for clearing in any of the 14 borrow pit sites if an exemption does not apply. The permit preparation is very straightforward and includes filling out a form (Form C2) with attached survey reports and a cover letter.

The cover letter will address the Ten Clearing Principles that the Department of Water and Environmental Regulation will use to determine the environmental impact of the clearing. The Ten Clearing Principles are:

- *Principle 1: Vegetation should not be cleared if it comprises a high level of biological diversity.*

- *Principle 2: Vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.*
- *Principle 3: Vegetation should not be cleared if it includes, or is necessary for the continued existence of rare flora.*
- *Principle 4: Vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.*
- *Principle 5: Vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.*
- *Principle 6: Vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.*
- *Principle 7: Vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.*
- *Principle 8: Vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.*
- *Principle 9: Vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.*
- *Principle 10: Vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.*

The results of the fauna surveys would be required before the clearing permit application can be finalised.

The proposed disturbance footprint for each area will be that shown in the yellow box on Figures 1-15 of the Biological Survey Brief.

Additional drafting time is needed for the clearing permit to change the drafting figures into ESRI shapefiles.

3 Timing

We propose to undertake the borrow pit survey and targeted flora survey over 4 days from 9 - 12 November. A memo on the early field survey will be prepared by 15 November including a draft of the vegetation types to assist the zoologist's survey. The first draft can be submitted by 8 December and a final report submitted within one week of receiving comments on the draft, likely around 17 December.

The clearing permit can be submitted by 22 December. <<not part of targeted flora survey scope>>

4 Deliverables

Two separate reports will be prepared for the borrow pit sites and the *Calytrix creswellii, Lepidosperma lyonsii* and the 'unknown *Lepidosperma*' survey.

Early findings of the report will be provided to Tellus in memos prior to compiling the reports.

One draft report will be submitted to Tellus for comment. Comments will be reviewed and where appropriate incorporated into a revised report. A comment tracking sheet will be prepared to show how the comments have been addressed.

The final report will be provided to Tellus in Word and Adobe pdf format. Data will be provided in ESRI shapefile format.

The reports will be suitable for use in environmental assessment and approvals processes, such as a clearing permit application.

5 Personnel

The field work will be undertaken by Dr Paul van der Moezel and a field assistant. Dr van der Moezel undertook the initial flora and vegetation survey of the Sandy Ridge site in 2015 and is therefore familiar with the vegetation and accessibility to and within the site.

6 Fee Proposal

The breakdown of costs is outlined in the table below. The three assessments will be undertaken concurrently during one site visit over 4 days. The field costs have been evenly split between the borrow pit survey and the targeted flora survey.

Task/Cost	Cost (Exc. 10% GST)	10% GST	Total (inc. 10% GST)
Borrow Pit Survey		$	$
Targeted flora Survey	$	$	$
Clearing Permit	$	$	$
TOTAL	**$**	**$**	**$**

The fee includes all time and expenses for the project and allows liaison with the client.

The fee allows lodgement of up to 30 specimens at the Perth Herbarium ($25/specimen).

We accept the milestone payments set out in the brief which are:

- On completion of fieldwork 40%
- On receipt of first draft reports and draft survey data 30%
- On approval of final report and supply of survey data 30%

Please contact me if you have any questions over the scope of work or fee proposal.

Yours sincerely

Paul van der Moezel
Managing Director

enclosure 3

Julie Mahony

From: Leanne Zheng <leanne.zheng@dwer.wa.gov.au>
Sent: Friday, 3 November 2017 9:48 AM
To: Julie Mahony
Cc: Richie Phillips; Richard Sutherland
Subject: RE: PLEASE REVIEW - Sandy Ridge targeted flora survey scope

Hi Julie

The Terrestrial Ecosystems Branch has had a look at the scope of works for the targeted flora survey.

While the scope of works proposed is reasonable, consideration should also be given to filling any gaps from previous surveys. Also, identification of potential locations of *Calytrix creswelli*, *Lepidosperma lyonsii*, and the unknown *Lepidosperma* should be based on vegetation types rather than soil types and landforms.

Regards

Leanne Zheng
A/Senior Environmental Officer
Mining and Industrial Assessments South
EPA Services

Department of Water and Environmental Regulation
Level 4, The Atrium, 168 St Georges Terrace PERTH WA 6000
Locked Bag 33, Cloisters Square, PERTH WA 6850
T: (08) 6364 6544 | Reception: (08) 6364 7000 | F: (08) 6364 7001
E: leanne.zheng@dwer.wa.gov.au | www.dwer.wa.gov.au | www.epa.wa.gov.au
Twitter: @DWER_WA | @EPA_WA

From: Julie Mahony [mailto:julie@tellusholdings.com]
Sent: Wednesday, 1 November 2017 3:17 PM
To: Richard Sutherland <richard.sutherland@dwer.wa.gov.au>; Leanne Zheng <leanne.zheng@dwer.wa.gov.au>
Cc: Richie Phillips <richie.phillips@tellusholdings.com>
Subject: PLEASE REVIEW - Sandy Ridge targeted flora survey scope

Good afternoon Richard and Leanne
As discussed in our meeting on 27 October 2017, Tellus has commissioned a targeted flora survey at Sandy Ridge to assess the distribution of Calytrix creswellii and Lepidosperma sp.. Subsequent to our commissioning a consultant botanist to conduct the survey, Tellus was provided preliminary draft EPA conditions which included the requirement for the survey scope to be approved by the CEO.

To allow Tellus to continue with logistics required to complete the survey during the current Spring season, Tellus would very much appreciate it if EPA could consider the proposed survey scope (attached) and indicate their support as soon as possible. Tellus notes that the consultant is scheduled to commence the survey on **9 November 2017**, with accommodation and travel arrangements already booked. The botanist has confirmed that he believes that the attached scope meets the EPAs objectives.

Please note that the attached scope of works also addresses a separate survey for road borrow pits, which is not directly related to the targeted survey (except that the botanist will keep a look out for the two priority species). Additionally, for commercial reasons I have deleted the survey fee amounts.
If you have any questions, please let me know.
Kind regards

Julie

Julie Mahony
Manager
Health, Safety, Environment, Community, Compliance & Quality
Tellus Holdings Ltd

Perth Office:
Level 34, Exchange Tower, 2 The Esplanade
Perth, WA, 6000
Mob: +61 448 955 529
E-mail: julie.mahony@tellusholdings.com

Corporate Sydney Office:
Suite 2, Level 10, 151 Castlereagh Street,
Sydney, NSW, 2000
Tel: +61 2 8257 3395 / Fax: +61 2 8233 6199
www.tellusholdings.com

enclosure 4

Our ref: TSR-3-PO-02200-AP-LET-0001

Anthony Sutton
Executive Director
EPA Services - Department of Water and Environmental Regulation
168 St Georges Terrace
PERTH WA 6000

24 November 2017

Dear Anthony,

RE: CONSULTATION ON DRAFT CONDITION – SANDY RIDGE FACILITY – ASSESSMENT NO. 2057

Tellus Holdings Ltd (Tellus) thanks you for the opportunity to comment on the Environmental Protection Authority's draft conditions for the Sandy Ridge Facility (your ref: CMS15087; DWERA-000033).

Tellus has considered the draft conditions on matters of fact, technical issues and implementation and submits its findings in Table 1 for your consideration.

Tellus requests a meeting to clarify the points raised in Table 1. Please do not hesitate to contact me on:

Email: Julie.mahony@tellusholdings.com.au

Mobile: 0448 955 529.

Yours sincerely

Julie Mahony
Manager
Health, Safety, Environment, Community and Compliance
Tellus Holdings Ltd

Table 1. Tellus Holdings Ltd comment on Sandy Ridge Project draft EPA Conditions (Assessment 2057).

Draft Condition Number	Suggested Change	Reason for Change
1-1	Refer to comments on Schedule 1	
2-1	nil	
3-1	nil	
3-2	nil	
4-1	Define “implementation”	Avoid ambiguity. Tellus understands “implementation” to refer to commencement of ground disturbance for the purpose of the development of the proposal.
4-2	nil	
4-3	nil	
4-4	nil	
4-5	Clarify “potential non-compliance” refers to a non-compliance identified during a compliance assessment.	Avoid ambiguity. Tellus assumes that “non-compliance” in this condition refers to non-compliances identified during compliance assessments as defined in condition 4-2. However, it could also be understood to refer to non-compliance with any regulatory requirement.
4-6	nil	
5-1	nil	
5-2	nil	
6-1	nil	
7-1	nil	
7-2	Change “Waste Register” to “Waste Management System”.	Tellus’ Waste Characterisation Procedures (in preparation), Waste Acceptance Criteria, Waste Acceptance Procedures and Enterprise Resource Planning (SAP ByDesign) software system combine to meet the requirements described in condition 7-3.
7-3	Change “Waste Register” to “Waste Management System”.	See comment on condition 7-2.

Draft Condition Number	Suggested Change	Reason for Change
7-4	Change "…until the Sandy Ridge Facility until cessation of operations at the facility" to "…until cessation of operations at the Sandy Ridge Facility". Define "cessation of operations"	Fix grammar – remove fragment. Avoid ambiguity. Tellus understands "cessation of operations" to mean when waste ceases to be accepted at Sandy Ridge and all wastes at Sandy Ridge have been permanently isolated in accordance with the approved Radiation Safety Case[1] and the Chemical Waste Safety Case [2].
8-1(1)	Define "permitted waste" as being compliant with Tellus' Waste Acceptance Criteria).	Avoid ambiguity.
8-1(2)	Delete	Tellus assumes that the requirement to comply with regulatory requirements is mandatory. Please clarify whether EPA's intent is for Tellus to report compliance with all legislation (not just the Environmental Protection Act 1986) to the CEO.
8-2(3)	Define Waste Acceptance Criteria	Avoid ambiguity. Related to comment for condition 8-1(1). The Waste Acceptance Criteria (WAC) is likely to change over time, as waste management and technology changes. An effective and efficient mechanism to assess and approve future changes to the WAC is via the *Radiation Safety Act 1975* and Part V of the *Environmental Protection Act 1986.*
8-2(4)	Define Waste Acceptance Procedures	Avoid ambiguity. Related to comment for condition 8-1(1). The Waste Acceptance Procedures (WAP) are likely to change over time, as waste management and technology changes. An effective and efficient mechanism to assess and approve future changes to the WAP is via the *Radiation Safety Act 1975* and Part V of the *Environmental Protection Act 1986.*
8-2(5)	Specify that "all required approvals" refers to "all required regulatory approvals".	
8-2(6)	nil	
8-2(7)	Add "(northing, easting and elevation)" after "three dimensions"	Avoid ambiguity

[1] The Sandy Ridge Radiation Safety Case is currently under assessment by the Radiological Council for approval under the *Radiation Safety Act 1975*.
[2] The Sandy Ridge Chemical Waste Safety Case is in development in accordance with world's best practice.

Draft Condition Number	Suggested Change	Reason for Change
8-2(8)	Insert after "requirements", "of the Environmental Protection Act 1986 applicable to the Proposal".	Avoid ambiguity.
8-2(9)	Delete the word "whether" at the beginning of the point	It is a repeated word
8-3	nil	
8-4	Delete ", and other relevant regulators where a non-compliance against other legislation has occurred," OR (in the event that the proposed amendment to condition 8-2(8) is not accepted) After "other legislation", Insert "with potential risk to human health or a sensitive environmental receptor".	Related to comment on condition 8-2(8), Tellus requests clarification as to whether the intention of the condition is for Tellus to notify the CEO of issues of compliance with all legislation, not just the *Environmental Protection Act 1986*? Tellus will develop and operate the Sandy Ridge Project in compliance with all applicable legislation, (environmental and other) and will manage incidents in accordance with the requirements of the applicable regulators. The current wording of the condition appears to duplicate regulation.
8-5	nil	
9-1	nil	
9-2	Define "commencement of operations"	Avoid ambiguity. Leachate Monitoring and Management Plan is relevant to above-ground hazardous waste storage and disposal in waste cells. There is no risk of leachate from above ground storage or isolation of disused sealed radioactive sources.
9-3	nil	
9-4	nil	
9-5	nil	
9-6	Consider specifying that "subsequently approved" means that it must be approved by the CEO.	Avoid ambiguity. See condition 11-4(1) for appropriate wording.
9-7	nil	
10-1	Delete ", and the undescribed *Lepidosperma* sp." from both 10-1(1) and 10-1(2).	Current information from the expert in *Lepidosperma* in Australia, Dr Russell Barrett, indicates that the taxa referred to is *L. lyonsii*. This will likely be confirmed by the WA Herbarium using specimens lodged from the targeted survey. If confirmed, delete as suggested.

Draft Condition Number	Suggested Change	Reason for Change
10-2	Delete condition.	The targeted survey plan for the stipulated species was submitted and reviewed by the EPA Terrestrial Ecosystems branch (refer email from L. Zheng to J. Mahony on 3 November 2017 at 09:48 hrs). The scope was revised following discussion between J. Mahony and Ms Kelly Freeman on 3 November 2017. The survey was conducted in November 2017. The report is in preparation and will be submitted to the CEO in December 2017. Hence the condition is no longer relevant.
10-3	Delete condition.	The survey methodology was described in the survey plan which was reviewed and endorsed by EPA Services (see comment on condition 10-2).
10-4	Delete condition.	See comments for condition 10-2 and condition 10-3. The CEO approval is now redundant.
10-5	Add “associated with the Proposal” after “activities,”.	Ground disturbing activities have occurred as approved under the *Mining Act 1978* by way of Programs of Work on the live exploration tenement E16/440. These activities are not directly related to the Proposal described in the Sandy Ridge PER.
10-6	Delete “, and the undescribed *Lepidosperma* sp.”	See comment for condition 10-1.
10-7	nil	
10-8	Consider specifying that “subsequently approved” means that it must be approved by the CEO.	Avoid ambiguity. See condition 11-4(1) for appropriate wording.
10-9	nil	
11-1	nil	
11-2	Add “ associated with the Proposal” after “activities,”.	See comment for condition 10-5.
11-3	nil	
11-4	nil	NOTE – condition 11-4(1) wording regarding the approval by the CEO could be considered for condition 9-6, condition 10-8 and condition 11-6.
11-5	nil	
11-6	Consider specifying that “subsequently approved” means that it must be approved by the CEO.	Avoid ambiguity. See condition 11-4(1) for appropriate wording.
11-7	nil	
Schedule 1 Table 1	nil	

Draft Condition Number	Suggested Change	Reason for Change
Schedule 1 Table 2 - In Column 1, row 5	Consider inserting "indicative" before "Mining rate".	A limit on annual mining rate impinges on Tellus' ability to conduct campaign-style mining eg mine 2-3 years' worth in a single year then not mine for during the subsequent year(s). A limit on annual rate of mining is superfluous as the operational throughput of the waste facility will be limited by the: 1. rate of waste acceptance being 100,000 tpa, 2. rate of placement in the waste cells being 280,000 tpa, 3. area of disturbance for mine pits/waste cells being 202.3 ha and 4. limit on the capacity of the kaolin processing plant being 40,000 tpa. Further, the air quality impacts (i.e. dust emissions) related to mining will be limited under Part V of the EP Act via the operating licence for screening. NOTE: The mining rate proposed to be 290,000 tonnes per annum as stated in the PER Glossary, Table 1-4 and in section 13.2.1 referred to kaolinised granite ore, not including overburden.
Schedule 1 Table 2 - In Column 1, row 11	Delete row	Avoid regulatory duplication. Although the rate of abstraction listed in Table 2 is likely to be sufficient for operating[3] the Sandy Ridge Facility, Tellus understands that water abstraction may be more efficiently assessed and regulated under the *Rights in Water and Irrigation Act 1914* via a 26D permit and 5C licence.

[3] Water abstraction rates stated in section 5.9.2 of the PER are estimates of the volumes during operation. Water consumption will be higher during construction to aid compaction activities and to minimise dust emissions. Tellus estimates no more than 0.3 Gigalitres will be abstracted during the 12-months of construction. This will reduce to below 0.18 Gigalitres per annum during operations.

Draft Condition Number	Suggested Change	Reason for Change
Schedule 1 Table 3	Consider adding definitions	Definitions for: • Commencement of operations - commencement of acceptance of Class IV or Class V waste at the Sandy Ridge Facility. • Cessation of operations - when waste ceases to be accepted at Sandy Ridge and all wastes at Sandy Ridge have been permanently isolated in accordance with the approved Radiation Safety Case and the Chemical Waste Safety Case. • Implementation – commencement of ground disturbing activities for the purposes of developing the Proposal. • Permitted Wastes – as per Sandy Ridge Facility Waste Acceptance Criteria. • Sandy Ridge Facility Waste Acceptance Criteria as approved (including subsequent version) under the *Radiation Safety Act 1975* and Part V of the *Environmental Protection Act 1986*. • Sandy Ridge Facility Waste Acceptance Procedures as approved (including subsequent version) under the *Radiation Safety Act 1975* and Part V of the *Environmental Protection Act 1986*

APPENDIX D: ROLES AND RESPONSIBILITIES

Tellus General Manager – HSECQ

The General Manager – HSECQ has the following responsibilities during the construction and operation of the Facility:

- Mandate and certify that environmental protection remains an integral element of all activities during construction and operation.
- Provide resources to certify compliance is achieved with this FVMP.

Tellus Perth Manager – HSECQ

The Perth Manager – HSECQ has the following responsibilities during the construction and operation of the Facility:

- Ensure that this FVMP is effectively implemented by the contractor.
- Provide direction and guidance on the implementation of this FVMP.
- Verify that an appropriate environmental induction and training program is developed such that personnel are aware of their environmental responsibilities under relevant legislation and their contract including the requirements associated with this FVMP.
- Coordinate ongoing training in environmental awareness for all levels of staff, as required, to implement this FVMP.
- Participate in regular inspections to ensure compliance with this FVMP.
- Certify that the required monitoring and reporting, including environmental auditing, is undertaken and reported to Tellus General Manager – HSECQ.
- Provide notification/information where environmental incidents/events have occurred liaising with Tellus General Manager – HSECQ.
- Ensure the timely review and assessment of environmental monitoring, auditing and inspection outcomes to ensure identification and implementation of continual improvement with regards to this FVMP.
- Overall reporting of the environmental performance of the Facility.

Sandy Ridge Site Technician

The Sandy Ridge Site Technician has the following responsibilities in line with this FVMP:

- Conduct environmental mitigation/management inductions.
- Daily interaction and coordination with contractors to ensure their environmental management requirements are discharged.

- Inspection and monitoring (daily and monthly) to ensure environmental mitigation/management requirements are implemented.
- Report on compliance with environmental mitigation/management requirements, results of inspections and monitoring, and any improvement opportunities and non-conformances. Liaise directly with Tellus Perth Manager – HSECQ.

Contractors

Contractors have the following responsibilities during the construction and operation of the Facility:

- Identify resources required for the implementation of this FVMP.
- Verify that personnel receive appropriate induction training, including details of the environmental obligations associated with flora and vegetation management.
- Verify suppliers and subcontractors comply with requirements regarding flora and vegetation management.
- Undertake weekly inspections, ensuring works comply with relevant regulatory and other requirements, including flora and vegetation management objectives.
- Provide other information as required from time to time to demonstrate that environmental management requirements are being met by the contractor.
- Program toolbox talks and daily pre-start meetings to include any relevant flora and vegetation management requirements.
- Report any activity that has resulted, or has the potential to result, in an environmental incident immediately to Sandy Ridge Site Technician or Tellus Perth Manager – HSECQ.
- Stop activities where there is an actual or immediate risk of harm to the environment and advise Sandy Ridge Site Technician or Tellus Perth Manager – HSECQ.
- Verify steps are taken to rectify and prevent future incidents from occurring in consultation with Sandy Ridge Site Technician or Tellus Perth Manager – HSECQ.

APPENDIX E: VEGETATION CLEARING PROCEDURE AND PERMIT

TELLUS

Standard 12: Environmental Effects and Management

Corporate Procedure

VEGETATION CLEARANCE

Tellus Holdings Ltd

February 19

Approval

The signatures below certify that this procedure has been reviewed and accepted, and demonstrates that the signatories are aware of all the requirements contained herein and are committed to ensuring their provision.

	Name	Signature	Position	Date
Prepared by	Richard Phillips		GM HSECQ	28/02/2019
Reviewed by				
Approved by				

Amendment Record

This procedure is reviewed to ensure its continuing relevance to the systems and process that it describes. A record of contextual additions or omissions is given below:

Page No.	Context	Version	Date

Company Proprietary Information

The electronic version of this procedure is the latest version. It is the responsibility of the individual to ensure that any paper material is the current version. The printed version of this procedure is uncontrolled, except when provided with a document reference number and version in the field below:

Document Ref. _____ Ver _____

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Figures / Tables

NOT APPLICABLE

1 APPLICABILITY

This procedure is written to meet Standard 12 – Environmental Effects and Management within Tellus Holding Ltd (Tellus) Integrated Management System.

Implementation of this Procedure will be supported by the Sandy Ridge Facility Environmental Management Plan (EMP), the Flora and Vegetation Management Plan (FVMP) and/or contractor EMPs prepared for specific components of work. Details of implementation requirements are provided below.

2 PURPOSE AND SCOPE

This procedure provides details on the processes involved in the pre-strip and construction phase of the Sandy Ridge Facility. The purpose of the procedure is to:

- Minimise the extent of vegetation clearance.
- Promote the retention of landscape function by appropriate topsoil and weed management.
- Reduce the risk of erosion.

It covers the removal of vegetation, removal and storage of topsoil required for rehabilitation, and has been prepared in accordance with relevant Land Clearing Guidelines. The procedure is written to assist field staff and plant operators who are responsible for clearing vegetation at the Sandy Ridge Facility.

3 RESPONSIBILITIES

Tellus HSECQ Representative	• Verifying the provisions of this procedure have been met. • Verifying compliance with this procedure. • Monitoring the performance of vegetation rehabilitation.
Principal Contractor	• Following the provisions of this procedure.

Unless otherwise specified, the provisions within this procedure are the responsibility of Tellus' onsite Health, Safety, Environment, Compliance and Quality (HSECQ) representative. Responsibility for implementation may be delegated to contractors undertaking the work; however, Tellus will maintain overarching responsibility for compliance.

4 DEFINITIONS

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5 REQUIREMENT

5.1.1 Licences and permits

This procedure was prepared as a supporting document to the Public Environmental Review. Subject to the project gaining approval to proceed, the proposed clearing activities will require the following additional permits:

- Permit under the *Environmental Protection Act 1986*.
- Permit under the *Bush Fires Act 1954*.

5.1.2 Pre-clearance tasks

Prior to the commencement of clearing works, the following must be completed:

- Delineate the area to be disturbed either physically using pegs and/or flagging tape, or by electronic means such as the use of GPS guidance systems in clearing machinery.
- Survey area for weeds – any infestation must be controlled prior to work commencing. Weed management actions are detailed in the Facility EMP.

- Clean and check all earth-moving equipment for weed seed and debris before entering site. Weed Declarations must be provided for any vehicle entering the site.
- Develop a clearing plan that can be communicated to all personnel and contractors. The clearing plan should be a map that shows areas of vegetation to be cleared and retained, no-go areas, locations for topsoil and vegetation stockpiles, areas where specific erosion control measures are required and locations for firebreaks.
- Establish bushfire first response capacity onsite.

5.1.3 Vegetation clearing

The following actions will be implemented during vegetation clearing:

- Establish a pre-clearing meeting (for all contractors) to ensure that the clearing plan is understood by all relevant personnel
- Confirm lines of communication between Tellus' environmental representative (ER) and the clearing contractors.
- Implement all safety procedures, including safe exclusion zones and attentive communication via signalling and radio communications.
- Clear vegetation using specified machinery (i.e. a bulldozer). Only qualified and trained personnel may operate the machinery.
- Monitor the boundary of clearing areas to safeguard machinery always remains within the approved clearance area. If, at any time, a machinery operator loses sight of the pegged/flagged boundary, they must cease clearing immediately and verify that they are within the approved area.
- Monitor site to ensure machinery operators do not overwork the area, which may lead to the loss of topsoil or compaction and rutting.
- Stack cleared vegetation into windrows within designated stockpiling locations inside the boundary of clearance area. This windrowed debris will be burnt as soon as practicable (with a permit) to minimise channelling and concentration of run-off. First response capacity will be onsite.
- Suppress dust using water carts as required.
- Install erosion and sediment control structures. Refer to the project ESCP for the location and types of controls.

5.1.4 Topsoil stripping and storage

The primary objective for the management and uses of topsoil is based on gaining the maximum benefit from the biological values of topsoil recovered from the clearance areas for the improvement of rehabilitation of the land.

Topsoil stripped from the mine infrastructure area will be re-used or stored until the mine enters the rehabilitation phase. Topsoil stripped from the water pipeline footprint will be re-laid in the same area as soon as practicable. The following actions will be implemented during topsoil stripping and storage:

- Strip soil under dry conditions.
- Strip the top 50-100 mm of topsoil (i.e. the topsoil containing most of the biological activity and nutrients) and stockpile separately.
- Strip remaining topsoil to a maximum depth of 200 mm.
- Monitor soil during the stripping process for changes in the depth and nature, and – where necessary and practicable – avoid the inclusion of obviously poorer quality material (i.e. subsoil clay with mottles, rocky material, saline material).
- Stockpile the topsoil in the assigned areas, away from sensitive receptors such as drainage lines and watercourses.

- Ensure the height of the stockpile is restricted to >1.5 m, and the batter slope to 1.5° to promote free draining condition and prevent long-term saturation.
- Implement controls to maintain structural integrity of the stockpile – refer to the project ESCP for details.

5.1.5 Water pipeline

A water pipeline will be installed between the groundwater abstraction site and the mine/waste infrastructure site. The pipeline will be buried to a sufficient depth to provide for protection from bushfire.

The pipeline corridor is 15 km and Tellus has secured tenure over the length of the corridor. The corridor will be 20 m wide and will include an unsealed access track, which will be used for inspection and maintenance. Management of clearing activities in linear corridors needs to address the increased risks associated with weed spread over long distances and erosion and sediment controls required for areas of erosion risk.

The following actions will be implemented during clearing and construction of the water pipeline:

- Remove vegetation as per procedure above, and store in windrow to one side of the corridor.
- Strip topsoil as per procedure above, and store in windrow to one side of corridor.
- Dig a trench 500 mm deep, lay the pipe and then backfill the trench.
- Spread the windrows of topsoil and some vegetation back over the corridor to encourage growth of local groundcovers.
- Dispose of any stockpiled vegetation excess to requirements which may include mulching around onsite landscaped areas.
- Control for erosion and sediment in accordance with the ESCP.

5.1.6 Monitoring

The following monitoring activities will be undertaken to ensure compliance with this procedure:

- Weekly inspections (using a GPS) of the clearing area to ensure no clearing beyond the boundary.
- Weekly inspections of vegetation and topsoil stockpiles to ensure correct placement and management. Inspections of erosion and sediment controls in accordance with the requirements of the ESCP.
- Monthly surveys of all disturbance areas and stockpiles for weeds.
- Regular inspection and maintenance of the water pipeline corridor to:
    - Remove any trees/shrubs that may affect the integrity of the pipeline.
    - Monitor for and control weed infestations.
    - Identify and address erosion issues.

5.1.7 Other

- Based on desktop assessments of habitat availability in the project area, it is not expected that any threatened species will occur, and subsequently, a fauna spotter-catcher is not required during clearing works.
- However, if any threatened fauna or flora species are observed, the location will be marked (ideally with a GPS) and the ER be notified.
- The ER will review existing management measures for the species to determine whether any additional actions or controls are required.
- Construction activities will not continue in this area until this process has been followed

6 COMPETENCY

Relevant staff and contractors will have training provided so that they are able to undertake the environmental management and monitoring activities specified in this procedure. Training requirements will be assessed and addressed in the relevant EMP

7 RECORDS SUMMARY

Records of site inspections and remedial actions will be maintained in accordance with the requirements prescribed in the Facility's EMP as follows:

- Records will be maintained of all land clearing activities, including details (i.e. location and extent) of any over-clearing beyond the approved area.
- Any occurrence of weeds, the control measures and monitoring results, will be recorded in accordance with the procedures described in the EMP.
- Inspection and maintenance of erosion and sediment controls will be recorded in accordance with the project ESCP.

8 REFERENCES

8.1 Legislation, Code of Practice or Standard

- *Environmental Protection Act 1986*.
- *Bush Fires Act 1954*.

8.2 Other Procedures, Documents

This procedure should be read in conjunction with the Facility's Environmental Management Plan (EMP) and Erosion and Sediment Control Plan (ESCP).

GR ENGINEERING SERVICES LIMITED

1. Site Details – Applicant to complete

Project: _____ Applicable Tenements: _____

Location of area to be cleared: _____

Central Coordinates E _____ N _____

Department responsible for clearing: _____

Proposed date of clearing: _____ Area to be cleared (Ha) _____

Reason for clearing: _____

Method of clearing / Equipment required: _____

Topsoil Destination (include on map) _____

Plan attached, Drawing: _____

Proposed level of disturbance:		**Disturbance period:**	
Vehicles driving over undisturbed area (no clearing)	[ ]	Less than 1 month	[ ]
Vegetation to be scraped but no disturbance to topsoil	[ ]	Less than 1 year	[ ]
Vegetation cleared and topsoil stripped	[ ]	Greater than 1 year	[ ]
Permanent hardstand area to be constructed	[ ]	Permanent	[ ]

Other (e.g. tree lopping):

Rehabilitation technique: _____

2. Checks – Environmental Only

Clearing permit / POW number:	Area Authorised (Ha):	
Please tick:	**Yes**	**No**
Area to be cleared within approved limit?		
Area to be cleared within hatched area on Clearing Permit Plan?		
Area to be cleared is within applicable tenements / *Land Administration Act 1997* Tenure?		
DMP approvals Received (Mining Proposal / Clearing Permit)?		
Notifications to pastoral holders is complete?		
All other notifications complete?		
All other approvals in place?		
Does the 10Ha exception apply?		
If yes, provide details:		
Regard for Guiding Principles: i. Avoid the clearing of native vegetation; ii. Minimise the amount of native vegetation to be cleared; and iii. Reduce the impact of clearing on any environmental value.		
If no, provide details:		
Weed control inspection of equipment completed?		
Vegetation to be removed and stockpiled checked and identified on Drawing and approved?		

GR ENGINEERING SERVICES LIMITED

GRESAFE

HS-FOR-0XX	CLEARANCE PERMIT

Topsoil to be removed and stockpiled checked and identified?				
Is vegetation present which must be avoided?				
	If yes, provide details:			
Are there areas present which must be avoided?				
	If yes, provide details and marked on the drawing:			
Are significant sites present within area to be cleared?				
If yes, Forest Products Commission has been contacted to arrange removal?				
Cleared area greater than 50m from riparian area vegetation or any watercourse or wetland?				
Are known Aboriginal Archaeological sites are present within the area to be cleared?				
	If yes provide details of management:			
Project Management Plan (PMP) reviewed and addresses key environmental risks?				
If sumps are required, do they need to be lined?				
Any other special management conditions?				
	If yes, provide details:			

3. Survey Control – Environmental Dept and Applicant to Complete

Pegs / star pickets required for cleared area and/or no restricted / avoidance areas?	Tape Colour:		Distance apart (m) :
Lease boundary pegs required?	Tape Colour:		Distance apart (m) :
	Special notes:		
	APPROVAL TO PROCEED		
	Note : with these signatures is authorisation to undertake works in accordance with drawing and agreed scope of works		

Environmental Department Responsible Manager Name:	**Signature**		**Date:**
GRES Responsible Manager Name:	**Signature**		**Date:**

4. Check – Operations Manager Only

Checked:		Date:
	Additional comments if required:	

5. Summary (to be completed after clearing) – Environmental Only

	Actual date cleared:	Actual area cleared (Ha):		
	Please tick:	**Date**	**Yes**	**No**
Clearing conducted according to plans?				
Vegetation removed and stockpiled?				
Topsoil removed and stockpiled?				

Location information available for annual report?		
Shapefile issued to Tellus GIS and Data Manager?		
Communication to operators (prior to commencing)?		
Survey / inspected actual boundary?		
Photos before and after taken and recorded on file?		
Provide details as required:		

APPENDIX F WEED CONTROL FORM

WEED CONTROL FORM

Assessor		**Date**	
Site location(s)		**Purpose of visit**	
Weed control equipment		**Weather**	

Weed species		Grid reference		Cover abundance	Flowering/ seeding	Control method (include dilution ratios)	Previous treatment summary
Common name	Scientific name	Easting	Northing	Number of species			

APPENDIX G: BUSHFIRE MANAGEMENT PLAN

SR-08.503

TELLUS

Sandy Ridge Facility

Bushfire Management Plan

Compliance Document

Tellus Holdings Ltd

March 19

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DOCUMENT CONTROL

The signatures below certify this **Bushfire Management Plan** has been reviewed, accepted and demonstrates that the signatories are aware of all the requirements contained herein and are committed to ensuring their provision.

	Name	Signature	Position	Date
Prepared by	Sophy Townsend		Manager - HSECQ	29/11/2018
Reviewed by	Michael Ingram		Chief Operating Officer	03/12/2018
Approved by	Richard Phillips		General Manager - HSECQ	05/12/2018

AMENDMENT RECORD

This Bushfire Management Plan is reviewed, audited and updated to ensure its continuing relevance to the systems and process that it describes. A record of contextual additions or omissions is given below:

Page No.	Context	Version	Name	Date
Section 6.3 and 6.5	As per DFES review comments dated 10 January 2019. Revised bushfire response team info and evacuation section. For consideration by JDAP.	C	Julie Mahony	24 Jan 2019
Throughout	As per DFES Land Use Planning review comments 22 February 2019	1	D. Panickar - ecoLogical	19 Mar 2019

COMPANY PROPRIETARY INFORMATION

The electronic version of this Bushfire Management Plan is the latest version. It is the responsibility of the individual to ensure that any paper material is the current version. The printed version of this procedure is uncontrolled, except when provided with a document reference number and version in the field below:

Document Ref.	**HSOO-1760150200-20316**					**Ver**	**0**
Uncontrolled Copy	✓		**Controlled Copy**			**Date**	**20/03/2019**

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1 INTRODUCTION

1.1 Project overview

Tellus Holdings Ltd (**'Tellus'**) has lodged a Development Application (DA) to construct and operate the Sandy Ridge Facility (the '**Facility**' and/or '**Project**'). The Facility involves the construction and operation of an open-cut kaolin mine and complementary waste storage and disposal facility with supporting above-ground infrastructure in the Shire of Coolgardie over 25 years.

The Facility is located approximately 75 km north east of Koolyanobbing, and approximately 240 km north west of Kalgoorlie, in the Shire of Coolgardie, within the Goldfields Region of WA (Figure 1-1).

The proposed development is encompassed within a 'development envelope' and has been divided into four sections as described below:

- Accommodation Village;
- Mine infrastructure area;
- Class II Landfill Area; and
- Groundwater Abstraction Area.

The Facility is within a designated bushfire prone area as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES 2018; Figure 1-2), which triggers bushfire planning requirements under *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; WAPC 2015) and reporting to accompany submission of the development application in accordance with the associated *Guidelines for Planning in Bushfire Prone Areas v 1.3* (the Guidelines; WAPC 2017).

This assessment has been prepared in conjunction between Tellus and Eco Logical Australia (ELA) Senior Bushfire Consultants Daniel Panickar (FPAA BPAD Level 2 Certified Practitioner No. BPAD37802-L2) and Bruce Horkings (FPAA BPAD Level 3 Certified Practitioner No. BPAD29962-L3).

1.2 Purpose and application of the plan

The primary purpose of this Bushfire Management Plan (BMP) is to act as a technical supporting document to inform planning assessment.

This BMP is also designed to provide guidance on how to plan for and manage the bushfire risk to the subject site through implementation of a range of bushfire management measures in accordance with the Guidelines.

The Facility is considered a high-risk land use under SPP 3.7. Policy Measure 6.6 of SPP .7 requires development applications for high-risk land uses in areas between BAL-12.5 and BAL-29 to be accompanied by a risk management plan for any flammable on-site hazards. A Bushfire Risk Management Plan has been prepared by for the proposed development and is included in Appendix A.

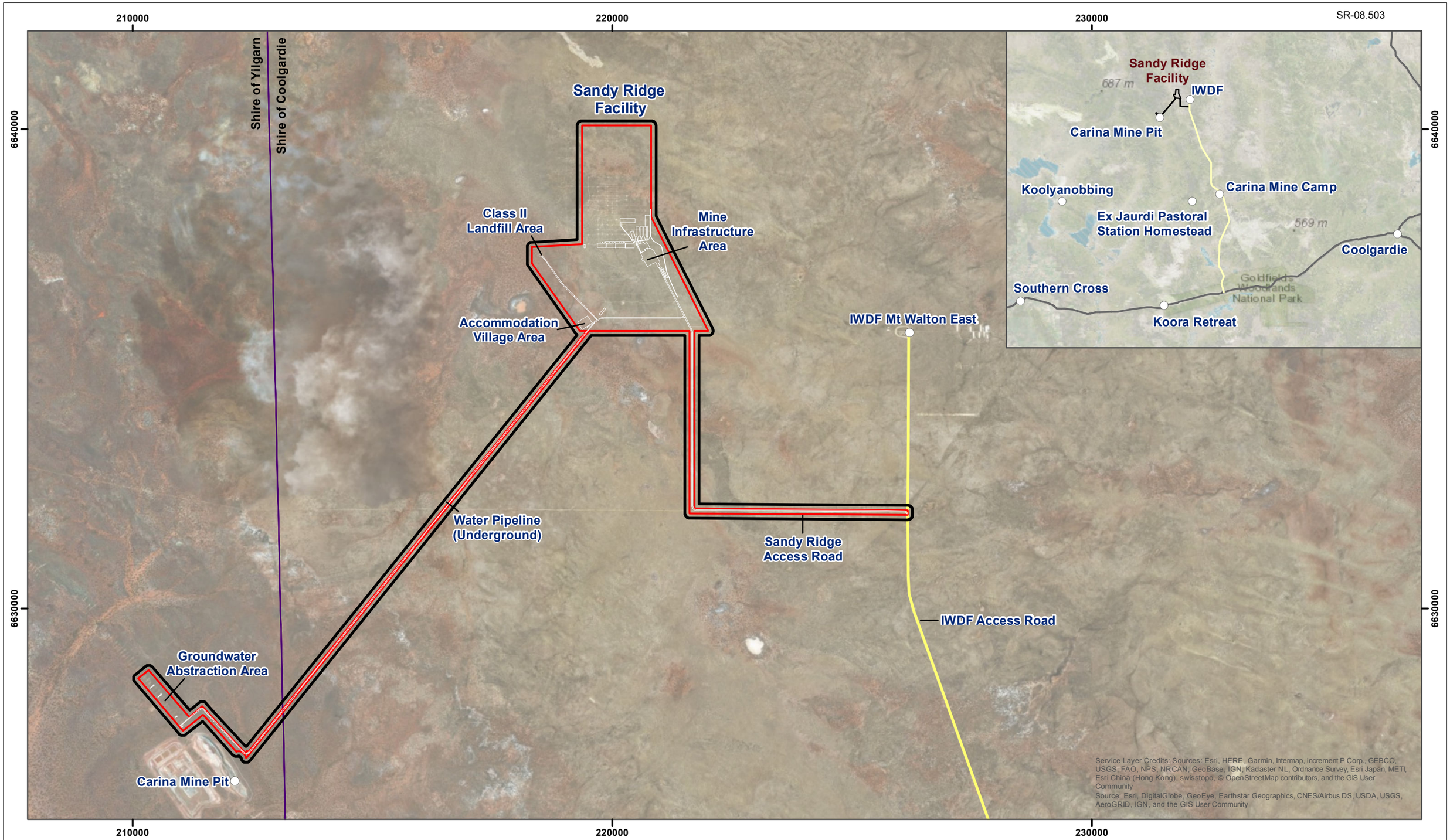
1.3 Environmental factors

1.3.1 Native vegetation clearing

The development envelope for the Facility consists of open woodland and shrublands dominated by Acacia and Eucalyptus species. Open heaths are dominated by Leptospermum species. All vegetation types are considered common and widespread within the region. Most of the vegetation within the development envelope is in excellent condition.

The proposed development has received environmental approval under s45 of the State *Environmental Protection Act 1986* (EP Act; refer to Ministerial Statement 1078).

SR-08.503



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1 0.5 0 1 Km

Coordinate System:
GDA 94 MGA Zone 51
A3 Scale 1:75,000

SP-ID:GL00-2017072102-558
TSR0248_BFMPv1_SiteOverview.mxd

Legend

- Development Envelope
- 100m Assessment Area
- Infrastructure footprint
- Principal road
- IWDF access road

Data in this map is sourced from: © Commonwealth of Australia (Geoscience Australia) 2018

Figure 1-1
Site Overview

SANDY RIDGE FACILITY
BUSHFIRE MANAGEMENT PLAN

TELLUS

Version: A
Date: 14/03/2019

SR-08.503

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Shire of Yilgarn

Shire of Coolgardie

Sandy Ridge Facility

Class II Landfill Area

Mine Infrastructure Area

Accommodation Village Area

IWDF Mt Walton East

Water Pipeline (Underground)

Sandy Ridge Access Road

IWDF Access Road

Groundwater Abstraction Area

Carina Mine Pit

N

1.5 0.75 0 1.5 Km

Coordinate System:
GDA 94 MGA Zone 51
A3 Scale 1:100,000

SP-ID:GL00-2017072102-560
TSR0249_BFMPv1_BFProneArea.mxd

Legend

- Bushfire Prone Areas 2018
- 100M Assessment Area
- Development Envelope
- Infrastructure footprint
- IWDF Access Road
- Local Government Authority Boundaries

Data in this map is sourced from: © Commonwealth of Australia (Geoscience Australia) 2018 and
© State of Western Australia (Department of Mines, Industry Regulation and Safety and Department of Fire and Emergency Services) 2018.

Figure 1-2
Bushfire Prone Area

SANDY RIDGE FACILITY
BUSHFIRE MANAGEMENT PLAN

TELLUS

Version: A
Date: 14/03/2019

2 BUSHFIRE ASSESSMENT RESULTS

2.1 Bushfire assessment inputs

The following section is a consideration of spatial bushfire risk and has been used to inform the bushfire assessment in this report.

2.1.1 General

The Facility is located in the Shire of Coolgardie on unallocated Crown Land and accessed from the Great Eastern Highway by the Mt Walton East Intractable Waste Disposal Facility (**IWDF**) Access Road, which leaves the highway approximately 96 km east of Southern Cross and 90 km west of Coolgardie. After travelling approximately 90 km north on the IWDF Access Road, access to the Facility is gained by turning west onto the Mt Dimer Road for 4.5 km, then north for 4 km along a new access road to the Facility.

Desktop investigations (involving the interpretation of publicly available aerial imagery) followed by field investigations have identified past fire history to the north and south of the Sandy Ridge Facility. The reasons for past fires are unknown but could be attributed to lightning strike.

2.1.2 Fire Danger Index

A blanket rating of FDI 80 is adopted for Western Australian environments, as outlined in *AS 3959-2009 Construction of Buildings in Bushfire Prone Areas* (AS 3959-2009) (SA 2009) and endorsed by Australasian Fire and Emergency Service Authorities Council (AFAC).

2.1.3 Vegetation classification

Vegetation within the development envelope and surrounding 150 m (the assessment area) was assessed in accordance with the Guidelines and AS 3959-2009 with regard given to the *Visual guide for bushfire risk assessment in Western Australia* (DoP 2016).

The vegetation assessment has been based on extensive flora and vegetation surveys undertaken within the development envelope and surrounds supporting environmental approvals. The results of these surveys have been reviewed by ELA and aligned to vegetation classifications described in AS 3959-2009.

The following vegetation classes and exclusions were identified within the assessment area as depicted in Figure 2-1:

- Class B woodland;
- Class C shrubland;
- Class D scrub;
- Class E mallee; and
- Exclusions as per clause 2.2.3.2 (e) and (f) (i.e. non-vegetated areas and low-threat vegetation).

Photographs relating to each vegetation type are included in Appendix B.

2.1.4 Topography and slope under vegetation

Effective slope under vegetation was assessed for a distance of 150 m from the development envelope in accordance with the Guidelines and AS 3959 2009 and is depicted in Figure 2-1. Slope under all areas of classified vegetation within the assessment area was assessed as upslope/flat.

The BAL assessment addresses this topic further in section 2.2.

2.1.5 Distance between proposed development areas and classified vegetation

Separation distances between proposed development areas within the development envelope and classified vegetation are discussed in the BAL assessment in section 2.2.

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Sandy Ridge Facility

Inset 1: Mine Infrastructure Area

Inset 2: Mine Accommodation Village Area

Inset 3: Groundwater Abstraction Area

IWDF Mt Walton East

IWDF Access Road

N

1 0.5 0 1 Km

Coordinate System:
GDA 94 MGA Zone 51

SP-ID:GL00-2017072102-557
TSR0250_BFMPv1_VegClass.mxd

Legend

Vegetation Classification

- Class B Woodaland
- Class C Shrubland
- Class D Scrub
- Class E Mallee/Mulga
- Area to be modified to low threat state
- Development Envelope
- 100m Assessment Area
- 150m Assessment Area
- Infrastructure footprint
- IWDF access road

* Photo point locations are indicative only

Figure 2-1
Vegetation Classification

SANDY RIDGE FACILITY
BUSHFIRE MANAGEMENT PLAN

TELLUS

Version: B
Date: 21/03/2019

2.2 Bushfire assessment outputs

A Bushfire Attack Level (BAL) assessment has been undertaken in accordance with SPP 3.7, the Guidelines, AS 3959-2009 and the bushfire assessment inputs in section 2.1.

2.2.1 Bushfire Attack Level (BAL) assessment

All land located within 100 m of the classified vegetation depicted in Figure 2-1 is considered bushfire prone and is subject to a BAL assessment in accordance with AS 3959 2009.

A Method 1 BAL assessment (as outlined in AS 3959 2009) has been completed for the proposed development and incorporates the following factors:

- State adopted Fire Danger Index (FDI);
- Vegetation class;
- Slope under classified vegetation; and
- Distance between proposed development areas and the classified vegetation.

Based on the identified BAL, construction requirements for proposed buildings can then be assigned. The BAL rating gives an indication of the expected level of bushfire attack (i.e. radiant heat flux, flame contact and ember penetration) that may be received by proposed buildings and subsequently informs the standard of construction required to increase building survivability.

2.2.2 Method 1 BAL assessment

Table 2-1 and Figure 2-2 display the Method 1 BAL assessment (in the form of BAL contours) undertaken for the proposed development in accordance with AS 3959-2009 methodology. The results show that all habitable buildings within the development envelope are located in areas subject to a BAL rating of BAL-12.5 or lower.

Table 2-1 Method 1 BAL calculation

Vegetation classification and plot	Effective slope under vegetation	Hazard separation distance (m)	BAL rating	Comment
Class B woodland Plots 4, 10 and 13	Upslope/flat	<10	BAL-FZ	No habitable buildings proposed in this area
		10-<14	BAL-40	No habitable buildings proposed in this area
		14-<20	BAL-29	No habitable buildings proposed in this area
		20-<29	BAL-19	No habitable buildings proposed in this area
		29-<100	BAL-12.5	Habitable buildings proposed in this area
Class C shrubland Plot 1		<7	BAL-FZ	No habitable buildings proposed in this area
		7-<9	BAL-40	No habitable buildings proposed in this area
		9-<13	BAL-29	No habitable buildings proposed in this area
		13-<19	BAL-19	No habitable buildings proposed in this area
		19-<100	BAL-12.5	Habitable buildings proposed in this area
Class D scrub Plots 3, 9 and 11		<10	BAL-FZ	No habitable buildings proposed in this area
		10-<13	BAL-40	No habitable buildings proposed in this area
		13-<19	BAL-29	No habitable buildings proposed in this area
		19-<27	BAL-19	No habitable buildings proposed in this area
		27-<100	BAL-12.5	Habitable buildings proposed in this area
Class E mallee Plots 2, 5, 6, 7, 8 and 12		<6	BAL-FZ	No habitable buildings proposed in this area
		6-<8	BAL-40	No habitable buildings proposed in this area
		8-<12	BAL-29	No habitable buildings proposed in this area
		12-<17	BAL-19	No habitable buildings proposed in this area
		17-<100	BAL-12.5	Habitable buildings proposed in this area

2.3 Identification of issues arising from the BAL assessment

All new structures are located in areas subject to a BAL rating of BAL 12.5 or lower. Should there be any changes in development design or vegetation/hazard extent that requires a modified bushfire management response, then the above BAL ratings will need to be reassessed for the affected areas and documented in a brief addendum to this BMP.

SR-08.503

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Sandy Ridge Facility

Inset 1

Inset 2

IWDF Mt Walton East

IWDF Access Road

Carina Mine Pit

Inset 1: Mine Infrastructure Area

Inset 2: Accommodation Village Area

N

1 0.5 0 1 Km

Coordinate System:
GDA 94 MGA Zone 51

SP-ID:GL00-2017072102-561
TSR0250_BFMPv1_BAL-Contours.mxd

Legend

Indicative Bush Fire Attack Level

- BAL-LOW
- BAL 12.5
- BAL 19
- BAL 29
- BAL 40
- BAL FZ
- Development Envelope
- 100m Assessment Area
- 150m Assessment Area
- Infrastructure footprint
- IWDF access road

Accommodation Village layout is indicative only
Data in this map is sourced from: © Commonwealth of Australia (Geoscience Australia) 2018

Figure 2-2
Bushfire Attack Level (BAL) Contour Map

SANDY RIDGE FACILITY
BUSHFIRE MANAGEMENT PLAN

TELLUS

Version: A
Date: 15/03/2019

3 ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA

3.1 Compliance

The proposed development is required to comply with policy measures 6.2, 6.5 and 6.6 of SPP 3.7 and the Guidelines.

In response to the above requirements of SPP 3.7 and the Guidelines, bushfire management measures have been devised for the proposed development in accordance with Guideline acceptable solutions where possible to meet compliance with bushfire protection criteria.

Table 3-1 outlines the Acceptable Solutions (AS) that are relevant to the proposal and summarises how the intent of each Bushfire Protection criteria has been achieved. No Performance Solutions (PS) have been used for this proposal. These management measures are depicted in Figure 3-1.

Table 3-1 Summary of solutions used to achieve bushfire performance criteria

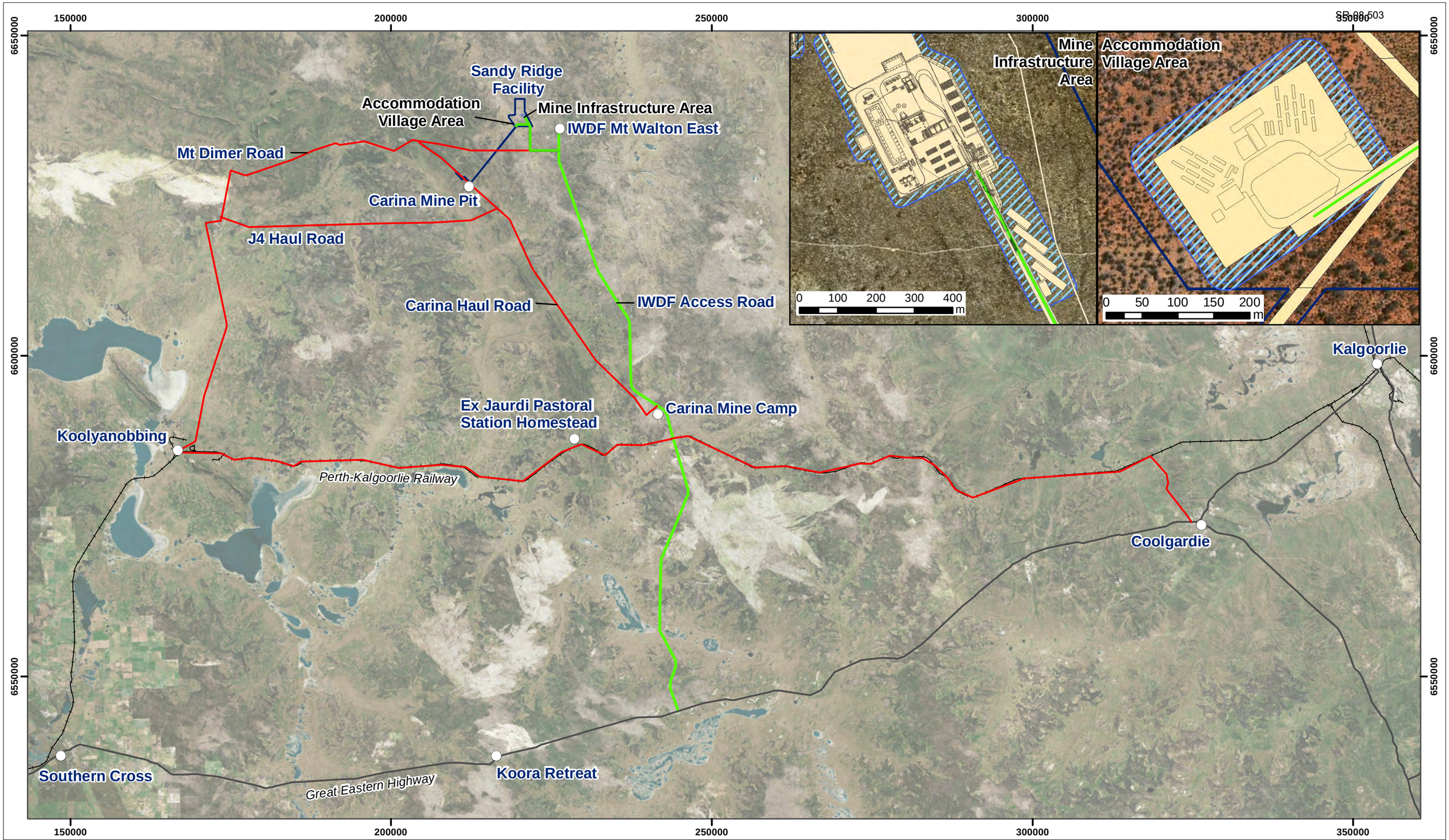
Bushfire Performance Criteria	AS	PS	N/A	Comment
Element 1: Location A1.1 Development location	☒	☐	☐	All habitable buildings within the development envelope are situated in areas subject to BAL ratings of ≤BAL-12.5 (Figure 2-2). The proposed development is considered to be compliant with A1.1.
Element 2: Siting and design of development A2.1 Asset Protection Zone (APZ)	☒	☐	☐	APZs will be implemented between all habitable buildings and classified vegetation in the form of cleared areas and maintained vegetation (refer to Figure 3-1). APZs will be maintained in accordance with *Standards for Asset Protection Zones* reproduced in Appendix C. The proposed development is considered to be compliant with A2.1.
Element 3: Vehicular access A3.1 Two access routes	☒	☐	☐	Two access/egress routes are available to/from the development envelope as depicted in Figure 3-1. The proposed development is considered to be compliant with A3.1.
Element 3: Vehicular access A3.2 Public road	☒	☐	☐	All public roads will be constructed in accordance with Table 6, Column 1 in the Guidelines. The proposed development is considered to be compliant with A3.2.
Element 3: Vehicular access A3.3 Cul-de-sac	☐	☐	☒	No cul-de-sacs are proposed as part of the development.

Bushfire Performance Criteria	AS	PS	N/A	Comment
Element 3: Vehicular access A3.4 Battle-axe	☐	☐	☒	No battle-axe lots are proposed as part of the development.
Element 3: Vehicular access A3.5 Private Driveway longer than 50 m	☒	☐	☐	Internal site roads (considered private driveways) will meet the requirements of Table 6, Column 3 and explanatory note 3.5 in the Guidelines. The proposed development is considered to be compliant with A3.5.
Element 3: Vehicular access A3.6 Emergency Access way	☐	☐	☒	No Emergency Access Ways are proposed or required for the development.
Element 3: Vehicular access A3.7 Fire-service access routes	☐	☐	☒	No Fire Service Access Routes are proposed or required for the development.
Element 3: Vehicular access A3.8 Firebreak width	☒	☐	☐	Where required, firebreaks will meet the requirements of the Shire of Coolgardie *Bush Fire Act Notice*. The proposed development is considered to be compliant with A3.8.
Element 4: Water A4.2 Non-Reticulated areas	☒	☐	☐	The accommodation village will have 4 x 32 kL water tanks, with 50 kL in reserve for firefighting purposes. The mine infrastructure area has a dedicated fire water system that includes the following tanks: • 520 kL raw water tank; • 360 kL fresh water tank; and • 220 kL potable water tank. Hardstand turnaround areas for a 3.4 fire appliance (minimum kerb to kerb width of 17.5 m) are available within 3 m of the tanks. The proposed development is considered to be compliant with A4.2.

3.2 Additional management strategies

A BRMP has been prepared for the proposed development in accordance with Policy measure 6.6 of SPP 3.7 (Appendix A). This plan details how high-risk components of the proposed development will be managed to reduce bushfire risk.

All cleared and maintained vegetation areas within the development envelope will be maintained in accordance with *Standards for Asset Protection Zones* (Appendix C).



N

10 5 0 10 Km

Coordinate System:
GDA 94 MGA Zone 51

SP-ID:GL00-2017072102-559
TSR0251_BFMPv1_Management.mxd

Legend

- Primary Egress Route
- Alternate Egress Route
- Indicative APZ
- Development Envelope
- Localities
- Principal road
- Infrastructure footprint
- Infrastructure footprint

Data in this map is sourced from: © Commonwealth of Australia (Geoscience Australia) 2018

Figure 3-1
Spatial Representation of Bushfire Management Strategies

SANDY RIDGE FACILITY
BUSHFIRE MANAGEMENT PLAN

TELLUS

Version: A
Date: 15/03/2019

4 IMPLEMENTATION AND ENFORCEMENT

Implementation of the BMP applies to Tellus to ensure bushfire management measures are adopted and implemented on an ongoing basis. A summary of the bushfire management measures described in section 3, as well as a works program, is provided in Table 4-1. These measures will be implemented to ensure the ongoing protection of life and property assets is achieved. Timing and responsibilities are also defined to assist with implementation of each measure.

Table 4-1 Proposed works program

No.	Bushfire management measure	Responsibility
Prior to operation of Facility		
1	Ensure all new structures are located outside of areas subject to BAL-FZ and BAL-40 as per the design in Figure 5-2.	Tellus
2	Ensure APZs are implemented and maintained in accordance with standards in Appendix C.	Tellus
3	Ensure water supply is provided as per section 3 of this BMP.	Tellus
	Comply with Bushfire Risk Management Plan	Tellus
Ongoing management		
4	Ensure APZs are implemented and maintained in accordance with standards in Appendix C.	Tellus
5	Comply with Bushfire Risk Management Plan	Tellus

5 CONCLUSION

In the author's professional opinion, the bushfire protection requirements listed in this assessment provide an adequate standard of bushfire protection for the proposed development consistent with the aim and objectives of SPP 3.7 and associated guidelines and is recommended for approval.

Daniel Panickar
Senior Bushfire Consultant
FPAA BPAD Certified Practitioner
No. BPAD37802-L2

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

Bruce Horkings
Senior Bushfire Consultant
FPAA BPAD Certified Practitioner
No. BPAD29962-L3

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

6 REFERENCES

Bureau of Meteorology (BoM). 2018. *Climate statistics for Australian locations: Monthly climate statistics for Coolgardie*, [Online], Commonwealth of Australia, available from: http://www.bom.gov.au/climate/averages/tables/cw_012018.shtml.

Department of Fire and Emergency Services (DFES). 2018. Map of Bush Fire Prone Areas, [Online], Government of Western Australia, available from: http://www.dfes.wa.gov.au/regulationandcompliance/bushfireproneareas/Pages/default.aspx.

Standards Australia (SA). 2009. *Australian Standard AS 3959–2009 Construction of Buildings in Bushfire-prone Areas*, Standards Australia, Sydney.

Western Australian Planning Commission (WAPC). 2015. *State Planning Policy 3.7 Planning in Bushfire Prone Areas*. WAPC, Perth.

Western Australian Planning Commission (WAPC). 2017. *Guidelines for Planning in Bushfire Prone Areas Version 1.3 (including appendices).* WAPC, Perth.

APPENDICES

SR-08.503

TELLUS

Sandy Ridge Facility

Bushfire Risk Management Plan

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DOCUMENT CONTROL

The signatures below certify this **Bushfire Risk Management Plan** has been reviewed, accepted and demonstrates that the signatories are aware of all the requirements contained herein and are committed to ensuring their provision.

	Name	Signature	Position	Date
Prepared by	Sophy Townsend		Manager - HSECQ	29/11/2018
Reviewed by	Michael Ingram		Chief Operating Officer	03/12/2018
Approved by	Richard Phillips		General Manager - HSECQ	05/12/2018

AMENDMENT RECORD

This Bushfire Risk Management Plan is reviewed, audited and updated to ensure its continuing relevance to the systems and process that it describes. A record of contextual additions or omissions is given below:

Page No.	Context	Version	Name	Date
ALL	Transferred risk assessment from BFMP to separate document	0	D. Panickar	19/03/2019

COMPANY PROPRIETARY INFORMATION

The electronic version of this Bushfire Management Plan is the latest version. It is the responsibility of the individual to ensure that any paper material is the current version. The printed version of this procedure is uncontrolled, except when provided with a document reference number and version in the field below:

Document Ref.	**HSOO-1760150200-20316**					**Ver**	**0**
Uncontrolled Copy	✓		**Controlled Copy**			**Date**	**05/12/2018**

TABLE OF CONTENTS

1 PROJECT OVERVIEW

Tellus Holdings Ltd (**'Tellus'**) has lodged a Development Application (DA) to construct and operate the Sandy Ridge Facility (the '**Facility**' and/or '**Project**'). The Facility involves the construction and operation of an open-cut kaolin mine and complementary waste storage and disposal facility with supporting above-ground infrastructure in the Shire of Coolgardie over 25 years.

The Facility is located approximately 75 km north east of Koolyanobbing, and approximately 240 km north west of Kalgoorlie, in the Shire of Coolgardie, within the Goldfields Region of WA (Figure 1-1).

The proposed development is encompassed within a 'development envelope' and has been divided into four sections as described below:

- Accommodation Village;
- Mine infrastructure area;
- Class II Landfill Area; and
- Groundwater Abstraction Area.

The Facility is within a designated bushfire prone area as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES 2018; Figure 1-2), which triggers bushfire planning requirements under *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; WAPC 2015) and reporting to accompany submission of the development application in accordance with the associated *Guidelines for Planning in Bushfire Prone Areas v 1.3* (the Guidelines; WAPC 2017).

This assessment has been prepared by Tellus. Eco Logical Australia (ELA) has provided input into the risk assessment section of this document, however controls and mitigation have been developed by Tellus.

1.1 Purpose and application of the plan

The primary purpose of this Bushfire Risk Management Plan (BRMP) is to act as a technical supporting document to inform planning assessment in conjunction with the corresponding Bushfire Management Plan (BMP).

SPP 3.7 (Policy Measure 6.6) requires development applications for high-risk land uses (such as petrol stations) in areas between BAL-12.5 and BAL-29 to be accompanied by a risk management plan for any flammable on-site hazards. The BMP prepared by Tellus and ELA for the development identifies all habitable buildings within the development envelope as being located within areas subject to a BAL rating of BAL-12.5 or lower.

The Building Code of Australia bushfire construction requirements only apply to residential buildings and associated structures. The Guidelines therefore require the planning process to focus on location and siting of high-risk land uses rather than application of bushfire construction requirements.

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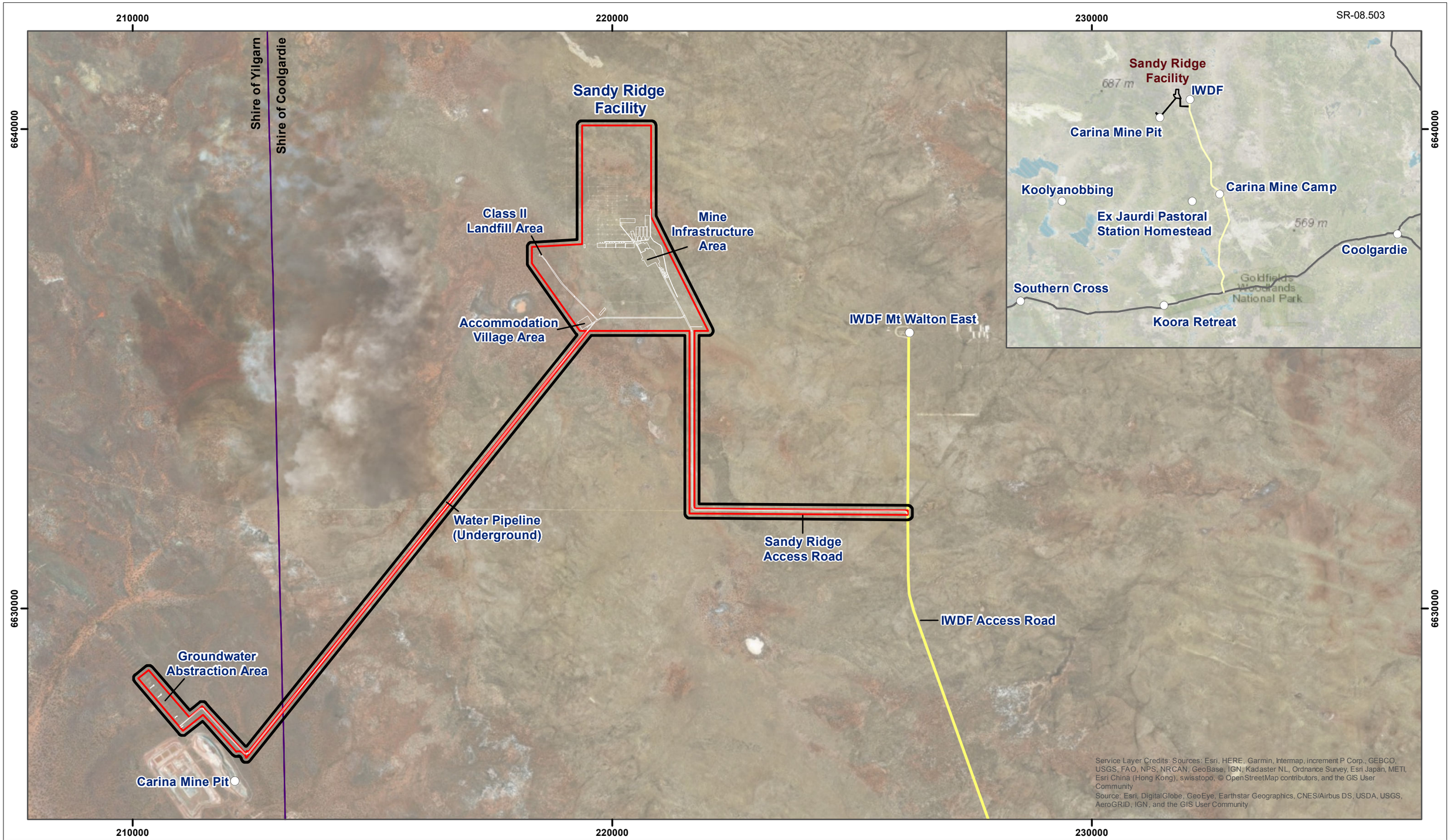

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1 0.5 0 1 Km

Coordinate System:
GDA 94 MGA Zone 51
A3 Scale 1:75,000

SP-ID:GL00-2017072102-558
TSR0248_BFMPv1_SiteOverview.mxd

Legend

- Development Envelope
- 100m Assessment Area
- Infrastructure footprint
- Principal road
- IWDF access road

Data in this map is sourced from: © Commonwealth of Australia (Geoscience Australia) 2018

Figure 1-1
Site Overview

SANDY RIDGE FACILITY
BUSHFIRE MANAGEMENT PLAN

TELLUS

Version: A
Date: 14/03/2019

SR-08.503

210000 220000 230000

6640000

6630000

Shire of Yilgarn

Shire of Coolgardie

Sandy Ridge Facility

Class II Landfill Area

Mine Infrastructure Area

Accommodation Village Area

IWDF Mt Walton East

Water Pipeline (Underground)

Sandy Ridge Access Road

IWDF Access Road

Groundwater Abstraction Area

Carina Mine Pit

N

1.5 0.75 0 1.5 Km

Coordinate System:
GDA 94 MGA Zone 51
A3 Scale 1:100,000

SP-ID:GL00-2017072102-560
TSR0249_BFMPv1_BFProneArea.mxd

Legend

- Bushfire Prone Areas 2018
- 100M Assessment Area
- Development Envelope
- Infrastructure footprint
- IWDF Access Road
- Local Government Authority Boundaries

Data in this map is sourced from: © Commonwealth of Australia (Geoscience Australia) 2018 and
© State of Western Australia (Department of Mines, Industry Regulation and Safety and Department of Fire and Emergency Services) 2018.

Figure 1-2
Bushfire Prone Area

SANDY RIDGE FACILITY
BUSHFIRE MANAGEMENT PLAN

TELLUS

Version: A
Date: 14/03/2019

2 POTENTIAL BUSHFIRE SCENARIOS

The BMP identifies and classifies the existing bushfire hazards within 150 m of the development envelope, based on existing vegetation and slope and separation distance to the vegetation.

Based on this information, an assessment of potential bushfire scenarios that could affect assets within the development envelope has been undertaken. The potential bushfire scenarios have been used to inform a bushfire risk assessment (refer to section 4) and assist in development of appropriate bushfire mitigation responses (refer to section 5). The following bushfire scenarios were assessed:

1. Bushfire approaching the Facility from a southerly or easterly direction; and
2. Bushfire approaching the Facility from all other directions.

Bushfire scenarios have been selected based on the location of classified vegetation from the development envelope, climate and direction of prevailing winds during the bushfire season.

2.1 Vegetation and slope

Vegetation and slope under vegetation within the development envelope and surrounding 150 m (the assessment area) was assessed in accordance with the Guidelines and AS 3959-2009 with regard given to the *Visual guide for bushfire risk assessment in Western Australia* (DoP 2016).

The following vegetation classes and exclusions were identified within the assessment area:

- Class B woodland;
- Class C shrubland;
- Class D scrub;
- Class E mallee; and
- Exclusions as per clause 2.2.3.2 (e) and (f) (i.e. non-vegetated areas and low-threat vegetation).

Slope under all areas of classified vegetation within the assessment area was assessed as upslope/flat.

2.2 Climatic contributions

2.2.1 Wind

Wind is an important factor in influencing the direction and speed of a bushfire. Wind supplies oxygen and can remove soot and ash from the flame; increasing its ability to burn. Wind can slant, carry embers causing spot fires and dictate the direction of the fire front. Unpredictable wind changes can occur during a bushfire which alter the direction of the fire, having catastrophic effects.

The dominant wind direction in the region is from the east-southeast and is generally the strongest in autumn and summer (refer to Figure 2-1) with maximum average wind speeds of 16 m s^{-1} (refer to Figure 2-2 and Figure 2-3).

Wind patterns follow a counter clockwise progression (varying around a week-long periodicity) but are normally from high pressure systems that result in south-west and east dominance of wind direction. However, during the spring and autumn equinoxes and during the unpredictable summer wet season, storms more commonly come from the west and north-west

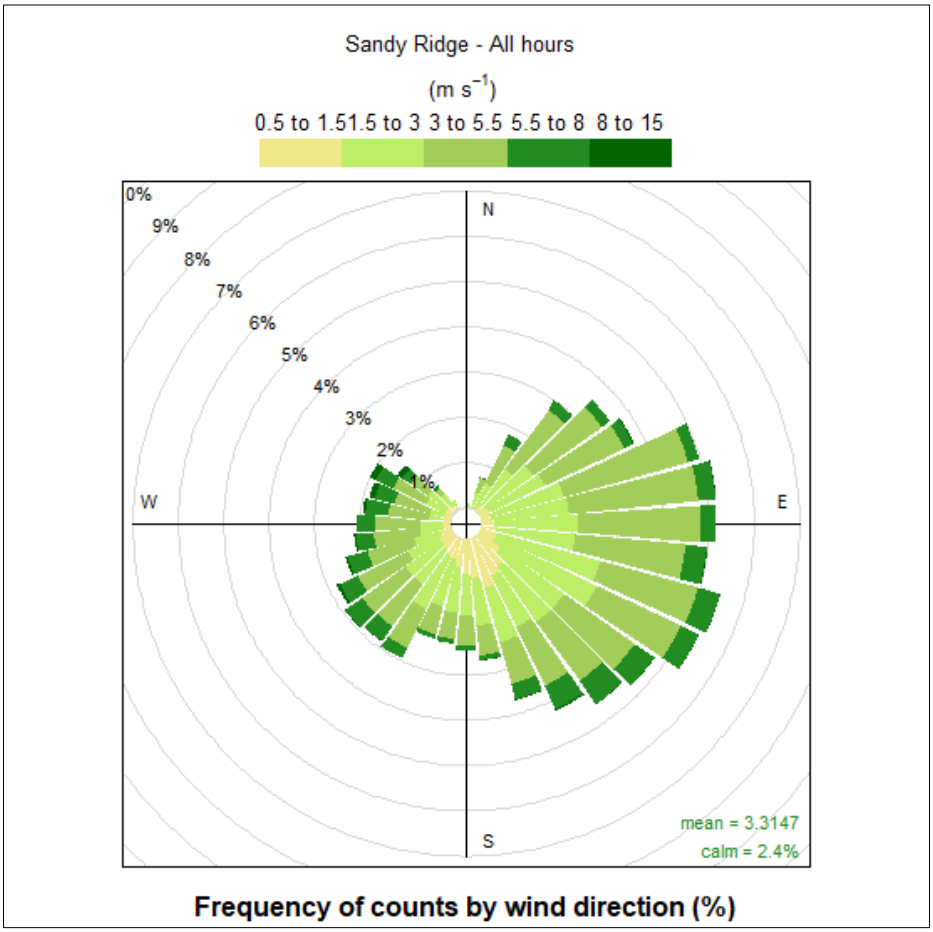


Figure 2-1 Annual and seasonal wind roses at Sandy Ridge from 7 May 2015 to 30 April 2018 (on site weather station).

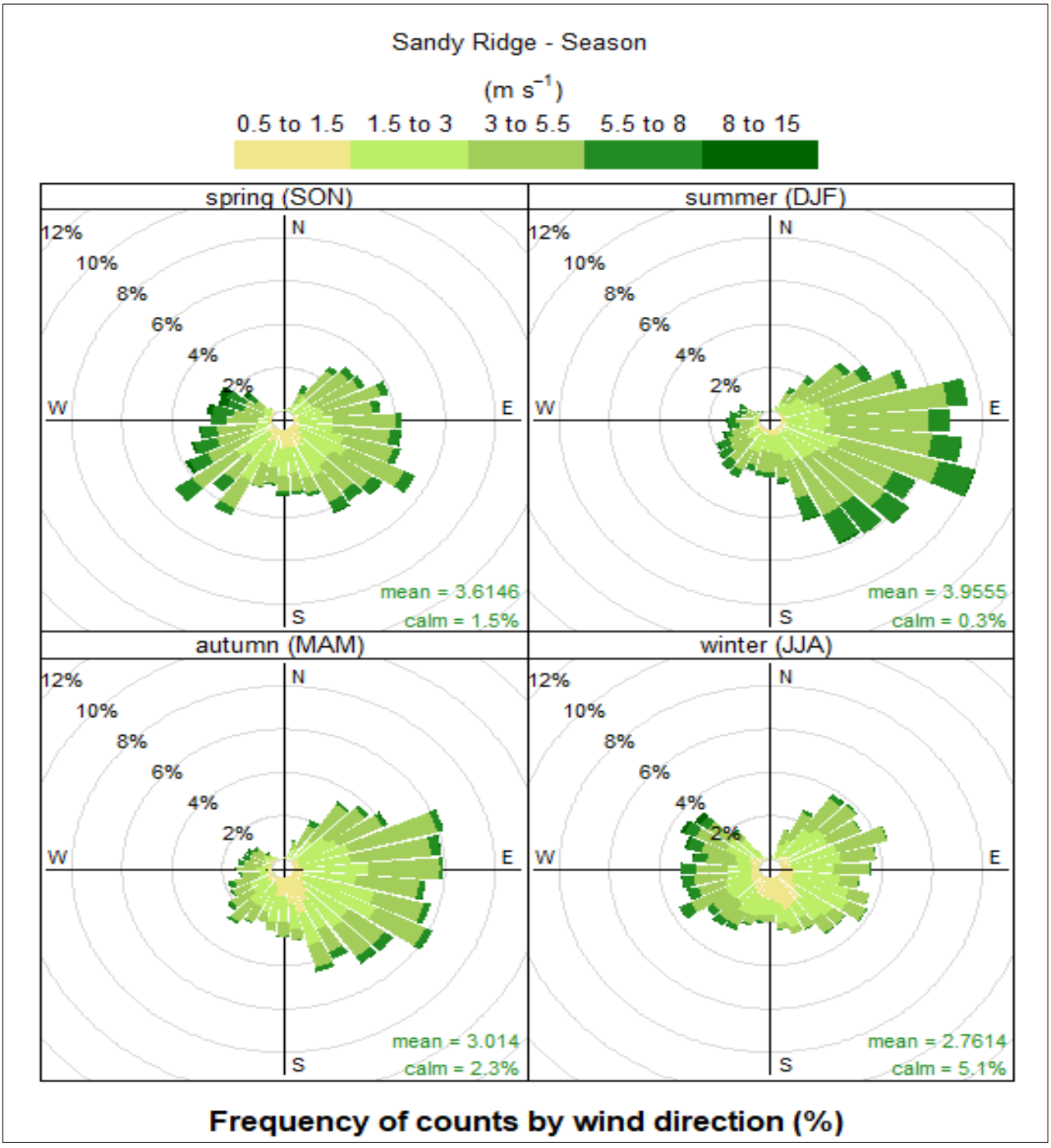


Figure 2-2 Annual and seasonal wind speed distribution from 7 May 2015 to 30 April 2018 (on site weather station).

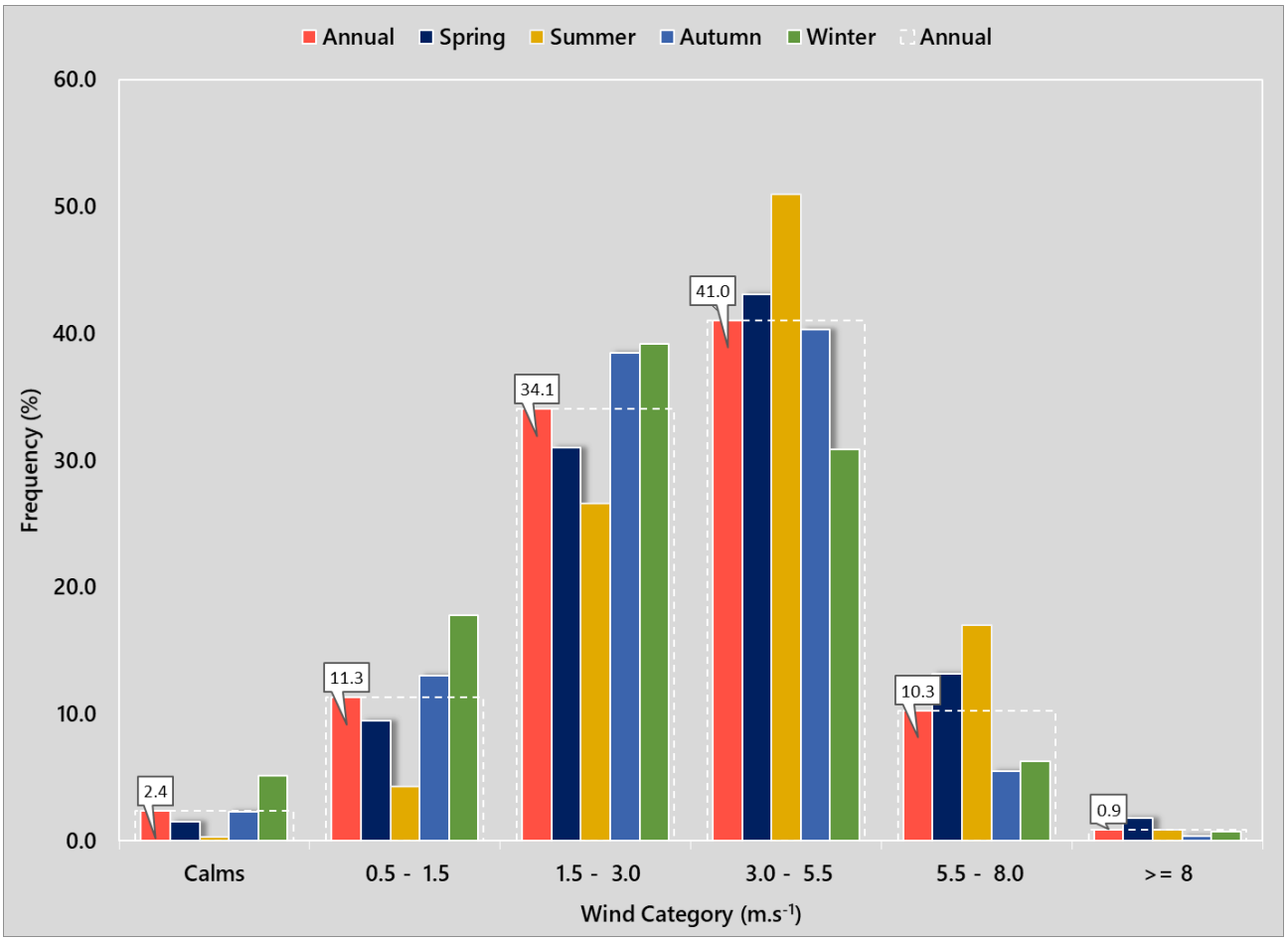


Figure 2-3 Annual and seasonal wind speed distribution - 7 May 2015 to 30 April 2018 (on site weather station).

2.2.2 Lightning

Bureau of Meteorology (BOM) information for Coolgardie shows a high rate of lightning strikes during summer storms. These have the potential to start bushfires that could impact the Facility.

2.2.3 Temperature and humidity

Air temperatures measured in the region between 7 May 2015 to 30 April 2018 varied between a period minimum of -6.7°C and a period maximum of 42.4°C. The average temperature measured over the monitoring period was 17.8°C.

Average, maximum and minimum hourly temperatures measured during each season in the region are presented in Table 2-1. The daily average temperature calculated between 7 May 2015 to 30 April 2018 is presented in Figure 2-4.

Table 2-1 Observed temperature at Sandy Ridge between 7 May 2015 to 20 April 2018 (on site weather station).

7 May 2015 to 30 April 2018	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Maximum temperature													
Mean maximum temperature (°C)	33.6	31.6	30.3	26.3	20.6	18.2	16.8	18.0	22.2	27.4	31.1	33.1	25.8
Highest maximum temperature (°C)	42.4	42.1	38.5	37.3	28.4	27.6	28.3	27.9	33.9	38.5	39.7	42.0	42.4
Lowest maximum temperature (°C)	21.8	19.2	17.7	17.5	14.5	10.2	8.4	11.4	12.4	17.4	20.2	21.1	8.4
Minimum temperature													
Mean minimum temperature (°C)	18.3	16.9	15.7	10.3	4.3	3.8	2.6	4.2	4.7	9.3	14.7	16.1	10.1
Highest minimum temperature (°C)	24.8	23.8	23.5	17.5	12.4	15.3	13.3	13.1	15.3	21.1	23.0	23.5	24.8
Lowest minimum temperature (°C)	12.6	6.1	5.0	1.3	-2.2	-4.8	-6.7	-5.7	-5.0	-1.7	4.8	5.7	-6.7

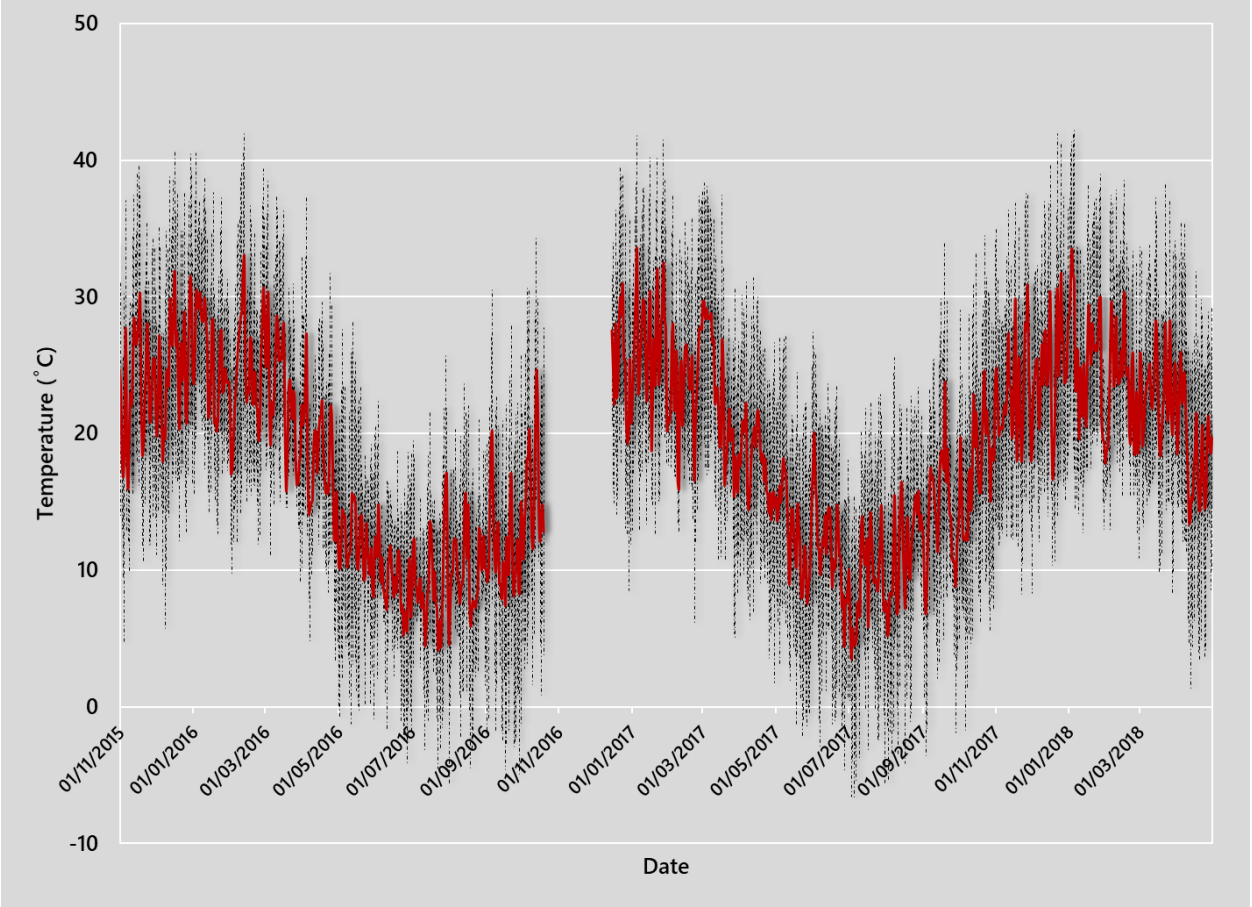


Figure 2-4 Daily average air temperature at Sandy Ridge from 7 May 2015 to 30 April 2018 (on site weather station).

2.2.4 Rainfall and evaporation

The region received at total of 950 mm of rainfall between 7 May 2015 and 30 April 2018. The distribution of rainfall is presented in Table 2-2. Distribution of rainfall by season is presented in Figure 2-5.

2.3 Assessment of bushfire scenarios

2.3.1 Bushfire approaching the Facility from a southerly to easterly direction

Land to the south and east of the Facility consists of a mixture of bushfire fuel structures on flat to gently undulating ground. These fuels are largely contiguous for hundreds of kilometres in all directions. A bushfire occurrence in the region could potentially be fast-moving and largely wind driven given the predominantly open structure of the bushfire fuels present and the high wind speeds experienced in summer, spring and autumn; potential fires could result in radiant heat and ember attack into the Facility itself.

2.3.2 Bushfire approaching the Facility from all other directions

Whilst land in all directions from the Facility is comprised of largely contiguous varieties of bushfire fuel structures on flat to gently undulating ground; the low wind speeds from the northeast to southwest, combined with the predominantly open nature of vegetation suggest that fires coming from these directions will be much slower moving, and potentially less intense than those approaching the Facility from the south to east.

3 BUSHFIRE RISK ASSESSMENT METHODOLOGY

Australian and New Zealand Standard *AS/NZS ISO 31000:2009 Risk Management–Principles and Guidelines* (SA & SNZ 2009) provides an internationally recognised approach to risk management. Methodology for this process is further described in *Risk Management Guidelines: Companion to AS/NZS 4360/2004* (SA & SNZ 2004), which defines the risk assessment process as outlined in Figure 3-1.

AS/NZS ISO 31000:2009 is adopted by DFES, as documented in the agency's Bushfire Risk Management Framework (DFES 2015), to formalise and communicate the approach of managing bushfire risk across the department in the aim of leading to improved coordination and effectiveness of bushfire risk management processes.

From a bushfire management perspective, this methodology can be useful in determining:

1. The inherent bushfire risk (i.e. the initial level of risk prior to risk treatment and mitigation); and
2. The residual bushfire risk (i.e. the level of risk remaining following risk treatment and mitigation).

Inherent and residual bushfire risk can be determined for individual bushfire events on the basis of the following risk criteria, which is used to inform the likelihood and consequence of such events:

- Likelihood of ignition and bushfire occurrence takes into consideration the bushfire history of the area, risk of ignition, vegetation type, fuel age and load, slope under vegetation and predominant fire weather conditions; and
- Consequence or impact from bushfire on life, property and the environment takes into consideration the degree and severity of potential bushfire scenarios, location of bushfire hazard areas, assets present in the area and the level of management and suppression response available.

The two bushfire scenarios identified in Section 2 have been subject to bushfire risk assessment through determination of likelihood and consequence in accordance with the rating tables outlined in Table 3-1 and Table 3-2[1]. This process determines the inherent bushfire risk of the event and informs the level of mitigation or management response required to reduce the risk to an acceptable level. The risk assessment matrix used to determine inherent and residual bushfire risk is outlined in Table 3-3.

[1] The determined consequence rating is the most likely outcome, not the worst case

Table 3-1 Likelihood rating system

Likelihood rating	Description
Almost certain	Consequence expected to occur in most circumstances; may occur once every year or more
Likely	Consequence will probably occur in most circumstances; may occur once every five years
Possible	Consequence might occur at some time; may occur once every twenty years
Unlikely	Consequence is not expected to occur; may occur once every one-hundred years
Rare	Consequence may occur only in exceptional circumstances; may occur once every five hundred or more years

Table 3-2 Consequence rating system

Likelihood rating	Description
Catastrophic	A large number of severe injuries, widespread damage and displacement of the community, significant impact on the environment
Major	Extensive number of injuries requiring hospitalisation, significant damage and impact on the community, longer term impacts on the environment
Moderate	Some injuries requiring medical treatment but no fatalities, localised damage and short-term impact on the environment
Minor	Small number of injuries but no fatalities, some damage and disruption but no lasting effects
Insignificant	No injuries or fatalities, little damage or disruption

Table 3-3 Risk assessment matrix

	Consequence				
Likelihood	**Insignificant**	**Minor**	**Moderate**	**Major**	**Catastrophic**
Almost Certain	High	High	Extreme	Extreme	Extreme
Likely	Medium	High	High	Extreme	Extreme
Possible	Low	Medium	High	Extreme	Extreme
Unlikely	Low	Low	Medium	High	Extreme
Rare	Low	Low	Medium	High	High
Risk level	**Risk response**				
Low	Acceptable risk. Application of standard management measures will ensure risk level remains low and risk should be eliminated or reduced as time permits.				
Medium	Potentially unacceptable risk. Development of site specific management measures may be required to lower the risk level and risk should be reduced as soon as reasonably practicable.				
High	Potentially unacceptable risk. Development of additional site specific management measures will be required to lower the risk level and requires urgent action as soon as possible.				
Extreme	Unacceptable risk. Additional site-specific mitigation will be required to lower the risk level and an immediate mitigation response is required.				

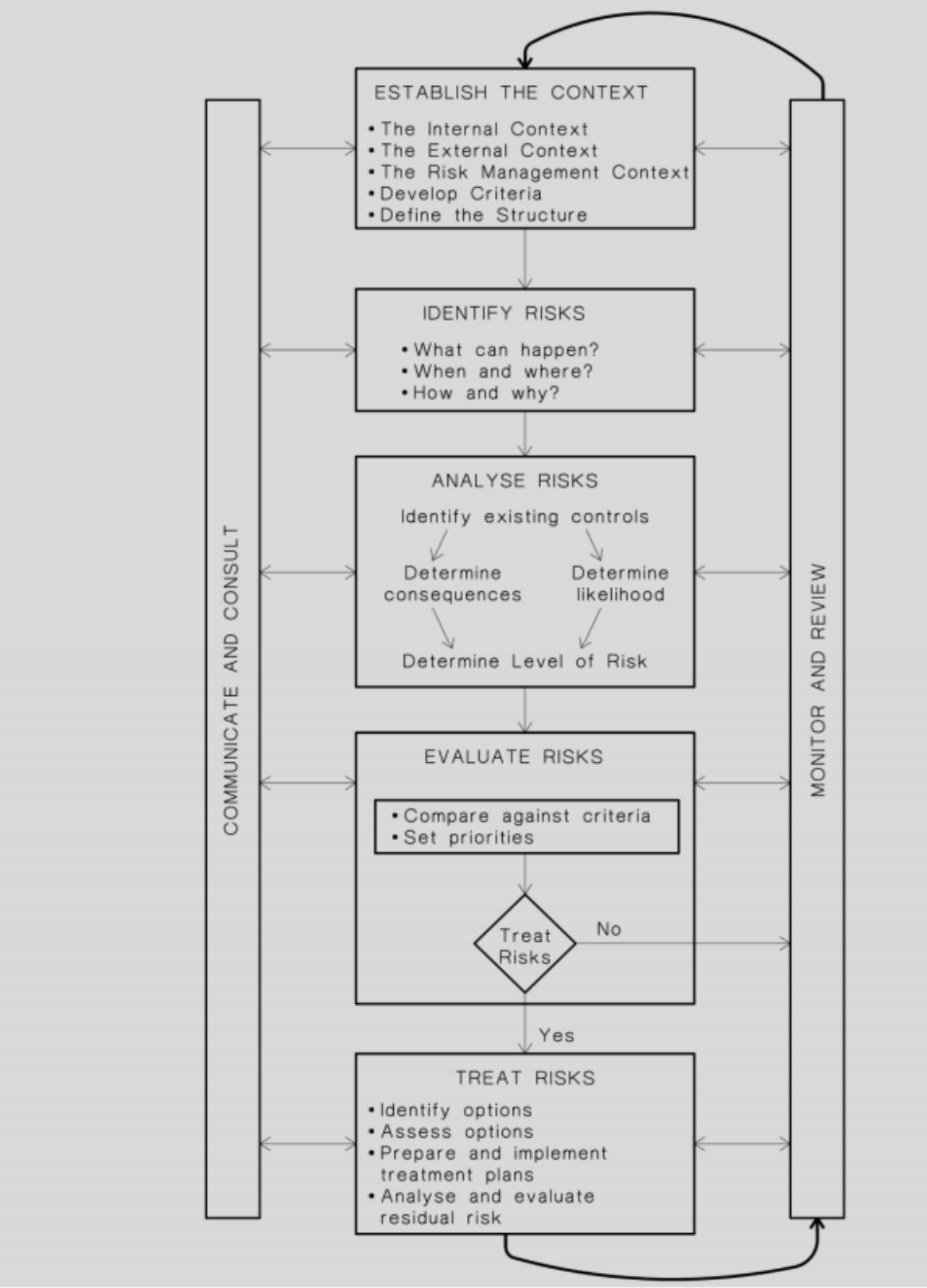


Figure 3-1 Risk assessment process as per AS/NZS ISO 31000:2009

4 BUSHFIRE RISK ASSESSMENT

4.1 Risk context

Risk is being assessed to inform bushfire mitigation for the Facility for the protection of life and property within and adjacent to the site. The risk assessment adopts a broad area and supports a tenure blind approach to ensure wider risk impacts and adjoining lands are captured to suitably address potential risk.

4.2 Risk identification

Bushfire risk is identified in the potential bushfire scenarios outlined in Section 2, which indicate the potential bushfire events that could impact life and property within the Facility and adjacent land. These two scenarios are considered to cover the majority of bushfire events that could occur in order to develop suitable bushfire risk mitigation.

4.3 Risk analysis and evaluation

Risk analysis and evaluation for each of the two potential bushfire scenarios is provided in Table 4-1 which specifies the likelihood and consequence of each scenario with and without management measures to determine inherent and residual risks.

Due to the storage and handling of flammable materials within the subject site, the potential consequence of a bushfire entering the site would be greater than if flammable materials were not present.

ELA and Tellus are of the view that following implementation of management measures, the risk of ignition will not be reduced due to the likelihood of lightning-induced ignition and presence of off-site classified vegetation and on-site flammable goods. Therefore, bushfire risk management measures are likely to reduce the level of consequence resulting from the bushfire event, rather than the likelihood of the event occurring. For example, an evacuation plan will reduce the potential impacts on life; thus reducing the level of consequence received from the bushfire event, but the likelihood of the event occurring will not be reduced.

Table 4-1 Bushfire risk assessment

Bushfire scenario	Comments	Likelihood	Consequence	Inherent risk	Mitigation	Likelihood	Consequence	Residual risk
1) Bushfire approaching from a southerly to easterly direction and impacting Facility	• Extended fire run through variety of open fuels. Limited firebreaks and roads to limit rate of spread. Limited points of access for fire suppression prior to reaching Facility. Greatest level of impact would occur under adverse fire weather conditions with an easterly wind (common during the bushfire season). • Consequence might occur at some time; may occur once every twenty years based on fire history, suppression response capability, fuel types, anticipated rate of spread etc. • Extensive number of injuries requiring hospitalisation, significant damage and impact on the community, longer term impacts on the environment based on analysis of assets.	Possible	Major	Extreme	Implementation of management measures identified in Section 5.	Possible	Moderate	High
2) Bushfire approaching from a westerly to northerly direction and impacting Facility	• Extended fire run through variety of open fuels. Limited firebreaks and roads to limit rate of spread. Limited points of access for fire suppression prior to reaching Facility. Carina mine pit between vegetation and the Facility expected to reduce rate of spread of bushfire. Predominant winds in the bushfire season suggest that a bushfire from these directions would be less probable than one from the south to east. • Consequence is not expected to occur; may occur once every one-hundred years based on fire history, suppression response capability, fuel types, anticipated rate of spread etc. • Extensive number of injuries requiring hospitalisation, significant damage and impact on the community, longer term impacts on the environment based on analysis of assets.	Unlikely	Major	High	Implementation of management measures identified in Section 5.	Unlikely	Moderate	Medium

5 BUSHFIRE MANAGEMENT MEASURES

Results of the bushfire risk assessment indicate that both bushfire scenarios pose a level of risk to the Facility, however Scenario 1 is considered to pose an increased level of risk than Scenario 2.

Implementation of the management measures provided in the following subsections prioritise protection of life and property and will reduce bushfire risk (residual risk) within the Facility.

5.1 Prevention

5.1.1 Identification of high bushfire risk areas

As a part of this BRMP it is recommended that bushfire fuel load assessments are conducted annually to assess bushfire potential and the need for pro-active controls (refer to Appendix B and C).

Survey lines/areas, vegetation densities and high fuel load areas will be identified and recorded with global positioning system (GPS) coordinates. Additional locations of interest (such as flora and fauna of conservation significance and habitat) will be determined by associated flora and fauna surveys and additional important sites will also be recorded and identified. This information will be mapped using GIS mapping and form a key part of the BRMP.

A quick assessment method for fuel loads based on **The Overall Fuel Hazard Guide for South Australia (2012)** will be used at the designated observation points across the development envelope and surrounds (Appendix D). This assessment technique is dominantly based on the visual assessment of dominant site species such as acacia's and grevillea, native grasses, woody shrubs and trees. It is a risk rating based assessment and is broadly described in Table 5-1. Additional assessment of fuel loads will be recorded opportunistically on a data sheet similar to that in Appendix B based on Table 5-1 and expanded information in Appendix C to update any high risk areas.

The result from annual and opportunistic fire load assessments will be used to develop bush fire management strategies and update this draft BRMP. The annual survey results will be available in the Facility Manager's office for emergency referral.

5.1.2 Specific controls

The following controls will be implemented to reduce the risk of bushfire ignition within the Facility and surrounds.

Construction

Construction has the potential to cause bushfires through:

- Hot works;
- Increased vehicles;
- Clearing and stockpiling vegetation; and
- Increased ignition sources.

The following controls will be implemented during construction activities:

- All hot works to have a permit and safety assessment in line with Tellus policy framework;
- Only diesel vehicles used onsite;
- No open flames unless permit approved;
- Vegetation stockpile in low mounds to reduce large fuel source and separated from buildings by a minimum of 20 m;
- Vehicles regularly checked and cleaned for build-up of grasses or vegetation around engine and undercarriage;
- All vehicles to be fitted with firefighting equipment;
- Fire tender available on-site at all times;
- Heavy earthmoving equipment available;
- Trained firefighting team at site; and
- A permit obtained and DFES to be informed not less than 48 hours before any planned back and/or patch burning activities performed.

Operation, closure and rehabilitation

Operation, closure and rehabilitation of the Facility has the potential to cause bushfires through:

- Ignition sources;
- Use of flammable materials;
- Hot works;
- Increased vehicles; and
- Increased use of project area.

The following controls will be implemented during operation, closure and rehabilitation of the Facility:

- At least a 40 m fire break to be established around working areas during operation;
- All hot works to have a permit and safety assessment in line with Tellus policy framework;
- No open flames outside of designated areas;
- Designated smoking area;
- No wastes burnt onsite;
- Weather and bushfire conditions assessed daily from website listed in Table 5-2;
- Fire tender available on-site at all times;
- Off-road 30,000 L water truck with cannon available at site;
- Heavy earthmoving equipment available;
- Site-wide fire hydrant system and fire hose reels, supplied from approx. 250 kL tank system;
- Trained firefighting team at site; and
- A permit obtained and DFES to be informed not less than 48 hours before any planned back- and/or patch-burning activities performed.

Hazardous materials, chemicals and fuels

Hazardous materials, chemicals and fuels within the Facility have the potential to cause/contribute to bushfires through:

- Flammable hazardous material stores;
- Flammable chemicals; and
- Flammable and volatile fuels.

The following controls will be implemented for hazardous materials, chemicals and fuels within the Facility:

- Ensure all flammable material is stored within enclosed buildings within a bunded area;
- Appropriate fire extinguishers and fire-fighting equipment to be located near to flammable material;
- All staff trained in the use and location of appropriate firefighting equipment; and
- If volatile fuels are required onsite, they will have an individual risk assessment undertaken and stored in separate area with appropriate controls;
- All hazardous materials, chemicals and fuels within the Facility to be stored in areas subject to BAL ratings of BAL-12.5 or lower.

Third party access

Third party access to the Facility have the potential to cause/contribute to bushfires through:

- Increase in ignition sources;
- Open flames outside of designated areas; and
- Unapproved back and/or patch burning.

The following controls will be implemented for third party access:

- Very limited access to undeveloped regions (limits ignition sources). No pastoral or Traditional Owner activities in the region due to restricted access;
- Liaise with local TOs and Pastoralists in back- and/or patch-burning operation planning;
- Inform local TOs and Pastoralists on the boundaries of the project area and no open flame policy;
- Visitors must sign in and undergo visitor site induction; and
- Visitors must be accompanied by a site representative and not deviate from formal access routes.

5.2 Suppression

If a bushfire is deemed to potentially impact the Facility, bushfire suppression techniques will be activated. A site bushfire response team will be adequately resourced for minimum responder numbers required for an effective bushfire response.

The team size will comply with legislative requirements and be consistent with relevant codes of practise. In addition, the team size will be informed by a risk-assessment workshop, taking into consideration the potential for ignition sources at different stages of the life of the facility. For example, there may be a higher risk of ignition sources during construction than during operations. During operation the workforce on site will be reduced and the number of potential ignition sources also reduced, so the number of bushfire fighting trained personnel may be reduced.

The team will be suitably trained.

5.2.1 Bushfire control methods

A bushfire can be broken down into components which aids on-ground co-ordination of control method; these are described in Table 5-3 and displayed in Figure 5-1.

5.2.2 Bushfire management approaches

The two main approaches to bushfire management are direct and indirect attack, as detailed in Table 5-4.

5.2.3 Fire control equipment

Firefighting equipment will be available at the Facility. This equipment includes:

- A 6x6 articulated 30,000L water cart with sprays and cannon;
- A 4x4 fast response foam unit with a 1,500L trailer-mounted water tank both with motorised water pump and hose;
- Fire extinguishers appropriate to potential fire type – chemical, electrical etc.;
- Fire hoses around facilities;
- Hydrants and hoses (yard areas);
- Hose reels are inside buildings and only for close by around buildings; and
- Heavy Earthmoving equipment as secondary support for fire appliances (can cut fire breaks and remove vegetation as required).

A map of the location of firefighting equipment and potential high fire risks areas are shown in Figure 5-2.

Table 5-1 Parts of a bushfire

Component	Description
Head	Is the part of the fire making the most progress, it will have the most intense and hottest fires and can also be called the fire front.
Flank	These are the sides of the fire between the front and the heel (rear). They are generally of lower intensity than the head and often described in direction, eastern flank, or location, left flank.
Fingers	Long slender sections of fire that extend beyond the head or flanks. Usual caused by variations in wind and fuel loads.
Heel	This is the rear of the fire, which is the lowest intensity part of the fire with the least spread. It is generally upwind or downslope of the head.
Spot fire	Fires caused by wind transported embers, outside of the area of the main fire; usually in front of the head of the fire.

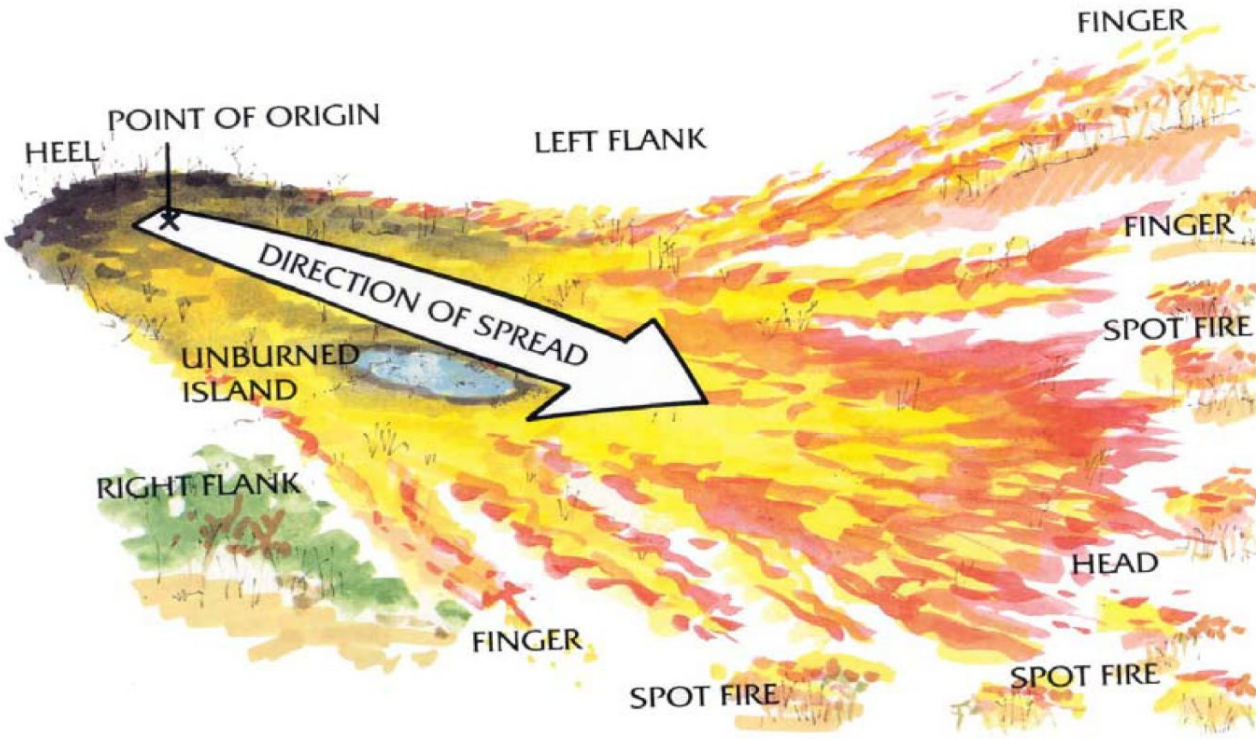
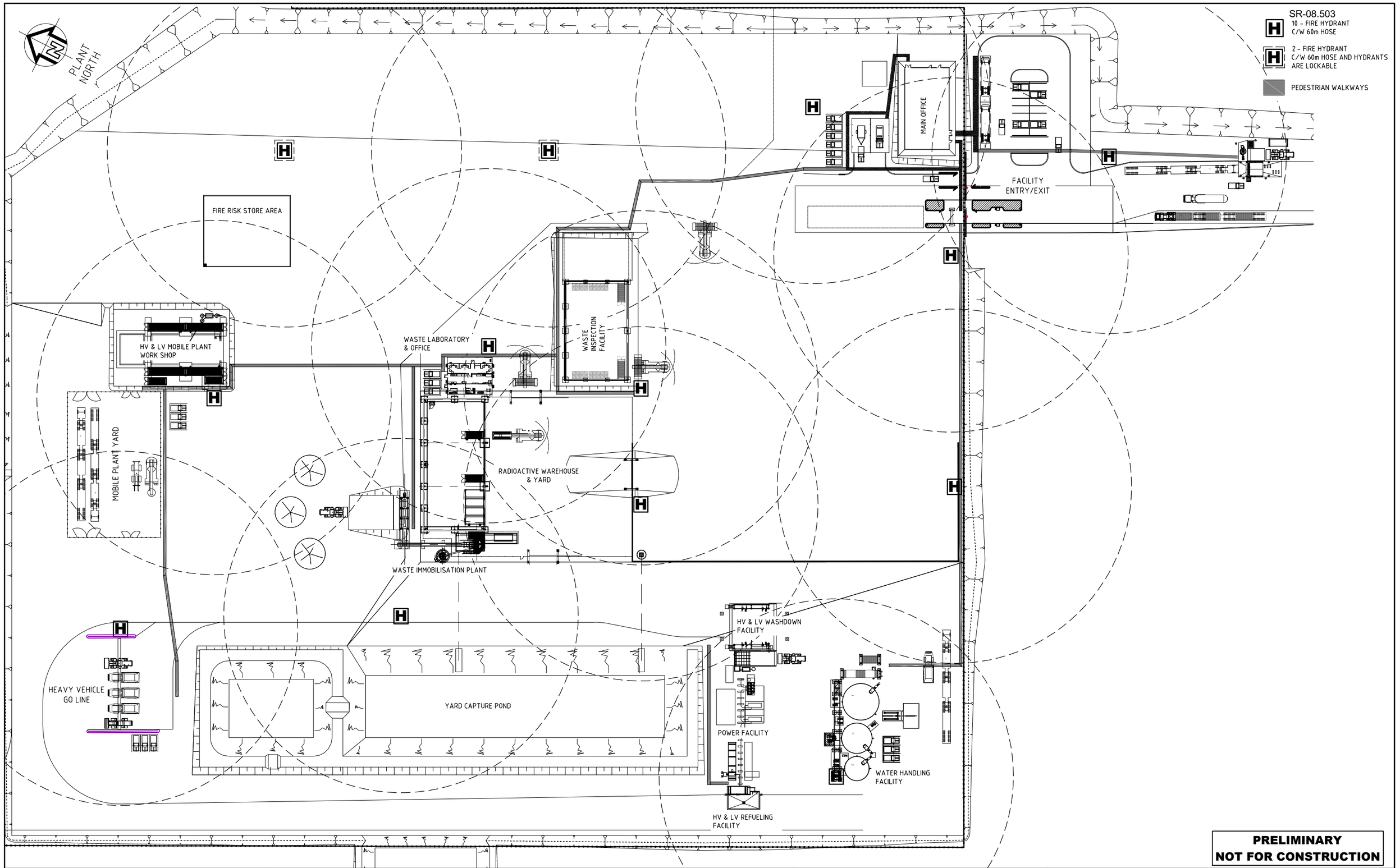


Figure 5-1 Graphic description of components of a bushfire

Table 5-2 Bushfire management techniques for consideration at Sandy Ridge

Control Method	Details	
Direct Attack		
Head	Attacking the head of the fire either by developing a control line (clearing around the edges of the fire) or using fire retardants or water to extinguish the head of the flame. Only recommended for low intensity fire.	
Flank	Like head attack but work is done on the flanks of fire, generally moving from the rear to the head to try and pinch the fire out. Useful if the fire is too intense to attack from the front.	
Parallel	Develop a control line a short distance ahead of the fire, useful when the fire is too intense to attack at close range. The attack line should be placed as close as possible to the main fire and if possible a second unit can burn out the fuel between the main fire and the control line.	
Equipment	**Advantages**	**Disadvantages**
• Mechanical, e.g. bulldozers • Hand tools, e.g. shovels. • Fire retardants – foam, chemicals, water. • Source of fire - Drip torches.	• Less area burnt. • Quickly contain the fire. • Edges where fire extinguished can be turned into the control line.	• Obstacles (e.g. fences) can impede on the control line. • Limited to low intensity fires. • Places firefighters in direct path of fire. • Needs constant patrol of fire line. • Irregular fire line constructed quickly.
Indirect Attack		
Back and/or patch burning	A control line is established some distance from the head or flanks of the fire and the fuel in between is burnt out. This can be advantageous when the intensity is extreme or, the terrain makes it difficult to attack the fire at close range.	
Equipment	**Advantages**	**Disadvantages**
• Mechanical, e.g. bulldozer. • Hand tools, e.g. shovels. • Source of fire, e.g. drip torch. • Water or other fire retardant source	• Removes firefighters from direct contact with fires. • Allows for strategic placement of control line. • Allows more time and consideration in control of the fire. • Choice of location for control line.	• Increases size of fire. • Allows for more intense fires to develop. • Larger area to control. • Back and/or patch burning may result in intense fires at intersection, potentially causing spotting outside of control lines. • Need to monitor and patrol large line.

Sourced from - ACT Fire and Rescue. (2011). Basic Wildfire Awareness: ACT Fire & Rescue Community Fire Units Learners Guide. Canberra: ACT Fire and Rescue.



PRELIMINARY
NOT FOR CONSTRUCTION

REF DRG No	TITLE	REV	BY	DATE	DESCRIPTION	CKD	ENG
		C	MK	08.08.2018	ISSUED FOR DMIRS APPROVAL		
TSR-4-PO-07400-EG-DWG-0040	DANGEROUS GOODS PLAN	B	MK	24.04.2018	PRELIMINARY		
07400-EG-DWG-0002	SITE PLOT KEY PLAN	A	MK	17.04.2018	PRELIMINARY FOR REVIEW/COMMENT		

TELLUS

VENDOR
GR ENGINEERING SERVICES LTD
ENGINEERING CONSULTANTS AND CONTRACTORS
71 Daly Street, Ascot ACN 121 542 738
Western Australia 6104
Phone: (08) 6272 6000
Fax: (08) 6272 6001

VENDOR DRG No: 12388-L-022 REV: C

	BY	DATE
DRAWN	MK	05.04.18
CHECKED		
DES ENG		
BFS MAN		
CLIENT		

TITLE
SANDY RIDGE PROJECT
DETAILED DESIGN
FIRE HYDRANT
GENERAL ARRANGEMENT

Figure 5-2. Locations of fire fighting equipment.

A1 | SCALE 1:550 | DRG No TSR-4-PO-07400-EG-DWG-0042 | REV C

5.3 Mitigation

Table 5-5 details mitigation and management measures to control the spread, development and severity of bushfires within the project area. This BRMP should be read in conjunction with the following management plans:

- Emergency Response Plan;
- Biodiversity Management Plan;
- Waste Management Plan;
- Water Management Plan; and
- Hazardous Material Management Plan.

Table 5-3 Measures for bushfire control during life of project

Mitigation measure	Responsible	Reporting	Audit
Bushfire risk map – highlighting high-risk areas for bushfires and potential direction of approach. This map is to be updated annually and after results of fire fuel load assessment surveys.	Facility Manager	At least annually or as required	Map showing latest update of fire risk and reference to fire fuel load assessment
All staff inducted into this BRMP, the Emergency Response Management Plan (ERMP) and other management plans associated with bushfire management.	Facility Manager	Annual Report	Annual report showing details of all completed inductions
Firebreaks developed around all assets and strategically to most effectively stop or slow potential incoming bushfires	Construction Manager	End of construction	All firebreaks are at least 4 m (*Bushfire Act)* wide, surrounding all assets, locations; mapped and recorded
Firebreaks maintained and cleared of vegetation	Construction and Facility Manager	End of construction report, then annually	Records of work completed and all fire breaks with vegetation below 10 cm
Appropriate signage and MSDS placed around site	Facility Manager	Annual Report	Signage at all hazardous and flammable material stores
Firefighting equipment and fire extinguisher onsite	Facility Manager	Annual Report	Location map and fire extinguishers present on site
Fire extinguishers maintained and inspected every 6 months	Facility Manager	6 months	Inspection every six months to verify
ERP clearly displayed for fire response	Emergency Services Officer	Annual Report	Annually audit to inspect plans and muster points
A dedicated team of 3-5 staff member during construction and 2-3 during operations to be present on site at any one time trained in bushfire fighting	Facility and Construction Manager	Annual Report	Records show 100% satisfactory completion by all staff
Fire drills conducted	Facility Manager	Annual Report	Annual report shows fire drills conducted regularly
Open flames or ignition sources prohibited from 20 m of flammable material	Facility Manager	Annual Report	Signage marking no open flame zones
Designated smoking area	Construction Manager	Annual Report	Designated smoking zones clearly signed and designated no smoking zones clearly signed
Dedicated firefighting equipment and personnel	Facility Manager	Annual Report	Firefighting equipment in place, operational, maintained, and tested and staff trained in its use.

Mitigation measure	Responsible	Reporting	Audit
Back- and/or patch-burning conducted as required in co-ordination with key stakeholders	Facility Manager	Annual Report	Evidence of stakeholder engagement; records of back and/or patch burning work conducted and permits granted
Vehicles inspected daily for build-up of vegetative matter in undercarriage and engine bay	Facility Manager	Daily	Records show daily checks and clean out of vehicles, as required
Monitor bushfires through websites	Facility Manager	Daily	Records show daily updates from fire advice websites and use during fire season
Any hot work requires a permit and a bushfire spotter if in areas next to flammable material	Facility Manager	As required	Annual report shows indication of hot works permits approved
Enforce no open flames or hot works during designated fire bans	Facility Manager	As required	Records show evidence of communicating and enforcing fire bans
Incident report lodged for any fire	Facility Manager	As required	Annual report shows records of any fire incident reports
Annual BFMP compliance and performance review	HSECQ Manager	Annual Report	Audit of BFMP criteria and management measure
All vehicles to carry fire extinguisher and UHF radio	Facility Manager	During new vehicle fit out	Records of compliance with all vehicles or visual inspection

5.4 Evacuation

5.4.1 Sandy Ridge Facility

Tellus will maintain a strict bushfire information control system. Tellus will adapt the DFES warning system which will broadly involve:

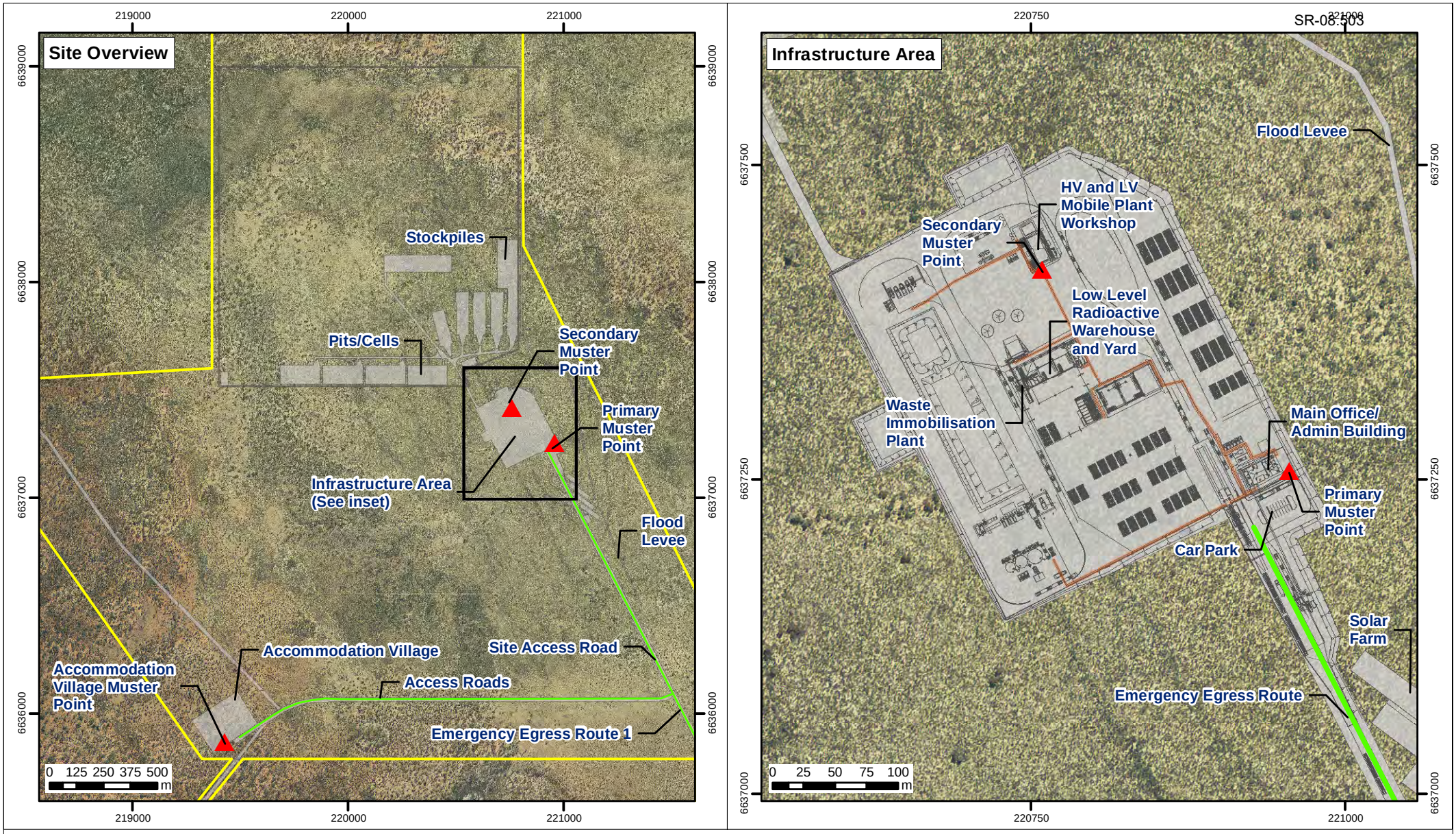
- Advice;
- Watch and act;
- Emergency warning; and
- All clear.

Muster points within the Mine Infrastructure Area are shown in Figure 5-3. Due to potential bushfire risks off-site (i.e. along Mt Walton Road), staff at the Facility will not be permitted to leave the site during a bushfire event. They will muster at the locations provided in Figure 5-3 and await further instruction from site Emergency Services Officer (refer to Section 6 for more information). Muster locations are considered by Tellus to align with DFES definition of a 'Safer Places' (DFES 2018).

5.4.2 Mount Walton Access Road

If trapped by a bushfire while travelling along Mt Walton Access Road, the following steps must be taken:

- Park the vehicle off the roadway where there is little vegetation, with the vehicle facing towards the oncoming fire front. There are relatively bare borrow pits at various points along the road;
- Turn the engine off;
- Close the car doors, windows and outside vents;
- **Call 000**;
- **Call the Sandy Ridge Facility and report to the Facility Manager**;
- Stay as close to the floor as possible and cover your mouth with a damp cloth to avoid inhalation of smoke. If smoke enters the vehicle, toxic fumes are released from the interior of the vehicle;
- Stay covered in woollen blankets if possible, continue to drink water and wait for assistance;
- Stay in the car until the fire front has passed and do not open windows or doors; and
- Once the front has passed and the temperature has dropped, cautiously exit the vehicle. Internal parts may still be extremely hot.



SR-08.503

N

Legend

- Emergency Muster Points
- Emergency Egress Routes
- Pedestrian Walkways
- Proposed Infrastructure
- Proposed Infrastructure Footprint

Figure 5-3
Muster Points in the event of Bushfire

SANDY RIDGE FACILITY
BUSHFIRE MANAGEMENT PLAN

SP-ID: GL00-2017072102-562
TSR0253_BFMPv1_MusterPoints.mxd

Version: A
Date: 15/03/2019

6 IMPLEMENTATION STRATEGY

6.1 Staff responsibilities

It is the responsibility of all staff to ensure the following:

- Meet requirements of this BRMP;
- Ensure have appropriate training for use of basic firefighting equipment;
- Aware of locations of all firefighting equipment and emergency procedures;
- Daily check of vehicles and water storage facilities;
- Report any fire incident to the Facility Manager;
- Apply for hot work permits;
- Maintain fire breaks as directed by Facility or construction manager;
- Follow bushfire advice as given by Facility Manager and / or Emergency Response Coordinator; and
- No open flames outside of designated areas during high fire risk periods.

6.2 Staff roles

6.2.1 Construction Manager

It is the responsibility of the Construction Manager to ensure the following:

- All staff are inducted and trained in this BRMP, Weed Management Plan and ERP.
- Staff are trained in the use of fire-fighting equipment.
- A dedicated team of 3-5 DFES accredited bushfire management personnel are available on-site at any time during construction
- Placement of dangerous goods and/or hazardous materials signage around flammable material stores.
- Permits are issued and managed for any hot works.
- Development of designated smoking area.
- Development of fire breaks.
- Ensure fire extinguishers are maintained and tested every six months.
- Ensure vehicles are checked and cleaned regularly of any vegetative build up.
- Ensure vehicles are maintained in accordance with the manufacturers requirements.
- Check for regular updates with internet-based fire websites.
- Report any incident to the Registered Manager for further action.
- Ensure fire fuel load assessments conducted annually or more frequently, if required.
- Consultation with key stakeholders to plan back- and/or patch-burning operations.
- Application and granting of a permit to conduct back- and/or patch-burning.
- Notification to DFES and Coolgardie Shire Council not less than 48 hours before any planned back- and/or patch-burning occurs.

6.2.2 Facilities Manager

It is the responsibility of the Facilities Manager to ensure the following:

- All staff are inducted and trained in this BRMP and ERP.
- Adequate firefighting equipment and staff trained in its use on site; this will include a dedicated bushfire trailer or utility with a 5,000L water tank and motorised water pump and hose.
- A dedicated team of 2-3 staff during operations to be present on site at any one time accredited with appropriate bushfire management training.
- Placement of appropriate signage around flammable material stores.
- Issuing of hot work permits.
- Development of designated smoking area.
- Maintenance of fire breaks.
- Ensure fire-fighting equipment are maintained and tested every 6 months.
- Ensure vehicles are checked and cleaned daily of any vegetative build up.
- Ensure all vehicles are maintained in accordance with the manufacturers requirements.
- Check for regular updates with internet-based fire websites.
- Ensure fire fuel load assessments conducted annually or more frequently, if required.
- Application and granting of a permit to conduct back- and/or patch-burning.
- Notification to the local DFES not less than 48 hours before any planned back and/or patch burning occurs.
- Annual report.
- Incident reports.
- Stakeholder engagement.
- Annual BFMP compliance and performance audit.
- Vehicles fitted with fire extinguisher and UHF radio.
- Report any incident to HSECQ Manager for further action.
- Monitor of bushfires and emergencies through websites.

6.2.3 Emergency Services Officer

It is the responsibility of the Emergency Services Officer to ensure the following:

- Maintain the ERP.
- Designate emergency muster points.
- Responsible for co-ordinating emergency response, including fire events.
- Audit and review emergency response plan.
- Ensure emergency response drills are conducted regularly.
- Develop emergency response induction.
- Ensure adequate emergency evacuation maps and signage is adequately displayed.
- Co-ordinate with relevant government, and other stakeholders in response to a bushfire or large fire event.
- Determine level of threat and appropriate action required.
- Co-ordinate with Facility or Construction Manager for staff response.

6.3 Training and competency

A dedicated team of 3-5 staff members during construction and 2-3 during operations will be present on site at any time and will be appropriately trained in the management and control of bushfires by an accredited Registered Training Organisation.

All staff will be familiar with and inducted into this BFMP. As part of the induction, all staff will be made aware of the potential fire sources, bushfire risk map and location of control equipment available.

Staff will be given cultural competency training to work effectively with key stakeholders in fire management and mitigation measures.

6.4 Reporting

6.4.1 Routine reporting

An annual **Bushfire Management Report** will be compiled containing the following information:

- Any fire incidents or near misses.
- Any fire mitigation work conducted – back- and/or patch-burning, development of fire breaks or other.
- An assessment of fire fuel loads in the surrounding area, including GPS locations.
- Records of all staff inductions into this BRMP.
- Records of required staff in bushfire training with satisfactory completion.
- Fire equipment maintenance and calibrations.
- Fire and emergency response drills.
- Fire break maintenance.
- Stakeholder engagement –, Pastoralists, TOs and other.
- Results of audits.
- Review and update of the BRMP.

6.4.2 Incident reporting

Where required, an incident report will be generated and submitted to the Facility Manager who will then distribute the results to the **relevant authority** and other affected stakeholders as soon as possible. DBCA and DFES will be notified immediately if there is a serious fire on-site.

An incident report will typically include the following:

- Location of fire.
- Date and time fire noticed.
- Updated bushfire map.
- Cause or source of fire (if known).
- Mitigation and management response.
- Stakeholder engagement.
- Damages – personal, assets or environment.
- Recommendations for future fire management.
- Rehabilitation work.

6.5 Stakeholder engagement

Tellus will engage the following stakeholders to determine concerns and attain information and advice relating to fire risk and management at the Facility:

- Tellus representative responsible for fire safety;
- DBCA, DFES and Shire of Coolgardie representatives; and
- Where appropriate, cultural heritage stakeholders.

Tellus will engage with the above in the planning of fuel load assessment surveys and controlled burn planning at the site. There will be ongoing management of firebreaks, ground fuel surveys and consultation on frequency and timing of controlled burning.

Key stakeholders and, where appropriate, an appropriately experienced consultant, will also be consulted for specialist advice and notified of any planned fire activities at Sandy Ridge. Concerns, information and advice resulting from stakeholder consultation and engagement will be incorporated in the annual review and audit of the BFMP.

If appropriate, there will be direct engagement of Aboriginal Rangers wherever possible in the ongoing development of the BRMP, particularly through participation in field surveys.

7 BUSHFIRE RESPONSE

7.1 Response management

Table 7-1 details the bushfire action response plan delegating responsibilities and required actions based on fire threat and occurrence. This plan will be annually reviewed and updated to improve the safety of all staff, assets and environmental values within the project area. The information is derived from the ACT Fire and Rescue (2011) community fire training manual and the national bushfire warning system alert levels.

A dedicated team of 3-5 staff members during construction and 2-3 during operations will be present on site at any one time and will have rural bushfire management training.

7.2 Notification management

Pursuant to Section 43(1) of the Bush Fires Regulations, Tellus shall within 7 days of the occurrence of a bushfire, send to the Shire of Coolgardie, written notice in duplicate notifying the local government of the occurrence of the fire.

The notice shall set out:

(a) the date on which the fire occurred.

(b) the cause or origin of the fire.

(c) the approximate area burned by the fire.

(d) an estimate of the total loss caused by the fire.

(e) the time when the fire was first noticed.

(f) the time when the fire was extinguished.

(g) details of persons and equipment used to suppress the fire.

Pursuant to section 78 of the *Mines Safety Inspection Act 1994*, Tellus will notify the Department of Mines, Industry, Regulation and Safety of any outbreak of fire above or below ground at the Facility.

Table 7-1 Bushfire action response plan for the Facility

Responsibility	Situation			
	No fire: *Carry out maintenance and scheduled inspection requirements of this BFMP*	**Advice:** *Either inspection identifies specific local fire risk or advice is issued of potential fire risk in the area*	**Watch and Act:** *A fire is approaching. Action should be taken to protect life and assets*	**Emergency Warning:** *Unplanned fire or bushfire imminent.* ***Immediate action required*** *- prioritise human life.*
General staff	• Maintain strict adherence to this BFMP. • Maintain fire breaks. • Assist with pre-fire season back- and/or patch-burning, as required.	• Notify Facility Manager of potential risk. • Mitigate risk by all available methods without placing staff at risk.	• Maintain safe distance from bushfire. • Report to Emergency Response Coordinator and Construction Manager/Facility Manager. • Review location of bushfire fighting equipment, evacuation procedures and muster points.	• If small fire, use available firefighting equipment and control fire. • Report to Emergency Response Coordinator or Construction Manager/Facility Manager. • If large fire, follow ERP. • Follow instructions from Emergency Response Coordinator or Construction Manager/Facility Manager.
Facility Manager and / or Emergency Response Coordinator	• Organise maintenance of fire breaks, fire extinguishers, waters sources, firefighting equipment and staff training. • Conduct emergency drills regularly.	• Follow advice on internet sources • Prepare for mitigation response. • Respond to site specific hazard increase. • Report on incident. • Review ERP.	• Follow bushfire on internet sources. • Determine level of bushfire and potential risk to on site personnel through on-ground assessments. • Prepare bushfire response team; Review	• Assess fire on-ground and internet. • Implement fire control techniques, if appropriate. • Alert DBCA, DFES and appropriate stakeholders. • Initiate evacuation plan, if appropriate. • Prioritise human life.

Responsibility	Situation			
	No fire: *Carry out maintenance and scheduled inspection requirements of this BFMP*	**Advice:** *Either inspection identifies specific local fire risk or advice is issued of potential fire risk in the area*	**Watch and Act:** *A fire is approaching. Action should be taken to protect life and assets*	**Emergency Warning:** *Unplanned fire or bushfire imminent.* ***Immediate action required*** *- prioritise human life.*
	• Co-ordinate back- and /or patch-burning. • Inspection of site for fuel and fire risk • Co-ordinate vegetation fuel load assessments.		ERP and evacuation procedures. • Actions need to be implemented to protect life and assets.	

8 REVIEW, UPDATE AND AUDIT

This BRMP will be reviewed, audited and updated by a third party prior to construction commencing and updated by Tellus. Following that, it will be reviewed, audited and updated by Tellus as and when required by the relevant authority. Results of the audit will be used to improve the BRMP for the life of the Project.

9 REFERENCES

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APPENDIX B - PLATES

The following vegetation descriptions inform classification.

Class C shrubland (Plot 1)

PH01

Acacia resinimarginea/Allocasuarina acutivalvis Open Heath

PH03

Acacia resinimarginea Open Heath over *Triodia scariosa* Open Grassland

PH04

Acacia resinimarginea Shrubland over *Triodia scariosa* Open Grassland

PH05

Acacia resinimarginea Open Heath

PH06

Acacia resinimarginea/Eucalyptus pileata Shrubland over *Triodia scariosa* Open Grassland

PH09

Callitris preissii/Acacia resinimarginea Tall Shrubland

PH10

Leptospermum roei Open Heath

Class B woodland
Plots 4, 10 and 13

PH07

Eucalyptus corrugata Low Woodland over *Acacia tetragonophylla* Tall Open Shrubland

PH13

Eucalyptus corrugata Low Woodland over *Acacia tetragonophylla*
Tall Open Shrubland

PH17

Eucalyptus salmonophloia Woodland over *Eremophila oppositifolia* Open Heath

PH19*

Open woodland of *Eucalyptus vittata* and *E. salmonophloia* over sparse shrubland of *Atriplex* spp., *Eremophila scoparia* and *Templetonia sulcata*

PH20*

Woodland of *Eucalyptus salmonophloia* and *E. salubris* over open shrubland of *Eremophila scoparia,* and *Atriplex vesicaria* and *Senna artemisioides* subsp*. filifolia*

Class D scrub
Plots 3, 9 and 11

PH11

Callitris preissii/Acacia resinimarginea Tall Shrubland

PH16

Acacia burkittii Tall Shrubland

PH18

Eucalyptus ?rigidula Very Open Shrub Mallee over *Melaleuca uncinata/Acacia acuminata* Open Low Heath

Class E mallee
Plots 2, 5, 6, 7, 8 and 12

PH02

Eucalyptus gracilis Shrub Mallee over *Acacia nigripilosa* subsp.*nigripilosa* Low Shrubland

PH08

Eucalyptus gracilis Very Open Shrub Mallee over *Acacia burkittii* Tall Open Shrubland over *Melaleuca uncinata* Open Shrubland

PH14

Acacia resinimarginea/Melaleuca uncinata Open Low Heath

PH12

Eucalyptus pileata Open Shrub Mallee over *Melaleuca uncinate* Open Shrubland over *Triodia scariosa* Open Grassland

PH21*

Tall sparse shrubland of *Acacia sibina* with *Allocasuarina campestris*, over open Shrubland of *Baeckea elderiana, Grevillea obliquistigma* subsp. *obliquistigma* and *Leucopogon* sp. Clyde Hill (M.A. Burgman 1207)

PH15

Eucalyptus salubris var. *salubris* Open Shrub Mallee over *Melaleuca uncinata* Open Shrubland

APPENDIX C – STANDARDS FOR ASSET PROTECTION ZONES

The following standards have been extracted from the Guidelines for Planning in Bushfire Prone Areas v 1.3 (WAPC 2017).

Every habitable building is to be surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements:

a. **Width**: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a fire does not exceed 29kW/m² (BAL-29) in all circumstances.
b. **Location**: the APZ should be contained solely within the boundaries of the lot on which a building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes).
c. **Management**: the APZ is managed in accordance with the requirements of '*Standards for Asset Protection Zones*' (below):

- Fences: within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used
- Objects: within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors
- Fine Fuel load: combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare
- Trees (> 5 metres in height): trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy (Figure 1)
- Shrubs (0.5 metres to 5 metres in height): should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m2 in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees
- Ground covers (<0.5 metres in height): can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs
- Grass: should be managed to maintain a height of 100 millimetres or less.

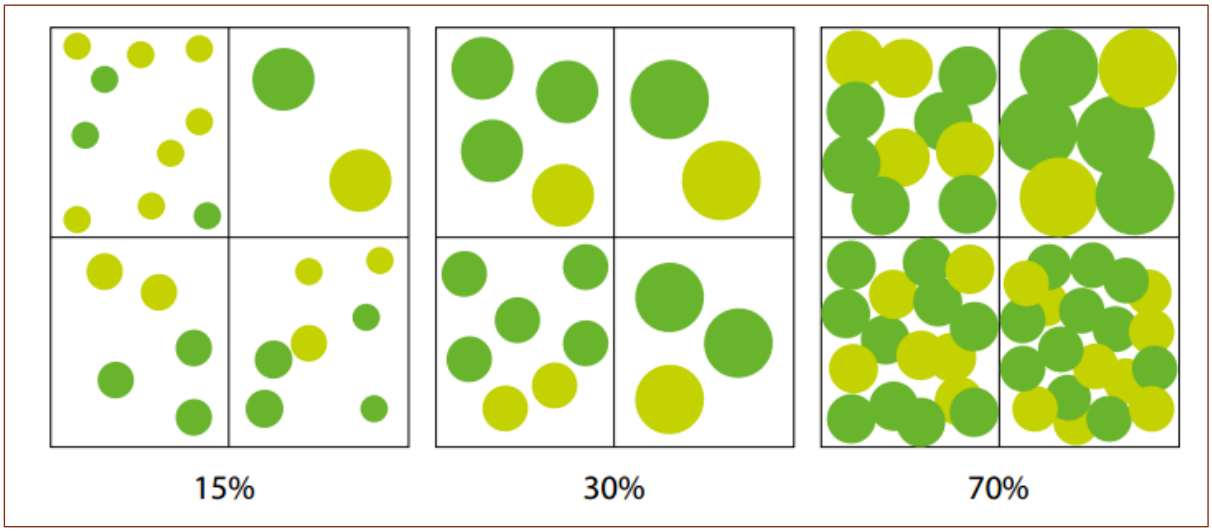

Figure 1 Illustrated tree canopy cover projection (WAPC 2017)

Additional notes

The Asset Protection Zone (APZ) is an area surrounding a building that is managed to reduce the bushfire hazard to an acceptable level. Hazard separation in the form of using subdivision design elements or excluded and low threat vegetation adjacent to the lot may be used to reduce the dimensions of the APZ within the lot.

The APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity. The APZ may include public roads, waterways, footpaths, buildings, rocky outcrops, golf courses, maintained parkland as well as cultivated gardens in an urban context, but does not include grassland or vegetation on a neighbouring rural lot, farmland, wetland reserves and unmanaged public reserves.

APPENDIX H: AIR QUALITY MANAGEMENT PLAN

SR-08.503

TELLUS

SANDY RIDGE FACILITY CONSTRUCTION AIR QUALITY MANAGEMENT PLAN

March 2019

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DOCUMENT CONTROL

The signatures below certify that this management plan has been reviewed and accepted and demonstrates that the signatories are aware of all the requirements contained herein and are committed to ensuring their provision.

	Name	Signature	Position	Date
Prepared by	Sophy Townsend		Manager HSECQ	28/3/2019
Reviewed by	Richard Phillips		General Manager HSECQ	28/3/2019
Approved by	Richard Phillips		General Manager HSECQ	28/03/2019

Amendment Record

This management plan is reviewed to ensure its continuing relevance to the systems and process that it describes. A record of contextual additions or omissions is given below:

Page No.	Context	Version	Date

Company Proprietary Information

The electronic version of this management plan is the latest version. It is the responsibility of the individual to ensure that any paper material is the current version. The printed version of this procedure is uncontrolled, except when provided with a document reference number and version in the field below:

Document Ref.	DOCID-88105952-809			Ver	0
Uncontrolled Copy	✓	Controlled Copy		Date	28/3/2019

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Abbreviations

AQMP	Sandy Ridge Facility Air Quality Management Plan
EMP	Environmental Management Plan
EMS	Environmental Management System
EP Act	Environmental Protection Act 1986
EPBC 2015/7478	Australian Government Ministerial Approval of the Sandy Ridge Facility
NEPM	National Environmental Protection Measure
PER	Public Environmental Review
SEP	Site Environmental Procedure

1 INTRODUCTION

1.1 Overview

This Air Quality Management Plan (AQMP) has been developed to manage air quality-related impacts associated with the construction of the Sandy Ridge Facility (the Facility). This plan outlines potential risks to air quality and mitigation/management measures that will be implemented to ensure that air quality impacts are as low as reasonably practicable during construction of the Facility.

This AQMP is a component of, and provides additional detail to, that contained within the Human Health Management Plan (HHMP) and the Contractors Environmental Management Plan (EMP). The AQMP plan applies to all works undertaken by Tellus and its Contractors.

1.2 Objective

The objective of this AQMP is to:

- Identify sensitive receptors.
- Reduce, wherever feasible, the impacts upon local amenity and sensitive receptors.
- Develop, implement and monitor air quality management measures on- and off-site.
- Verify the project adheres to legislative and contractual requirements.
- Verify that reporting and continuous improvement practices are implemented during the construction of the Facility.

1.3 Targets and performance criteria

Targets and performance criteria have been established to manage air quality during construction of the Facility. These targets and performance criteria have been informed by the outcome of the air quality assessment undertaken for the PER. The targets and performance criteria are listed in Table 1-1.

Table 1-1 Targets and performance criteria – AQMP

Objective	Target/performance criteria
Minimise dust generated during construction of the Sandy Ridge Facility.	- Minimal dust generated on haul routes. - Minimal dust generated during earthworks. - Minimal dust generated from stockpiles.
Minimise emissions and odour generated during construction of the Sandy Ridge Facility.	- Minimal generation of exhaust fumes from vehicles/equipment. - Minimal generation of odour from waste (rubbish bins and landfill). - No bushfires caused by construction activities at Sandy Ridge (refer to Bushfire Risk Management Plan).

1.4 Interface with other management plans

This AQMP will form an integral part of Tellus' Environmental Management System (EMS). As a subsidiary to the Project Management Plan, the AQMP interfaces with a range of other management plans as shown Figure 1-1.

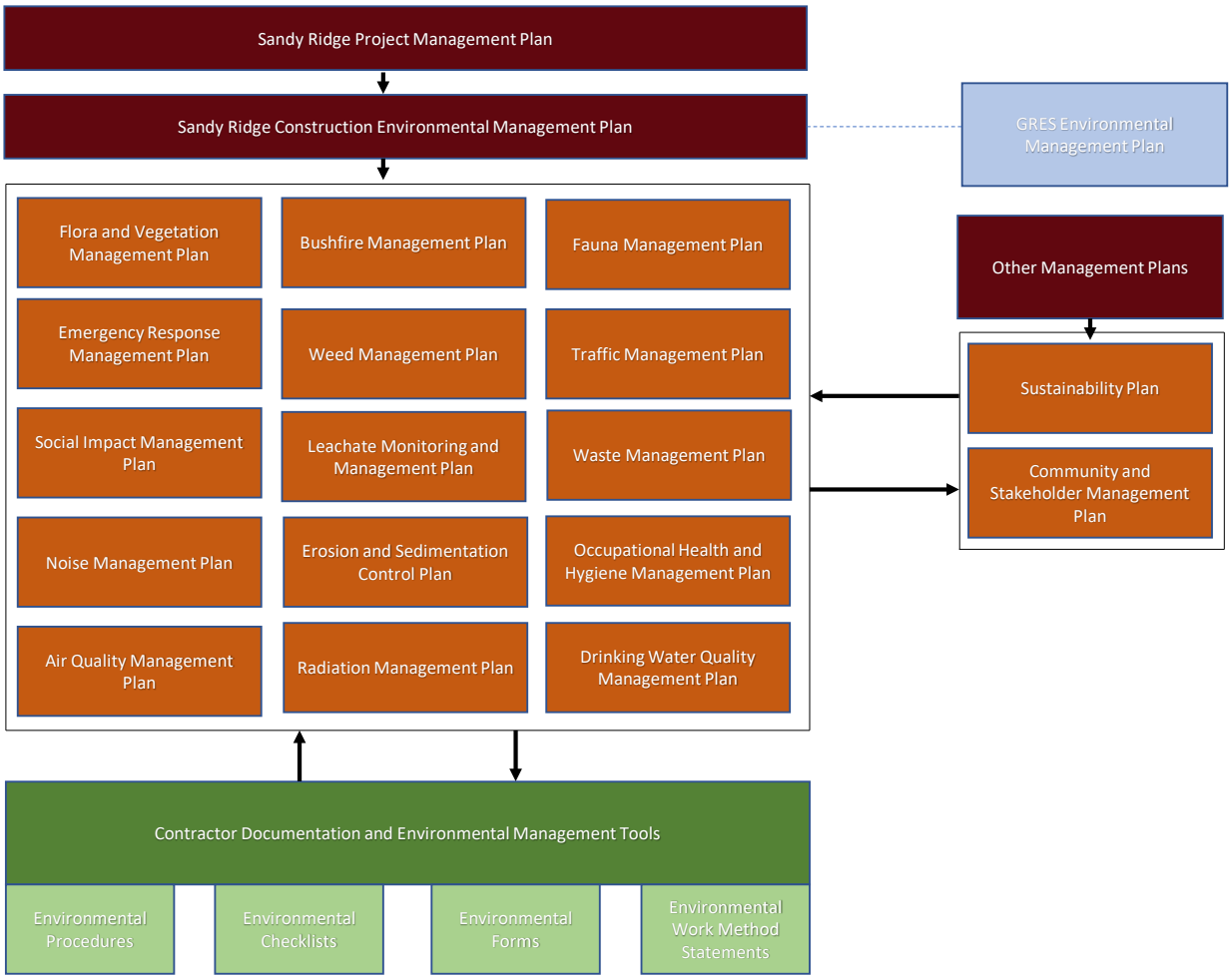

Figure 1-1 Structure of the environmental management system of the Sandy Ridge Facility

2 LEGISLATIVE CONTEXT

2.1 Legislation, guidelines and policies

Owners requirements for managing air quality are tabled in Appendix A. This section addresses legislation, guidelines and policies that are relevant to this AQMP.

2.1.1 Legislation

Legislation relevant to this AQMP are summarised in Table 2-1.

Table 2-1 Legislation and relevance to this AQMP

Legislation/regulation	Relevance	Compliance – AQMP
Environment Protection Act 1986 (EP Act)	State environmental legislation that provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment.	Chapter 5 – Air Quality Mitigation/Management Measures.
Bush Fires Act 1954	State legislation that provides provision for diminishing the dangers resulting from bushfires, and for the prevention, control and extinguishment of bush fires.	Chapter 5 – Air Quality Mitigation/Management Measures.

2.1.2 Guidelines and policies

This AQMP has been prepared with reference to 'A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities' prepared by the WA Department of Environment and Conservation (2011).

Policies relevant to this AQMP are summarised in Table 2-2.

Table 2-2 Policies and relevance to this AQMP

Policy	Relevance	Compliance – AQMP
National Environment Protection Measure (Ambient Air Quality) Measure (Ambient Air NEPM) (National Environment Protection Council 1998)	This policy sets out national standards and goals for six common air pollutants, 'criteria' air pollutants including lead (Pb), sulphur dioxide (SO2), carbon monoxide (CO), ozone (O3), nitrogen dioxide (NO2) and particulates with mean aerodynamic diameter <10um (PM10). The standard and goals set out in the NEPM are designed to be measured to give an 'average' representation of general air quality for large urban populations. That is, the NEPM monitoring protocol was not designed to apply to assessing the air quality at locations adjacent to major roads and industrial premises. This means that NEPM limits apply and as such, are to be considered by DWER in assessing air quality concerns and issues.	Chapter 6 – Monitoring
National Environment Protection Measures for Air Toxics (Air Toxics NEPM) (National Environment Protection Council, 2004).	The policy is concerned with collection of data on ambient levels of: • Formalehyde • Toluene • Xylenes • Benezene • Polycyclic aromatic hydrocarbons (PAH) …at locations where, elevated levels are expected to occur and there is a likelihood that significant population exposure could occur. Any air monitoring data that is and has been collected for the purposes of the Air Toxics NEPM must be assessed against the monitoring investigation levels. They are set as an average level designed to protect air quality and public health for large urban populations.	Chapter 6 – Monitoring

2.2 Approvals, agreements and other specifications

2.2.1 Ministerial conditions – Australian Government

There are no conditions of approval regarding air quality attached to the approval from the Australian Government (EPBC 2015/7478).

2.2.2 Ministerial conditions – Western Australian Government

The conditions of approval from the Western Australian Government (Ministerial Statement 1078) and their relevance to this AQMP are provided in Table 2-2.

Table 2-3 Conditions of approval attached to MS 1078 and their relevance to this AQMP

Condition No.	Condition	Compliance – AQMP
10-6	The Flora and Vegetation Management Plan shall include detailed information on potential direct and indirect impacts to *Calytrix creswellii*, *Lepidosperma lyonsii*, and the undescribed *Lepidosperma* sp. and include the following: (1) Targeted flora survey results required by condition 10-4. (2) Avoidance of direct impacts where practicable. (3) Mitigation, monitoring and management measures for indirect impacts, including those for fire, dust suppression and water quality, and weeds.	Chapter 5, Table 5-1. Also refer to Sandy Ridge Flora and Vegetation Management Plan.

2.2.1 Access agreements – Polaris Metals and Golden Iron Resources

The access agreements stipulate an obligation to repair, rehabilitate and make good all damage caused within the development envelope and to revegetate the development envelope (where necessary) in accordance with the terms and conditions of the tenure and in compliance with applicable laws. These obligations will be undertaken during the decommissioning and rehabilitation phase of the Sandy Ridge Facility and are not applicable to this AQMP for construction of the Facility.

2.2.2 Requirements of the Public Environmental Review

Air quality mitigation/management measures to be implemented during construction of the Facility were committed to by Tellus in the PER. These requirements, as they relate to construction, are summarised in Table 2-3.

Table 2-4 Air quality mitigation/management requirements of the PER

Reference	Mitigation/management requirement	Compliance – AQMP
Section 10.2.4 of PER.	Implement dust suppression and management measures to mitigate any adverse effects on vegetation including the following: (1) Stabilisation of topsoil stockpiles. (2) Application of dust suppression methods along internal access roads and hardstand areas using watercarts during dry, dusty periods. (3) Monitoring of weather conditions prior to mining activities most likely to generate dust (i.e. vegetation removal, topsoil and subsoil stripping and blasting). (4) Installation of dust deposition gauges near the population of *Calytrix creswellii* within the development envelope and at control locations and ensure monitoring is conducted quarterly for 12 months. The final locations of dust depositions gauges would be identified in consultation with the Department of Water and Environmental Regulation (DWER).	Chapter 5, Table 5-1.
Section 11.1.4 of PER.	Dust suppression and management measures would be implemented to minimise dust impacts where possible. This would include: - Application of dust suppression methods along internal access roads and hard stand areas using watercarts during dry, dusty periods. - Weather conditions would be monitored prior to mining activities most likely to generate dust (i.e. vegetation removal, topsoil and subsoil stripping, and blasting). - Dust deposition gauges would be installed within the development envelope and monitored quarterly for at least the initial 12 months. The final locations of dust deposition gauges would be identified in consultation with DWER.	Chapter 5, Table 5-1.

3 SENSITIVE RECEPTORS

A sensitive receptor is defined as educational, health care, food manufacturing, parks/recreational facilities and residential land use areas that are within a 50-kilometre radius of the Facility.

Desktop studies using aerial imagery have identified several sensitive receptors, and these have been confirmed by numerous field studies undertaken within and in the vicinity of the Facility. The location of sensitive receptors is shown in Figure 3-1. These include:

- Population of *Calytrix creswellii* located within the Facility Mine Infrastructure Area.
- The Facility Mine Infrastructure Area.
- The Facility Accommodation Village.
- The Mt Walton Intractable Waste Disposal Facility.
- The Carina Iron Ore Mine.

A site visit conducted by Tellus confirmed the limited number of identified sensitive receptors and allowed for the identification of unlisted sensitive receptors. No additional sensitive receptors were identified.

Control measures will be implemented where construction activities are within 50 m of an identified sensitive receptor. To successfully identify areas where control measures are required and to determine appropriate monitoring locations, personnel will be issued with maps of each construction area showing the relative locations of the active construction zone and nearby sensitive receptors.

160000 200000 240000 280000 320000

6680000

6640000

6600000

Mount Manning Range Nature Reserve

Mount Manning- Helena and Aurora Ranges Conservation Park

Mount Manning Range Nature Reserve

Shire of Menzies

Mount Manning- Helena and Aurora Ranges Conservation Park

Sandy Ridge Facility

Population of *Calytrix creswellii*

Facility Mine Infrastructure Area

Facility Accommodation Camp

Mt Walton Intractable Waste Disposal Facility

Ex-Jaurdi Pastoral Lease

Carina Iron Ore Mine Pit

Sandy Ridge Access Road

25 km

IWDF Access Road

Ex-Jaurdi Pastoral Lease

Shire of Yilgarn

Shire of Coolgardie

Ex-Jaurdi Pastoral Station Homestead

50 km

Carina Iron Ore Mine Camp

Wallaroo Rock Conservation Park

Koolyanobbing

PERTH-KALGOORLIE RAILWAY

Clear and Muddy Lakes Nature Reserve
Rowles Lagoon Conservation Park

N

7.5 3.75 0 7.5 Km

Coordinate System:
GDA 94 MGA Zone 51

SP-ID:GL00-2017072102-574
TSR0262_AQMP_SensitiveReceptors.mxd

Legend

- Locality
- Sensitive Receptor

Radius Boundary

- 25 km
- 50 km

- Tellus *Mining Act* Tenure
- Local Government Authority
- DBCA lands

- IWDF access road
- Principal road
- Railways

Data in this map is sourced from: © Commonwealth of Australia (Geoscience Australia) 2018 and © State of Western Australia (Department of Mines, Industry Regulation and Safety) 2018.

Figure 3-1
Sensitive Receptors within a 50 km Radius of the Sandy Ridge Facility

SANDY RIDGE FACILITY
AIR QUALITY MANAGEMENT PLAN

TELLUS

Version: C
Date: 2/04/2019

4 KEY ENVIRONMENTAL ISSUES

A detailed risk assessment has been conducted to evaluate the potential impacts on air quality during construction of the Facility. The results of the risk assessment have been used to inform the desired outcomes of this AQMP.

4.1 Overview of the risk assessment

In summary:

- The risk assessment was conducted to identify the potential risks to air quality during construction of the Facility.
- The risk assessment provides rigour for decision making and planning.
- The risk assessment was based on the project description and the outputs of the risk assessment represent the risk and impacts of implementing the Facility as described in the project description within the Public Environmental Review (PER).
- The risk assessment was conducted in close consultation with technical specialists. All the risk assessment inputs including consequence and likelihood ratings were provided by the technical specialists.

4.2 Risk assessment methodology

The risk assessment approach used a multi-disciplinary group of technical specialists to identify and assess risks through a series of risk workshops. To assess risks consistently, a risk matrix was developed, defining the level of risk posed by project activities in terms of their 'credible worst case' consequence and the likelihood of that consequence occurring.

Levels of consequence for different assets and beneficial uses were clearly defined from insignificant to catastrophic, in terms of magnitude, space and time. A level of consequence was determined for each risk, taking into consideration the controls that would be in place to minimise or avoid the risk and having regard to 'reasonable worst-case scenarios'.

Likelihood rankings were defined, from rare to almost certain, to describe the likelihood of the selected consequence occurring (note that this applies to the likelihood of the consequence occurring and not the likelihood of the activity occurring). The defined level of consequence and likelihood were used to form the risk matrix and assign a level of risk, ranging from low to critical, to each identified environmental effect.

4.3 Risk assessment results

Dust was the primary risk to air quality with emissions and odour as a secondary risk to air quality identified during the risk assessment for the construction of the Sandy Ridge Facility.

5 AIR QUALITY MITIGATION/MANAGEMENT MEASURES

The mitigation/management measures required to achieve the objectives and targets set for the Facility with regards to air quality are listed in Table 5-1. Mitigation/management measures that address bushfires are provided in the Bushfire Risk Management Plan.

This AQMP plan will be used to develop Site Environmental Procedures (SEPs). SEPs will provide detailed environmental mitigation/management measures to be implemented at individual worksites during construction to avoid and/or minimise the impacts of construction activities on ambient air quality. Detailed site-specific environmental management information is presented in tabular and drawing format facilitating ease of interpretation and use by all on site staff and contractors prior to and during construction.

Table 5-1 Mitigation/management measures - AQMP

AQMP reference	Subject	Mitigation/management measure	Responsibility	Timing	Performance measure
Induction and training					
AQ.01	Project induction	All employees, consultants and subcontractors involved will be inducted into the environmental requirements of the project.	Tellus Perth Manager – HSECQ, Sandy Ridge Site Technician.	Pre-construction, construction	Induction records
AQ.02	Awareness and site training (tool box training sessions)	Awareness and site training for all site workers which will include: • Importance of keeping to speed limits. • Where practical, machines should be operated at low speed or power and switched off when not being used rather than left idling for prolonged periods. • Keep drivers informed of designated vehicle routes and parking locations. • Importance of not disturbing stabilised stockpiles. • Importance of reporting dust issues.	Sandy Ridge Site Technician.	Pre-construction, construction	Induction records
AQ.03	Complaints handling protocol	All supervisors shall be trained in correct protocol for handling complaints received directly from the public.	Tellus Perth Manager – HSECQ, Sandy Ridge Site Technician, Facility Manager.	Pre-construction	Induction records
Construction dust management					
AQ.04	Dust management	• The primary method for controlling dust generated by construction and maintenance activities shall be the application of water and/or an approved suppression agent, via water cart and localised canon mist spraying.	Tellus Perth Manager – HSECQ, Sandy Ridge Site Technician, Contractor.	Pre-construction, construction	• Dust monitoring which meets legislative requirements. • Audits and records which show water carts operating when required.

AQMP reference	Subject	Mitigation/management measure	Responsibility	Timing	Performance measure
		• Avoid or minimise dust-generating activities during dry and windy conditions. • Prompt remedial strategies should be implemented in the event of visible dust emissions. • During work hours, the Site Technician should ensure that water tankers are available and operating as required. • Speed limits will be established and enforced. • The Site Technician must check that watering for dust suppression is not creating contaminated run-off that could enter surface water bodies. • In times of adverse weather conditions, the Site Technician may mandate reduced intensity of dust-generating construction activities. • Earthmoving machinery will be operated in such a manner that drop heights will be minimised to reduce dust generation • Areas of disturbed soil are to be re-vegetated as soon as practicable. • The superintendent may direct the suspension of work at any time where the work creates a dust hazard to personnel or other sensitive receptors in the vicinity of the works.			

AQMP reference	Subject	Mitigation/management measure	Responsibility	Timing	Performance measure
Haul/access road management					
AQ.05	Haul/access road management	• Defined haul routes to be used wherever it is necessary for vehicles to traverse unformed roads. • All roads shall be clearly marked to ensure vehicle movements are confined to areas where dust control methods can be employed. • High traffic areas will be graded, compacted and/or sheeted with road base • All unsealed haulage/access roads servicing construction shall be regularly dampened by a water cart to reduce traffic generated dust • The Site Technician should determine the frequency of passes and number of water tankers required, based on the following: - Weather conditions - Volume of traffic - Extent of stripped area - Extent of unprotected areas. • Vehicular speeds should be limited to 25 km/h, where travelling on unsealed surfaces. • All vehicles are to have their loads covered, or loads wetted, while transporting material to or from the work area on public roads. • All haulage vehicles transporting materials within the work area are to be sufficiently wetted down.	Tellus Perth Manager – HSECQ, Sandy Ridge Site Technician, Contractor.	Pre-construction, construction	• All roads signed • Monitoring by Site Technician confirms that drivers are adhering to speed and other driving guidelines • Audit and records which show water carts operating when required

AQMP reference	Subject	Mitigation/management measure	Responsibility	Timing	Performance measure
Stockpile management					
AQ.06	Stockpile management	• When topsoil and subsoil are stockpiled they will be sprayed with a water cart to encourage a surface crust to form. • Materials which are to be stockpiled for more than 1 month will be stabilised by grass seeding, covering or other appropriate means to prevent generation of dust. • Access to stockpiles will be minimised to ensure that they are not disturbed once they have been stabilised • Stockpiles should be monitored to ensure that they are stable and wind/water erosion is minimised.	Tellus Perth Manager – HSECQ, Sandy Ridge Site Technician, Contractor.	Pre-construction, construction	Audits and inspections of stockpiles show that management measures have been implemented
Gaseous emissions and odour					
AQ.07	Gaseous emissions	• All vehicles and equipment will be fitted with appropriate emission control equipment. • All construction plant and equipment shall be effectively maintained such that they do not emit visible smoke for any period greater than: - 15 consecutive seconds (in the case of plant not being registered for use on public roads. - 10 consecutive seconds (in the case of plant registered for use on public roads). • Verify that all vehicles used comply with emissions standards. • Control deliveries to site to minimise queuing.	Tellus Perth Manager – HSECQ, Sandy Ridge Site Technician, Contractor.	Pre-construction, construction	Audit and inspection records which show monitoring of visible smoke occurs Maintenance records of vehicles and equipment

AQMP reference	Subject	Mitigation/management measure	Responsibility	Timing	Performance measure
		• Store odorous materials away from main site access roads and downwind of sensitive receptors. • Dispose of waste (including organic waste/food scraps) in closed/covered containers. • Take into account prevailing wind direction when scedulting activities that are likely to emit odours, fumes or smoke.			
Contingency program					
AQ.08	Contingency program	• Where an alert or intervention level is triggered, a contingency program should be enacted immediately and consequent actions logged. The program shall include: - Immediate inspection of the construction or maintenance site for signs of dust. - Increased use of water and dust suppressants. - Reduced vehicle speed on haul/access roads to 15 km/h. - Reduced intensity of dust-generating construction or maintenance operations until effective dust control measures can be applied. - Notification of the alert to the Site Environment Officer.	Tellus Perth Manager – HSECQ, Sandy Ridge Site Technician, Contractor.	Pre-construction, construction	Records indicate all exceedances have been reported and managed

AQMP reference	Subject	Mitigation/management measure	Responsibility	Timing	Performance measure
		• All exceedances must be documented in an environmental incident report. • The monitor(s) should be configured to allow for examination of historical records to demonstrate compliance with the criteria.			

6 MONITORING

Air quality monitoring will be undertaken to assess the effectiveness of the mitigation/management measures in controlling emissions of dust and other air pollutants during construction of the Sandy Ridge Facility.

Air quality monitoring stations will be located within the development envelope as shown in Figure 6-1. The air quality monitoring stations will record dust (particulate matter) and other parameters, as necessary. In addition, one portable aerosol dust monitoring station will be located at an appropriate distance between the construction activities and the identified sensitive receptor locations.

Air quality monitoring frequencies, parameters and intervention levels are provided in Table 6-1.

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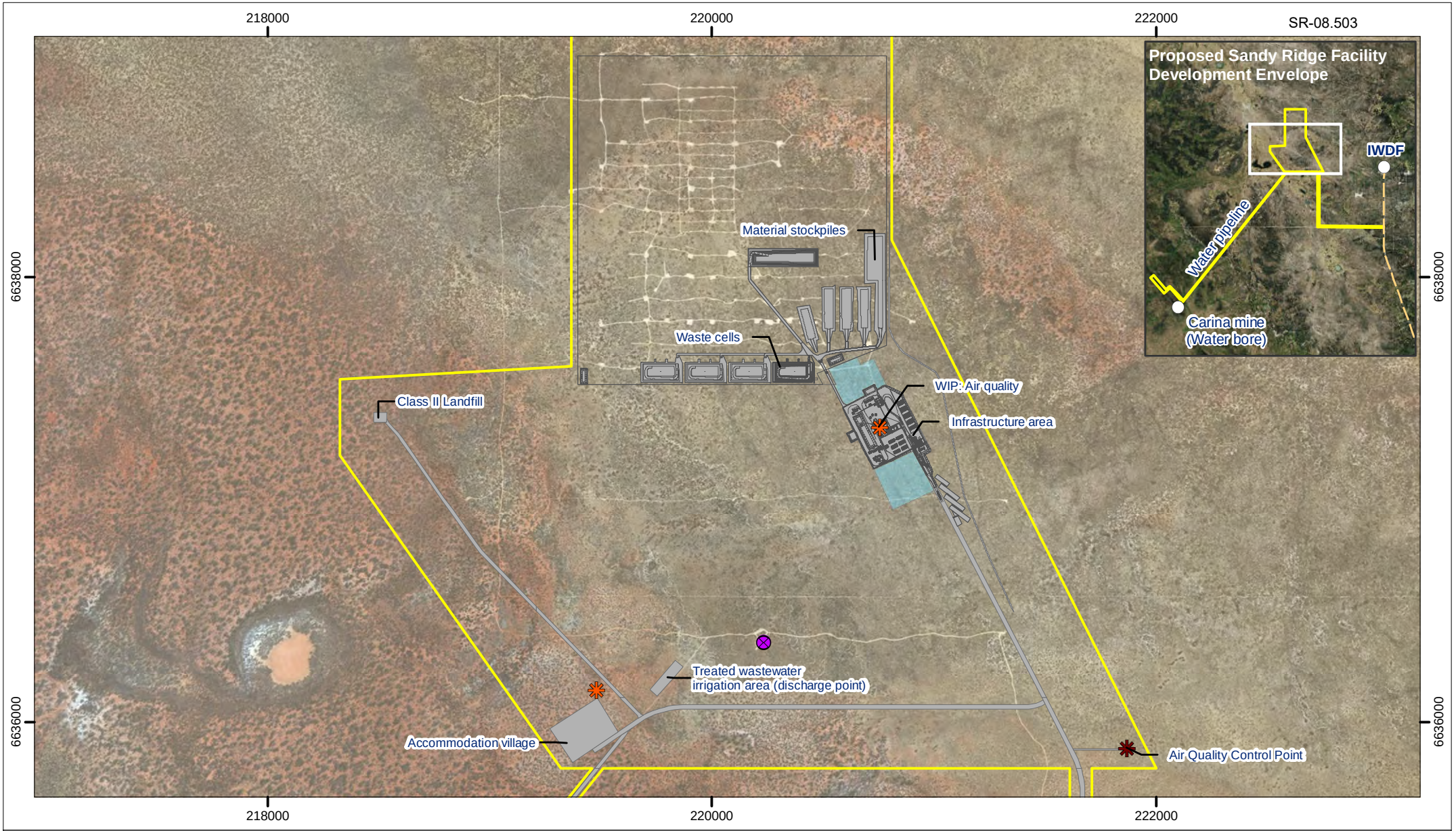

N

0 125 250 500 m

Coordinate System:
GDA94 MGA Zone 51

SPID: GL00-2017072102-572
TSR0261_AQMP_MonitoringStations.mxd

Legend

Monitoring Station Type

- Air quality
- Air quality control point
- Weather Station

- IWDF access road
- Proposed infrastructure
- Proposed development footprint
- Proposed future development
- Development Envelope

Figure 6-1
Proposed Air Quality Monitoring Stations

SANDY RIDGE FACILITY
AIR QUALITY MANAGEMENT PLAN

TELLUS

Version: A
Date: 29/03/2019

Table 6-1 Air quality monitoring frequencies, parameters and intervention levels

Type	Frequency	Parameters monitored	Intervention level	Responsibility
Particulate emissions				
Visual observations	During high risk activities	Visual dust	Potential dust hazard or potential nuisance to the public.	Sandy Ridge Site Technician, Contractor
Dust deposition monitoring	Monthly	Insoluble Solids (g/m2/month)	Reactive measure: 2 g/m^2/month above background (lowest of 4 sites) Reporting (audit) measure: As above but rolling 12-month average.	Sandy Ridge Site Technician
PM2.5 fixed site	15-minute (Casting Yard)	$PM^{2.5}$ over 24-hour average time	25 ug/m	Sandy Ridge Site Technician
PM10 fixed site	15-minute (Casting Yard)	PM^{10} over 24-hour average time	50 ug/m	Sandy Ridge Site Technician
PM10 - real-time reactive sites	10-minute average at mobile site(s) as required during high risk activity	M10 10-minute average	100 ug/m^3 as SMS alert	Sandy Ridge Site Technician
Gaseous emissions and odour				
Visual observations	On arrival to site, random selection of vehicles and equipment monthly	Visible smoke emitted to atmosphere. Odour	Construction plant and equipment will not emit to the atmosphere visible smoke for any period greater than: 15 consecutive seconds (in the case of plant not being registered for use on public roads) 10 consecutive seconds (in the case of plant registered for use on public roads). Odour detected or reported by personnel.	Sandy Ridge Site Technician, Contractor

7 REVIEW AND CONTINUAL IMPROVEMENT

7.1 Audits and inspections

Work sites will be audited and inspected to ensure compliance with the commitments made in the AQMP and SEP's. Audit and inspection frequencies are contained within the EMP.

7.2 Review and continual improvement

The AQMP will be reviewed on a 6-monthly cycle with an audit report sent to the Tellus Health, Safety, Environment, Compliance and Quality management team. The audit report will include details on incidents and/or complaints. Corrective actions should be detailed with an analysis of their effectiveness.

SEP's are intended to be a dynamic document and will need to be periodically updated to reflect changes to operations and improved land management practices. They will be reviewed monthly. Monitoring as described in Chapter 6 may vary due to improvements identified as part of inspection and auditing processes,

7.3 Reporting

Any breach of regulatory requirements or commitments relating to air quality will be reported using the Tellus Incident Reporting process. Reporting requirements for environmental management are discussed in the EMP.

8 REFERENCES

WA Department of Environment and Conservation, 2011, 'A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities.' Accessed online at: https://www.der.wa.gov.au/images/documents/your-environment/air/publications/Guideline_for_managing_impacts_of_dust.pdf

APPENDIX A: OWNERS REQUIREMENTS

Owners objective	Requirement	Status
AQ 001	The Contractor shall undertake an on-site assessment of sensitive receivers likely to be affected by works at the Facility to determine the existing (pre-construction) air quality levels.	Addressed in Chapter 3
AQ 002	The contractor shall undertake air dispersion modelling to assess construction air quality impacts from construction activities on sensitive receivers and food manufacturing sites and develop and implement and necessary onsite and offsite mitigation measures, to ensure appropriate air quality levels in all legislation, standards and guidelines are met	Addressed in Chapter 5
AQ 003	The air quality levels shall be assessed against appropriate legislation/guidelines.	Addressed in Chapter 2
AQ 004	Background air quality monitoring has been undertaken by the Principal and was provided for information. The contractor shall undertake any additional air quality monitoring as required	Noted
AQ 005	The Contractor shall suppress nuisance dust from within the construction area including access tracks, haul roads and stockpiles	Addressed in Chapter 5
AQ 006	The Contractor shall undertake real time dust monitoring for PM10 and PM2.5 and other parameters as necessary, to ensure regulatory compliance, when undertaking dust generating activities in the vicinity of sensitive receivers, food and beverage manufacturing facilities, other industrial/commercial premises where dust may cause a safety or nuisance issue. Mitigation measures shall be implemented as required	Addressed in Chapter 6
AQ 007	To minimise air pollution from the construction works, the Contractor shall as a minimum implement the following measures: a) stabilise materials to be stockpile for longer that a period of 1 month by grass seeding, covering or other appropriate means to prevent generation of dust; b) the progressive revegetation of the Site as work proceeds where this forms part of the Contract c) Watering the Works areas and temporary paving of haul roads to suppress dust; d) Avoid or minimise dust-generating activities during dry and windy conditions; e) Cessation of works at areas of the Site where climatic conditions are such that construction operations generate unacceptable levels of dust pollution; and f) Minimise the extent of exposed, stripped surface until covered with appropriate fill material	Addressed in Chapter 5
AQ 008	The contractor shall have a suitable water cart on site at all times during the Contract and use it when appropriate.	Addressed in Chapter 5
AQ 009	It is the Contractors responsibility to achieve adequate dust control, particularly where the safety and convenience of people are affected	Noted

Owners objective	Requirement	Status
AQ 010	The contractors Site Technician shall identify all reasonable and feasible air quality and dust mitigation methods on an hourly basis. The Site Technician shall have the authority to modify work practices in response to complaints where necessary	Addressed in Chapter 5
AQ 011	Suspension on work at any time may be directed where that work creates a dust hazard or nuisance to the public, personnel working on the Site or properties in the vicinity of the works.	Addressed in Chapter 5
AQ 012	All construction plant and equipment shall be effectively maintained such that they do not emit to the atmosphere visible smoke for any period greater than: • 15 consecutive seconds (in the case of plant not being registered for the use on public roads), and • 10 consecutive seconds (in the case of plant registered for use on public roads)	Addressed in Chapter 5

APPENDIX I: EROSION AND SEDIMENTATION MANAGEMENT PLAN

TELLUS

SANDY RIDGE FACILITY CONSTRUCTION EROSION AND SEDIMENTATION CONTROL PLAN

March 2019

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DOCUMENT CONTROL

The signatures below certify that this management plan has been reviewed and accepted and demonstrates that the signatories are aware of all the requirements contained herein and are committed to ensuring their provision.

	Name	Signature	Position	Date
Prepared by	Sophy Townsend		Manager HSECQ	28/3/2019
Reviewed by	Richard Phillips		General Manager HSECQ	28/3/2019
Approved by	Richard Phillips		General Manager HSECQ	02/04/2019

Amendment Record

This management plan is reviewed to ensure its continuing relevance to the systems and process that it describes. A record of contextual additions or omissions is given below:

Page No.	Context	Version	Date

Company Proprietary Information

The electronic version of this management plan is the latest version. It is the responsibility of the individual to ensure that any paper material is the current version. The printed version of this procedure is uncontrolled, except when provided with a document reference number and version in the field below:

Document Ref. DOCID-88105952-809 Ver 0

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ABBREVIATIONS

EMP	Environmental Management Plan
EMS	Environmental Management System
ESCP	Erosion and Sedimentation Control Plan
EP Act	*Environmental Protection Act 1986*
EPBC 2015/7478	Australian Government Ministerial Approval of the Sandy Ridge Facility
PER	Public Environmental Review

1 INTRODUCTION

1.1 Overview

This Erosion and Sedimentation Control Plan (**ESCP**) has been developed to manage the environmental risks associated with soil and drainage management during construction of the Sandy Ridge Facility (the Facility). It lists management and control measures that are considered necessary to minimise those risks. This ESCP will be used to create site-specific ESCP procedures for each construction area and phase (as required).

This ESCP has been prepared in accordance with:

- *Assessment Levels for Soil, Sediment and Water* (Department of Environment and Conservation 2010)
- *Stormwater Pollution Prevent – Code of Practice for the Building and Construction Industry* (Environmental Protection Authority 1999).
- *Environmental Good Practice Site Guide* (CIRIA 2005).

1.2 Objectives

The key outcomes of this plan are to:

- Implement a system for addressing all aspects of proposed site disturbance.
- Implement a plan for temporary drainage works, erosion and sediment control measures.
- Protect inland waters.
- Protect and maintain surface water quality.
- Adhere to legislative and contractual compliance covered in the Facility Public Environmental Review (PER).
- Design mitigation and management measures to achieve environmental objectives.
- Develop, implement and monitor mitigation/management measures.
- Verify all erosion and sediment management controls are located within the Contractor's defined activity zone.
- Reporting and continuous improvement of practices during project delivery.

1.3 Targets and performance

Targets and performance criteria for this plan have been established to manage stormwater runoff, erosion and sedimentation. The PER assessed the impacts to inland waterways and these targets and performance criteria have been informed and further developed because of the PER assessment (refer to the Owners Requirements in Appendix A).

1.4 Interface with other management plans

This ESCP will form an integral part of Tellus' Environmental Management System (EMS). As a subsidiary to the Facility Project Management Plan, the ESCP interfaces with a range of other management plans as shown in Figure 1-1.

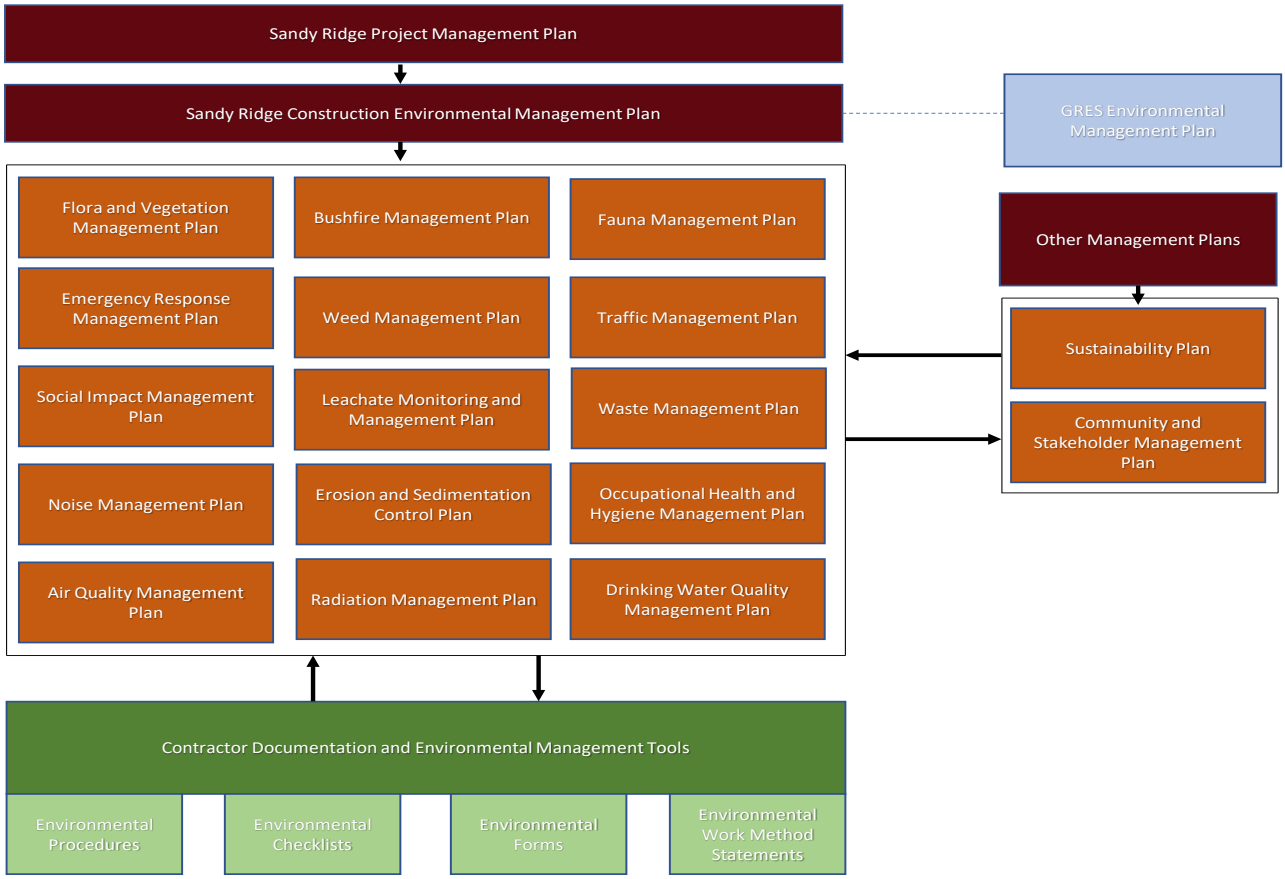


Figure 1-1 Structure of the environmental management system of the Sandy Ridge Facility

2 LEGISLATIVE CONTEXT

2.1 Legislation, guidelines and policies

This section addresses legislation, guidelines and policies that are relevant to this ESCP.

2.1.1 Legislation

Legislation relevant to this ESCP are summarised in Table 2-1.

Table 2-1 Legislation and relevance to this ESCP

Legislation/regulation	Relevance	Compliance
Environment Protection Act 1986 (EP Act)	State environmental legislation that provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment.	Chapter 5– Erosion and Sedimentation Mitigation/Management Measures.

2.2 Approvals, agreements and other specifications

2.2.1 Ministerial conditions – Australian Government

There are no conditions of approval regarding erosion and sedimentation attached to the approval from the Australian Government (EPBC 2015/7478).

2.2.2 Ministerial conditions – Western Australian Government

There are no conditions of approval regarding erosion and sedimentation attached to the approval from the Western Australian Government (Ministerial Statement 1078).

2.2.1 Access agreements – Polaris Metals and Golden Iron Resources

The access agreements stipulate an obligation to repair, rehabilitate and make good all damage caused within the development envelope and to revegetate the development envelope (where necessary) in accordance with the terms and conditions of the tenure and in compliance with applicable laws. These obligations will be undertaken during the decommissioning and rehabilitation phase of the Sandy Ridge Facility and are not applicable to this ESCP for construction of the Facility.

2.2.2 Requirements of the Public Environmental Review

Erosion and sedimentation mitigation/management measures to be implemented during construction of the Facility were committed to by Tellus in the PER. These requirements, as they relate to construction, are summarised in Table 2-2.

Table 2-2 Erosion/sedimentation mitigation/management requirements of the PER

Reference	Mitigation/management requirement	Compliance – AQMP
Section 10.3.5 of PER.	Implement the following principles when stockpiling soils: - Combined use of a front-end loader, truck and bulldozer would be used to stockpile soils to reduce compaction, not a scraper. - Topsoil stockpiles would be constructed to an acceptable height and would be flat-topped or slightly domed to control offsite water run-off whilst encouraging water entry. Encouraging water entry would make more water available to plants and minimise the risk of erosion and sediment movement from the stockpile. - Subsurface soils (deep yellow sands) would be stockpiled up to 4 m tall and would be flat-topped or slightly domed to maximise water entry. - Stockpiles would be monitored for changes in physical and chemical condition. Monitoring should occur at a minimum of every 12 months and should record: surface condition and erosion; nutrient status, pH and electroconductivity; and seed germination. - If soils are stockpiled for longer than 12 months, measures to reduce erosion, maintain and accumulate soil organic matter and increase soil seed banks. - Monitoring of stockpiles for erosion (wind and water) and weed infestation would occur.	Chapter 5 and Appendix B
Section 10.3.5 of PER.	Use tree debris including shrubs and brush with trunk diameters greater than 10 cm as erosion protection for stockpiled soil material.	Chapter 5 and Appendix B
Section 10.3.5 of PER.	Ensure that the handling of topsoils is not be undertaken when it is wet to avoid soil compaction.	Chapter 5 and Appendix B

3 SENSTIVE RECEPTORS

A sensitive receptor is defined as educational, health care, food manufacturing, parks/recreational facilities and residential land use areas that are within a 50-kilometre radius of the Facility.

Desktop studies using aerial imagery have identified a limited number of sensitive receptors, and these have been confirmed by numerous field studies undertaken within and near the Facility. The location of sensitive receptors is shown in Figure 3-1. These include:

- Population of *Calytrix creswellii* located within the Facility Mine Infrastructure Area (**MIA**).
- The Facility MIA.
- The Facility Accommodation Village.
- The Mt Walton Intractable Waste Disposal Facility.
- The Carina Iron Ore Mine.

A site visit conducted by Tellus confirmed the limited number of identified sensitive receptors and allowed for the identification of unlisted sensitive receptors. No additional sensitive receptors were identified.

Control measures will be implemented where construction activities are within 50 m of an identified sensitive receptor. To successfully identify areas where control measures are required and to determine appropriate monitoring locations, personnel will be issued with maps of each construction area showing the relative locations of the active construction zone and nearby sensitive receptors.

160000 200000 240000 280000 320000

6680000

6640000

6600000

Mount Manning Range Nature Reserve

Mount Manning- Helena and Aurora Ranges Conservation Park

Mount Manning Range Nature Reserve

Shire of Menzies

Mount Manning- Helena and Aurora Ranges Conservation Park

Sandy Ridge Facility

Population of *Calytrix creswellii*

Facility Mine Infrastructure Area

Facility Accommodation Camp

Mt Walton Intractable Waste Disposal Facility

Ex-Jaurdi Pastoral Lease

Carina Iron Ore Mine Pit

Sandy Ridge Access Road

25 km

IWDF Access Road

Ex-Jaurdi Pastoral Lease

Shire of Yilgarn

Shire of Coolgardie

Ex-Jaurdi Pastoral Station Homestead

50 km

Carina Iron Ore Mine Camp

Wallaroo Rock Conservation Park

Koolyanobbing

PERTH-KALGOORLIE RAILWAY

Clear and Muddy Lakes Nature Reserve
Rowles Lagoon Conservation Park

N

7.5 3.75 0 7.5 Km

Coordinate System:
GDA 94 MGA Zone 51

SP-ID:GL00-2017072102-576
TSR0263_ESCP_SensitiveReceptors.mxd

Legend

- Locality
- Sensitive Receptor
- **Radius Boundary**
  - 25 km
  - 50 km
- Tellus *Mining Act* Tenure
- Local Government Authority
- DBCA lands
- IWDF access road
- Principal road
- Railways

Data in this map is sourced from: © Commonwealth of Australia (Geoscience Australia) 2018 and © State of Western Australia (Department of Mines, Industry Regulation and Safety) 2018.

Figure 3-1
Sensitive Receptors within a 50 km Radius of the Sandy Ridge Facility

SANDY RIDGE FACILITY
EROSION AND SEDIMENTATION CONTROL PLAN

TELLUS

Version: B
Date: 2/04/2019

4 KEY ENVIRONMENTAL ISSUES

A risk assessment has been conducted to evaluate the potential impacts on soils and drainage during construction of the Facility. The results of the risk assessment have been used to inform the desired outcomes of this ESCP.

4.1 Overview of the risk assessment

In summary:

- The risk assessment was conducted to identify the potential risks to soils and inland waters during construction of the Facility.
- The risk assessment provides rigour for decision making and planning.
- The risk assessment was based on the project description and the outputs of the risk assessment represent the risk and impacts of implementing the Facility as described in the project description within the PER.
- The risk assessment was conducted in close consultation with technical specialists. All the risk assessment inputs including consequence and likelihood ratings were provided by the technical specialists.

4.2 Risk assessment methodology

The risk assessment approach used a multi-disciplinary group of technical specialists to identify and assess risks through a series of risk workshops. To assess risks consistently, a risk matrix was developed, defining the level of risk posed by project activities in terms of their 'credible worst case' consequence and the likelihood of that consequence occurring.

Levels of consequence for different assets and beneficial uses were clearly defined from insignificant to catastrophic, in terms of magnitude, space and time. A level of consequence was determined for each risk, taking into consideration the controls that would be in place to minimise or avoid the risk and having regard to 'reasonable worst-case scenarios.

Likelihood rankings were defined, from rare to almost certain, to describe the likelihood of the selected consequence occurring (note that this applies to the likelihood of the consequence occurring and not the likelihood of the activity occurring). The defined level of consequence and likelihood were used to form the risk matrix and assign a level of risk, ranging from low to critical, to each identified environmental effect.

4.3 Risk assessment results

Indirect impacts to flora and vegetation because of erosion and sedimentation were identified during the risk assessment for the construction of the Sandy Ridge Facility.

5 EROSION AND SEDIMENTATION MITIGATION/MANAGEMENT MEASURES

5.1 Introduction

The objective of this plan is to minimise the erosion of soil and hence minimise offsite direct and indirect adverse impacts. The essentially flat nature of the site simplifies the issue of surface water management and soil erosion. Details of erosion and drainage control are summarised below.

5.2 Construction soil and erosion control

Soil and erosion management measures will be prepared for each construction zone. Table 5-1lists techniques and control measures that will be implemented during construction to achieve the objectives of this ESCP.

Table 5-1 separates the Facility into five construction zones. Upon completion of detailed design, figures will be prepared to support the information listed in Table 5-1 by illustrating where the proposed control measures will be located.

Table 5-1 Construction soil, erosion and drainage control measures

Zone	Location	Control measures during construction					
		Sedimentation basin / drainage swales	Silt fences & sediment traps	Straw bales / flood levee	Cut off drains / catch drains	Dust suppression	Wheel washing
1	Sandy Ridge Access Road (within Development Envelope)	✓	-	-	✓	✓	-
2	Mine Infrastructure Area	-	✓	✓	✓	✓	✓
3	Mine Pits / Waste Cells	-	✓	✓	✓	✓	-
4	Accommodation village	-	✓	✓	✓	✓	-
5	Internal access roads	✓	-	-	✓	✓	-

Tellus will implement the detailed soil erosion and drainage control measures provided in Appendix B. These measures are based on general site control techniques and mitigation measures that include:

- Mandatory site inductions to inform site personnel of their environmental responsibilities.
- Control of on-site drainage water by intercepting and redirecting runoff in a manner which protects exposed areas from erosion.
- Completion of each stage of earthworks within the minimum time possible.

- Stabilising finished areas and stockpiles as soon as practicable (ideally within 20 days of completion).
- The strategic location of stockpiles outside erosion hazard areas such as drainage paths.
- Construction of soil conservation works including silt fences or similar and diversion drains around soil stockpile areas to prevent migration of fines to the stormwater system.
- Temporary stabilisation of disturbed areas, wherever possible.
- Maintenance of stabilised surfaces to ensure effectiveness of the stabilisation.
- Keeping foot and vehicular traffic away from recently stabilised areas, wherever practical.
- Constructing all earthworks, including waterways, drains, spillways and their outlets, to be stable in common storm events.
- Water spraying large dusty areas during windy weather to minimise dust generation.
- Constructing earth batters with as low a gradient as practical.
- Removing temporary soil and water management structures only after the lands they are protecting are stabilised.

5.3 Construction drainage control

In addition to the proposed drainage treatment measures listed in Table 2-1, the drainage system will be designed to manage large stormwater flows and increase retention time during construction to ensure sediment loads are controlled and managed within the development envelope.

6 MONITORING

6.1.1 Inspection requirements

Tellus' Sandy Ridge Site Technician shall inspect erosion control devices at the following intervals:

1. During and immediately after a rain period.
2. Once per week during dry weather.
3. Within the first hour of a storm event (during daylight periods).
4. As soon as practicable following storm events outside working hours and not later than the following day.
5. At least once during periods of continuous rain.

All site inspections should include filling out the site environmental checklist (refer to Attachment C). The checklist shall be made available for viewing when requested by the Facility Manager or relevant statutory representatives.

6.1.2 Site monitoring requirements

During construction, soil and erosion control measures are to be inspected by the Sandy Ridge Site Technician (or nominated representative), prior to and after rainfall events.

Daily, weekly and monthly inspections are to be undertaken during periods of runoff-producing rainfall. Soil and erosion control measures should be de-silted, repaired and amended as appropriate to maintain the water quality targets outlined in the Facility's Water Quality Monitoring Plan.

6.2 Reporting procedures

6.2.1 Responsibility

During the construction stage, reports will be submitted monthly by the Sandy Ridge Site Technician or Officer. Reporting will identify performance of:

- The implementation strategy.
- Innovations and improvements to the ESCP.
- Water quality monitoring results.
- Identification of incidents and corrective actions.

6.2.2 Frequency

Monitoring frequencies will vary between daily, weekly and monthly (refer to Appendix B).

7 REVIEW AND CONTINUAL IMPROVEMENT

7.1 Audits and inspections

Work sites will be audited and inspected to ensure compliance with the commitments made in the ESCP and site procedures. Audit and inspection frequencies are contained within the Facility EMP and in Appendix B.

7.2 Review and continual improvement

The ESCP will be reviewed on a 6-monthly cycle with an audit report sent to the Tellus Health, Safety, Environment, Compliance and Quality management team. The audit report will include details on incidents. Corrective actions should be detailed with an analysis of their effectiveness.

Site procedures are intended to be dynamic documents and will need to be periodically updated to reflect changes to operations and/or improved land management practices. They will be reviewed monthly. Monitoring as described in Chapter 6 may vary due to improvements identified as part of inspection and auditing processes.

7.3 Reporting

Any breach of regulatory requirements or commitments relating to erosion and sediment control will be reported using the Tellus Incident Reporting process. Reporting requirements for environmental management are discussed in the Facility EMP.

8 REFERENCES

CIRIA, 2005, 'Environmental Good Practice Site Guide'.

Department of Environment and Conservation, 2010, 'Assessment Levels for Soil, Sediment and Water'.

Environmental Protection Authority, 1999, 'Stormwater Pollution Prevent – Code of Practice for the Building and Construction Industry'.

APPENDIX A: OWNERS REPORTING REQUIREMENTS

Minimum requirement	Objective	Document Reference
ESC001	The Contractor shall implement and maintain a final construction ESCP. The ESCP shall include: a. North point and plan scale. b. Site and easement boundaries and adjoining roadways. c. Construction and access points. d. Site office, car park and location of stockpiles. e. Proposed construction activities and limits of disturbance. f. Retained vegetation including protected trees. g. General soil information and location of problem soils. h. Location of critical environmental values (where appropriate). i. Existing site contours. j. Final site contours including locations of cut and fill. k. Construction Drainage Plans for each stage of earthworks, including land contours for that stage of construction, sub-catchment boundaries. l. General layout and staging of proposed works. m. Location of all drainage, erosion and sediment control measures. n. Full design and construction details (e.g. cross-sections, minimum channel grades, channel linings) for all drainage and sediment control devices, including diversion channels and/or sediment basins. o. Site revegetation requirements (refer to the Flora and Vegetation Management Plan).	To be developed on the completion of detailed design

Minimum requirement	Objective	Document Reference
	p. Site monitoring and maintenance program, including the location of proposed water quality monitoring stations. q. Technical notes relating to: i. Site preparation and land clearing. ii. Extent, timing and application of erosion control measures. iii. Temporary ESCP measures installed at end of working day. iv. Temporary ESCP measure in case of impending storms, or emergency situations. v. Installation sequence for ESCP measures. vi. Site re-vegetation and rehabilitation requirements. vii. Application rates for mulching and revegetation measures. viii. Legend of standard symbols used within the plans. r. Calculation sheets for the sizing of ESCP measures. s. A completed ESCP checklist such as presented in Appendix C.	
ESC002	The Contractor shall utilise soil and drainage management measures during construction to minimise and treat stormwater runoff pollutants prior to leaving the site during construction.	Table 2-1
ESC003	It shall be the responsibility of the contractor to design, construct, operate and maintain drainage and temporary erosion control measures.	Appendix B
ESC004	The contractor shall provide the ESCP at least 8 days prior to work that may disturb the natural surface proceeding.	
ESC005	The Contractor shall not obstruct or divert any waterway, stream or channel, unless authorised by the Facility Manager. The Contractor shall be responsible for assessing and developing effective control measures for the Works. Control measures shall be suitable for any rainfall event that may result in surface runoff and shall be fully operational prior to commencing work.	Appendix B

Minimum requirement	Objective	Document Reference
ESC006	The Contractor shall maintain a register documenting all relevant information, recording inspection dates, names of personnel performing the inspections, corrective actions, and performance of erosion and sediment control devices. The register shall include: i. The location and description of all sediment control structure and all in-stream devices on scale diagrams ii. The time and date on which the sediment control structures and in-stream devices are inspected, and record observations made as to their operating effectiveness iii. The time and date on which the sediment control structures and in-stream devices are cleaned, repaired, maintained or altered and the record the action taken iv. The signature of the person making each entry.	Appendix C
ESC007	Establish sediment control structures around all areas prone to erosion including stockpiles, batters and drainage lines.	Appendix B
ESC008	The Contractor shall implement water saving and reuse practices on site. For all water used for construction including pavement formation and dust suppression the Contractor shall be responsible for investigating, documenting and implementing the use of sustainable water sources as an alternative to potable and prescribed water sources, during construction.	Appendix B
ESC009	Site specific ESCP procedures must address all aspects of proposed site disturbance, temporary drainage works, erosion and sediment control measures, installation sequence, and site rehabilitation for the duration of the construction phase, including where appropriate, the nominated maintenance period.	Appendix B
ESC010	Provision of the ESCP or any amendment to the ESCP shall be undertaken following a change or alteration of drainage design during construction.	Section 2.2
ESC011	Discharge from the works site to any downstream pipe or channel system shall not increase flows in that system to the extent that the design standard is compromised.	Appendix B
ESC012	Existing drainage catchment and flow patterns shall be maintained where practicable and drainage flows shall not cause damage or nuisance to surrounding landowners and properties. The Contractor shall not permit re-direction, concentration or diversion of drainage flows from the Works except with the written consent of the Western Australia Department of Water and Environmental Regulation.	Appendix B

Minimum requirement	Objective	Document Reference
ESC013	No runoff from any part of the Works shall be discharged out of any road corridor unless it is contained within a surface drainage system.	Appendix B
ESC014	The Contractor shall investigate opportunities to re-use stormwater within the Works.	Appendix B

APPENDIX B: EROSION AND DRAINAGE CONTROL MEASURES

Objective	Measure	Implementation	Action	Responsibility	Monitoring requirements	Reporting frequency
Earthworks	Controlled activities	Construction	Prevent water from entering an excavation site. When water does enter excavations, take measures such as cut off drains and silt fences to avoid it becoming contaminated and dispose of it properly. Be aware of unexpected contamination revealed during earthworks. Halt work immediately, clear the site and seek expert advice (refer to soil contamination objective below for more information). Be aware of unexpected archaeological finds. Materials to look out for include burned or blackened material; bone fragments; pottery; timber joints; bricks or stone foundations. Use cut off drains to control surface water flows. Construct designated haul roads to prevent unnecessary erosion and maintain a wheel wash facility to minimise dirt on local roads.	Contractor	Weekly	Monthly
Regular site inspections	Prior to rainfall	Construction	Inspect all drainage, erosion and sediment control measures Inspect all temporary (e.g. over-night) flow diversion and drainage works	Sandy Ridge Site Technician	Prior to rainfall	As required

Objective	Measure	Implementation	Action	Responsibility	Monitoring requirements	Reporting frequency
	Immediately after rainfall	Construction	Inspect all drainage, erosion and sediment control measures Report all occurrences of excessive sediment deposition (whether on-site or off-site) Report occurrences of construction materials, litter or sediment placed, deposited, washed or blown from the site, including deposition by vehicular movements Check sediment deposition within sediment basins and the need for its removal	Sandy Ridge Site Technician	As required	Monthly
	Daily	Construction	Visually inspect all drainage, erosion and sediment control measures. Record the location and frequency of occurrences of excessive sediment deposition (whether on-site or off-site). Visually inspect all discharge points for signs of blockage, contamination e.g. oil films, turbidity etc	Sandy Ridge Site Technician	Daily	Within site environmental checklist and monthly report
	Weekly	Construction	Inspect all drainage, erosion and sediment control measures Record occurrences of, and the location of, excessive sediment deposition (whether on-site or off-site). Record occurrences of, and location of, construction materials, litter or sediment placed, deposited, washed or blown from the site, including deposition by vehicular movements.	Sandy Ridge Site Technician	Weekly	Within site environmental checklist and monthly report

Objective	Measure	Implementation	Action	Responsibility	Monitoring requirements	Reporting frequency
			Inspect the amount of litter and waste generated and suggest methods to reduce litter and waste generation. Inspect oil, fuel and chemical storage facilities to ensure these elements are secure.			
	Monthly	Construction	Inspect and report on the surface coverage of finished surfaces (both area and percentage cover). Health of recently established vegetation (if applicable). Communication of proposed staging of future site clearing, earthworks and site/soil stabilisation to site supervisors.	Sandy Ridge Site Technician	Monthly	Monthly report
Reduce sediment supply	Manage soil stockpiles	Construction	Combined use of a front-end loader, truck and bulldozer used to stockpile soils to reduce compaction, not a scraper. Topsoil stockpiles not to exceed 1 m in height and flat-topped or slightly domed to maximise water entry. Subsurface soils (deep yellow sands) stockpiled up to 4 m tall and flat-topped or slightly domed. Stockpiles monitored for changes in physical and chemical condition. Locate stockpiles 5 metres away from drainage lines and least susceptible to wind erosion. Cover stockpiles if they are to be in place for more than 10 days.	Contractor	Weekly, and when required	Monthly (physical) and annually (chemical)

Objective	Measure	Implementation	Action	Responsibility	Monitoring requirements	Reporting frequency
			If soils are stockpiled for longer than 12 months, fertilise and seed to reduce erosion, maintain and accumulate soil organic matter and increase soil seed banks. Protect from run-on water by installing water diversion structures upslope (e.g. tree debris). Sediment filters placed immediately down-slope to protect other land uses and waterways.			
	Prevent erosion and sediment loading	Construction	The ESCP shall be updated prior to any changes to construction processes that may impact upon erosion or sedimentation.	Sandy Ridge Site Technician	When required	When required
	Minimise dust generation	Construction	Vehicle speed restrictions on unsealed roads or tracks. Minimise the number of vehicles allowed on unsealed access roads and exposed surfaces Deploy water cart twice daily to suppress dust. No topsoil stripping or vegetation clearance during periods of high winds (e.g. greater 60km/hr).	Contractor, Sandy Ridge Site Technician	Daily, and when required	Monthly
	Minimise surplus spoil	Construction	Minimise the surplus materials arising from earthworks by considering methods of improving the spoil (e.g. in-situ stabilisation)	Contractor	Weekly	Monthly
		Construction	Remove sediment deposited on external roads	Contractor	Daily	Monthly

Objective	Measure	Implementation	Action	Responsibility	Monitoring requirements	Reporting frequency
	Control vegetation removal	Prior to and during construction	Maintain existing vegetation where possible	Contractor	Daily	Monthly
Control sediment run off	Straw bales to be used in all minor drainage lines to filter/slow runoff from small catchment areas or installed to prevent runoff from leaving a disturbed area without treatment.	Construction	Straw bales to be secured by two stakes, driven 0.6 m into the ground and embedded no less than 0.1 m into the ground. Straw bales should be positioned to form a continuous perimeter to intercept sediment laden runoff and retain the sediment. Straw bales should be inspected after each rain event for displacement, undercutting and overtopping and repaired immediately if needed. Bales generally have a 3-month lifespan so weekly inspection is necessary. Bales will be: - Staked firmly into the ground but not embedded into the ground. - Located in the centre of, and perpendicular to, surface water flow path. - Given enough space to provide for sediment entrapment. - Given access for cleaning. - Replaced to their original position if displaced during daily construction activities. - Secured and safe from arson.	Contractor Contractor, Sandy Ridge Site Technician	Weekly Weekly, and when required	Monthly Monthly

Objective	Measure	Implementation	Action	Responsibility	Monitoring requirements	Reporting frequency
	Erect silt fences	Construction	Silt fences to be used in minor drainage lines, around the toe of stockpiles and installed around disturbed areas to trap sediment and prevent sediment laden runoff from leaving construction working areas Silt fences shall be securely installed as per manufacturer's instructions Remove sediment from sediment fences following rain and storms Remove sediment from sediment fences if more than 30% full	Contractor	Weekly, and= when required	Monthly Monthly As required As required
	Create diversion drains	Construction	Diversion drains shall be constructed to concentrate flows to points where they can pass through works areas and drain into constructed sediment traps	Contractor	When required	Monthly
	Install sediment traps	Construction	Avoid stripping and excavating until ready to build. To be used in areas where high sediment loads are generated from a disturbed site, greater than 0.5 ha and equal to 4 ha. Traps shall be installed to capture and contain all sediment runoff from a disturbed area and shall be installed via the creation of a small basin and an embankment along the downhill side. All sediment laden runoff shall be left for a short period of time to allow the sediment to deposit in the bottom of the trap prior to removal.	Contractor	Weekly	Monthly

Objective	Measure	Implementation	Action	Responsibility	Monitoring requirements	Reporting frequency
			Allow stormwater to flow around the building/construction zone or any disturbed areas.			
	Pollution control measures	Construction and operation	All permanent pollution control measures must be shown on the design drawings – including catch drains, sedimentation basins, gross pollutant traps.	Designer	Tender	Throughout construction
Clean roads	Wheel wash facility	Construction	Use a wheel wash to minimise dirt on roads	Contractor	Daily	Monthly
		Construction	Temporary control measures shall be removed by the sub-contractor prior to the final certificate	Contractor	When required	Monthly
		Post construction	All material used in temporary control measures shall be removed from the Site of Works and disposed of by the Contractor in accordance with the site waste management plan	Contractor	When required	Monthly
Control potential soil contamination	Awareness of potential contamination	Construction	Educate ground staff to be familiar with unexpected contamination that may be revealed during earthworks. The following procedures should be undertaken: Stop work immediately. Report the discovery to the site manager who must seek expert advice. Seal off the area to contain spread of contaminants. Clear the site to ensure there is nothing that could cause fire or explosion.	Sandy Ridge Site Technician	Daily	Monthly

Objective	Measure	Implementation	Action	Responsibility	Monitoring requirements	Reporting frequency
			Contact the regulator or local authority once it is confirmed that contaminant is found. Ensure that the suspected contamination is tested and characterised and agree changes to the existing remedial plan. Follow best practice guidance to then remediate the land.			
	Managing run-off and silty water	Construction	Silty of discoloured water should not be discharged from the site	Sandy Ridge Site Technician	Daily	Monthly
		Construction	Surface water run-off shall not be directed in a watercourse or drain	Sandy Ridge Site Technician	Daily	Monthly
		Construction	Stockpiles will not be located within 5 metres of open drains, overland watercourses, paved areas and driveways.	Contractor	Daily	Monthly
		Construction	Monitor any water treatment methods to ensure their effectiveness	Sandy Ridge Site Technician	Monthly	Monthly
		Construction	If straw bales are used, ensure they are securely fixed in place with stakes	Sandy Ridge Site Technician	Daily	Monthly
	Bunding	Construction	Bund walls will be constructed around any contaminated material emplacement areas to physically separate them from the rest of the site and ensure any external stormwater is	Contractor Contractor	Daily Daily	Monthly Monthly

Objective	Measure	Implementation	Action	Responsibility	Monitoring requirements	Reporting frequency
			diverted away from the containment areas. Bunds and / or similar diversion drains as necessary may be constructed around the perimeter of excavation areas to prevent surface water entering these areas.			
Concrete batching	Site management	Construction	The casting yard shall be covered by a permanent roof and all its activities carried out under the roof. Ensure the correct storage and disposal of additives to prevent spillage and contamination. Onsite mixing of concrete, either by hand or be mechanical means, should be carried out in a designated area of the site which can contain all excess water, residues and waste. Ensure correct consents to store and dispose of wastes are in place. Erect silt fences on the downstream end of the site to prevent polluted surface water from washing offsite and into drains. Check silt fences on a weekly basis. Ensure regular maintenance of pipelines and pumps to prevent overfilling and spillage of highly alkaline washout material.	Sandy Ridge Site Technician	Weekly Monthly Daily	Monthly

Objective	Measure	Implementation	Action	Responsibility	Monitoring requirements	Reporting frequency
			Concrete mix trucks, pumps and equipment must not be washed down in roadways or footpaths. Waste concrete slurry should dry and either be taken to a licensed waste depot. Any hard surfaces (paved or bitumen areas) shall be cleaned by a mechanical sweeper. Construct temporary sediment basin in the northwest corner of the site to drain and treat potentially contaminated surface water from hard surfaces			
Effective monitoring	How and what to monitor	Construction & operation	Establish a regular monitoring procedure for water discharged from the site and keep records (pH, turbidity, suspended solids etc). Refer to the Water Quality Management Plan for more information.	Sandy Ridge Site Technician	Refer to WQMP	Refer to WQMP
		Construction	Check outfalls and pipe work daily to ensure they are clean ad clear of litter	Sandy Ridge Site Technician	Daily	Monthly
No spillages	Avoiding spillages	Construction	Store liquids, solids and powders away from drains and watercourses in secondary containment.	Contractor	Weekly	Monthly
		Construction	Store solvents, chemicals or paints in accordance with their MSDS datasheets.	Contractor	Weekly	Monthly
		Construction	Appropriate spill kits should be available and adequately stocked.	Contractor	Monthly	Monthly

Objective	Measure	Implementation	Action	Responsibility	Monitoring requirements	Reporting frequency
		Construction	All bund areas should be: Impervious to infiltration Able to safely contain at least 120% of the volume of the largest container located within the bund Roofed to minimise the collection of rainwater inside the bunded compound.	Sandy Ridge Site Technician	Weekly	Monthly
Drainage	Discharging water	Construction	Ensure appropriate consents for disposal of all water is in place, and that personnel are aware of the quantity and quality of water that can be discharged.	Contractor	When required	When required
		Construction	Discharge from the works site to any downstream pipe or channel system shall not increase flows in that system to the extent that the design standard of the existing system is compromised	Contractor	Daily	Monthly
		Construction	Existing drainage catchment and flow patterns shall be maintained where practicable and drainage flows shall not cause damage or nuisance to surrounding landowners and properties. The Contractor shall not permit re-direction, concentration or diversion of drainage flows from the Works except with the written consent of the responsible drainage authority and any other affected parties.	Sandy Ridge Site Technician	Daily	Monthly

Objective	Measure	Implementation	Action	Responsibility	Monitoring requirements	Reporting frequency
		Construction and operation	No runoff from any part of the works shall be discharged out of any road corridor unless it is contained within an underground or surface drainage system.	Sandy Ridge Site Technician	Daily	Monthly
		Construction	Check for any visible sign or smell of pollution in watercourses at or near the site.	Sandy Ridge Site Technician	Daily	Monthly
		Construction	If a settlement tank is being used, check that it is working.	Sandy Ridge Site Technician	Daily	Monthly
	Stormwater	Construction	Allow for the capture of stormwater runoff by way of temporary drainage basins. Minimise, as far as practical, any increase in the volume of stormwater to be conveyed offsite and the peak runoff, by retention and infiltration. This will facilitate recharge to local aquifers and reduce scour from increased sheet flows. A treatment train approach should be used to control runoff. This should be achieved by planning straw bales, cut off drains, sediment fences and sediment basins. All sub-surface pipes associated with stormwater collection and drainage systems installed on the premises must be flexible jointed pipes designed and	Contractor	Where required Weekly When required Where required Weekly Daily	Monthly Monthly When required Monthly Monthly Monthly

Objective	Measure	Implementation	Action	Responsibility	Monitoring requirements	Reporting frequency
			installed in accordance with Australian Standard AS/NZS 2566.1:1998. Installation of permanent stormwater detention basins in the onsite surface water drainage systems. Design of these ponds will comply with appropriate recognised standards (e.g. Australian Rainfall and Runoff) and be routinely cleaned of silt to ensure that their capacity is not reduced by more than 10% of volume. This silt will be disposed of in such a way that further pollution of surface water does not occur. Stored basin contents will be treated in accordance with the specifications contained in 'Managing Urban Stormwater: Soils and Construction, Department of Housing 1998' such that the discharge is lower than guideline limits. Runoff from the site that does not meet any excavation areas will be considered to be uncontaminated and will be diverted away from remedial areas without requiring special treatment other than that required for surface water generally.			
Drainage	System elements	Construction	The Contractor shall ensure the correct drainage system elements (including pits, kerb and gutter, driveway crossover, kerb-outlet, etc) are used as	Contractor	Where required	When required

Objective	Measure	Implementation	Action	Responsibility	Monitoring requirements	Reporting frequency
			appropriate for each road classification and road maintainer DTEI or CPAE as the case warrants. All drainage elements shall be readily accessible for cleaning and maintenance. The drainage system shall be designed and constructed with a view to minimising ongoing maintenance. Culverts shall be self-cleaning and shall be of a depth that provides for the connection of any subsoil drainage systems.			
Stormwater	Re-use	Construction	The Contractor shall re-use surface water within the temporary drainage basin constructed to the north of the golf course along Days Road for activities including but not limited to dust suppression and wheel washing.	Contractor	Where appropriate	Monthly
Effective site communication	ESCP reporting	Construction	Implement and maintain a site inspection register.	Contractor	Weekly	Monthly
		Construction	The Contractor shall rectify any defects revealed during site inspections. All erosion and sediment control structures shall be cleaned, repaired and augmented as required to ensure effective control thereafter	Contractor	Daily or weekly	Within monthly report
	Emergency preparedness and response	Construction	Ask site personnel if they know whom to contact in the event of a spillage, what to do and from where to get equipment	Sandy Ridge Site Technician	Monthly	Monthly

Objective	Measure	Implementation	Action	Responsibility	Monitoring requirements	Reporting frequency
		Construction	Adopt and test and emergency response plan	Sandy Ridge Site Technician	Quarterly	Quarterly
		Construction	Nominate a spill contractor to deal with major incidents	Contractor	When required	When required
		Construction	The designated washout area must be at least 5 metres away from drains and watercourses	Contractor	Daily	Monthly
		Construction	Protect watercourses from washout	Contractor	Daily	Monthly
		Construction	Re-use washout water for dust suppression	Contractor	Daily	Monthly

APPENDIX C: SITE ESCP CHECKLIST

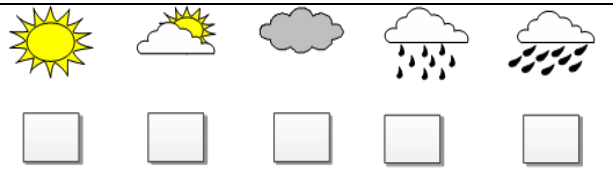
Zone:		Proposed area of disturbance:	
Revision No.		**Catchment area upslope of the site:**	
Date:		**Average gradient of the site:**	
Inspected by			

Checklist is contained on the following page.

Erosion and Sedimentation Control Checklist

Item	Description	Yes / No	Comments	Action Required(yes/no)	Action Date	Responsibility
1	Are erosion and sedimentation devices adequate to ensure they are implemented appropriately at the site?					
2	Is spoil being tracked offsite?					
3	Is there evidence of offsite release of sediment or sediment laden water from access/egress points?					
4	Are vehicles cleaned before exiting the site?					
5	Are silt fences clean or do they require cleaning?					
6	Do soils have large areas of grey mottling or discolouration?					
7	Do surface water bodies show obvious signs of oil films, silt, turbidity, rubbish etc?					
8	Does surface water have a foul odour like rotten eggs?					
9	Is water leaking from any containment areas and discharging offsite?					
10	Are all fuel storage areas secured away from water courses?					
11	Are spill kits readily accessible?					
12	Are spoil stockpiles placed near watercourses? If so, ensure they are not.					

APPENDIX J: ENVIRONMENTAL INSPECTION CHECKLIST

Inspected by:			
Inspection date:		**Time:**	
Location/chainage:			
Rain in the last 24hrs (mm)?		**Weather conditions** **(tick one of the following icons):**	

Environmental Protection Measure	Compliance?		Description of Action (if required)	Action Risk Rating[1]				Completion Signoff
	Yes	No		1	2	3	4	
General								
The site is generally in a tidy condition	☐	☐		☐	☐	☐	☐	
All materials and equipment are contained within the project boundary	☐	☐		☐	☐	☐	☐	
All works are undertaken within the project boundary	☐	☐		☐	☐	☐	☐	
Designated haulage routes and access points are being used	☐	☐		☐	☐	☐	☐	
Soil and water management								

[1] For Action Risk Rating scale, refer to end of this document.

Environmental Protection Measure	Compliance?		Description of Action (if required)	Action Risk Rating[1]				Completion Signoff
	Yes	No		1	2	3	4	
All clean water is being diverted away from disturbed areas	☐	☐		☐	☐	☐	☐	
All clean water diversion drains are stable	☐	☐		☐	☐	☐	☐	
Sediment fence is installed correctly and there are no gaps	☐	☐		☐	☐	☐	☐	
Disturbed areas where no works are undertaken are properly covered or stabilised	☐	☐		☐	☐	☐	☐	
Areas of localised soil erosion have been identified and appropriate preventative measures implemented	☐	☐		☐	☐	☐	☐	
There are no areas of potential or actual concentrated flow that do not flow to sediment basins/traps	☐	☐		☐	☐	☐	☐	
Slope lengths are maintained at appropriate lengths to slow flows down and minimise erosion	☐	☐		☐	☐	☐	☐	
Check dams are used within diversion drains where required to slow flows down and minimise erosion within the drains	☐	☐		☐	☐	☐	☐	
Geotextile linings (or similar) are used to provide temporary surface protection in areas where appropriate (e.g. batter drains, culvert construction)	☐	☐		☐	☐	☐	☐	
Stockpiles are sited in low-hazard areas clear of watercourses and	☐	☐		☐	☐	☐	☐	

Environmental Protection Measure	Compliance?		Description of Action (if required)	Action Risk Rating[1]				Completion Signoff
	Yes	No		1	2	3	4	
flood prone lands								
Cut-off drains on the upslope side and sediment fencing on the downslope side are in place for all stockpile areas within the site	☐	☐		☐	☐	☐	☐	
Stockpiles are less than 2m in height	☐	☐		☐	☐	☐	☐	
Sediment control measures are constructed as close to the potential source of sediment as possible	☐	☐		☐	☐	☐	☐	
Shakers, rubble pads or wash down areas have been installed	☐	☐		☐	☐	☐	☐	
There is no mud on the roads outside of the project boundary	☐	☐		☐	☐	☐	☐	
Sediment fencing or equivalent is provided downslope of disturbed areas that can't be directed into a designated sediment basin	☐	☐		☐	☐	☐	☐	
Sediment basin volume markers intact and clearly visible	☐	☐		☐	☐	☐	☐	
Sediment basin inlets and outlets are stable	☐	☐		☐	☐	☐	☐	
Accumulated sediment is below 30% of the sediment storage zone	☐	☐		☐	☐	☐	☐	
The basins have been emptied since the last rain event and restored to their design capacity (if	☐	☐		☐	☐	☐	☐	

Environmental Protection Measure	Compliance?		Description of Action (if required)	Action Risk Rating[1]				Completion Signoff
	Yes	No		1	2	3	4	
not, explanation must be provided) _								
All discharges are undertaken in accordance with Dewatering Permits	☐	☐		☐	☐	☐	☐	
Air quality/dust management								
No visible dust leaving the Project boundary	☐	☐		☐	☐	☐	☐	
Dust suppression, i.e. water cart, is being used to minimise dust emissions	☐	☐		☐	☐	☐	☐	
Vegetation management								
Clearing limits and work boundaries are established and well defined	☐	☐		☐	☐	☐	☐	
Clearing and grubbing works are undertaken in accordance with Clearing and Grubbing Permits	☐	☐		☐	☐	☐	☐	
No materials are stockpiled and no vehicles are parked under trees' drip line	☐	☐		☐	☐	☐	☐	
Exclusion fencing around trees and sensitive areas is intact	☐	☐		☐	☐	☐	☐	
No visible weed infestation	☐	☐		☐	☐	☐	☐	
Heritage management								

Environmental Protection Measure	Compliance?		Description of Action (if required)	Action Risk Rating[1]				Completion Signoff
	Yes	No		1	2	3	4	
Exclusion fencing around heritage protected areas is intact	☐	☐		☐	☐	☐	☐	
Heritage protected areas are adequately signposted	☐	☐		☐	☐	☐	☐	
Waste management and storage of hazardous materials								
Wastes are segregated in designated containers	☐	☐		☐	☐	☐	☐	
Contaminated soil/asbestos storage areas are fenced off and signposted	☐	☐		☐	☐	☐	☐	
Concrete washouts are properly set-up and signposted	☐	☐		☐	☐	☐	☐	
Fuel/chemicals stored in bunded areas	☐	☐		☐	☐	☐	☐	
No oil leaks or spills visible on site	☐	☐		☐	☐	☐	☐	
Re-fueling in designated areas	☐	☐		☐	☐	☐	☐	
Spill kits available in designated areas	☐	☐		☐	☐	☐	☐	

Action Risk Rating

Action Risk Rating	Risk Level	Priority*	Examples
1	Extreme	Immediately - must be closed out on the day of inspection	• Any actual or potential non-compliance with any EA conditions • Adverse weather conditions are predicted that may result in above if controls are not adequate
2	High	Within 24hrs	• Critical ERSED controls are damaged and need to be reinstated before a rain event
3	Medium	Within 3 Working Days	• Dewatering of sediment basins required
4	Low	Within 5 Working Days	• Stockpiles need to be stabilised

* Priority must be reviewed and revised particularly if adverse weather conditions are predicted