Risk Matrix

TELLUS

Consequence [C]

Level	Descriptor	Health
1	Insignificant	No inju
2	Minor	First ai
3	Moderate	Medica require
4	Major	Extens
5	Catastrophic	Death

Northstar No: 16.1012
Project: Chandler Facility
Scenario: Option 3
Client: Tellus Holdings

Register Ref: 16.1012 Risk Register OPTION 3
Date Completed: 2/02/2017
Completed By: RP and GCG

Hazard Indentification			Risk Pre-Mitigation						
Risk ID	Hazard	Aspect / Descriptor	Likelihood	Consequence	CRI Pre-M	Nature	Duration	Likelihood	Description
1	Biodiversity	Loss of habitat and/or mortality of threatened fauna species	Possible	Major	High	Adverse	Long term	Biodiversity Mgmt Plan	
2	Biodiversity	Removal of vegetation	Almost certain	Moderate	High	Adverse	Long term	Biodiversity Mgmt Plan	
3	Biodiversity	Loss of fauna habitat from removal of vegetation	Almost certain	Moderate	High	Adverse	Long term	Biodiversity Mgmt Plan	
4	Biodiversity	Habitat fragmentation from removal of vegetation	Almost certain	Moderate	High	Adverse	Temporary	Biodiversity Mgmt Plan	
5	Biodiversity	Fauna displacement injury or mortality from removal of vegetation	Possible	Moderate	Medium	Adverse	Temporary	Biodiversity Mgmt Plan	
6	Biodiversity	Fauna strike (vehicle)	Possible	Catastrophic	High	Adverse	Temporary	Traffic Mgmt Plan	
7	Biodiversity	Removal of vegetation resulting in edge effects	Almost certain	Minor	High	Adverse	Temporary	Biodiversity Mgmt Plan	
8	Biodiversity	Altered hydrology leading to flora mortality and loss of habitat	Possible	Minor	Medium	Adverse	Long term	Water Mgmt Plan	
9	Biodiversity	Groundwater abstraction (at 50 m below ground level) impacting vegetatio	Remote	Minor	Low	Neutral	Long term	Water Mgmt Plan	
10	Biodiversity	Contamination of soil and water	Possible	Minor	Medium	Adverse	Temporary	Sediment and Erosion Mgmt Plan	
11	Biodiversity	Erosion and sedimentation of soils	Likely	Major	High	Adverse	Temporary	Sediment and Erosion Mgmt Plan	
12	Biodiversity	Dust deposition from vehicle traffic and earthworks	Almost certain	Minor	High	Adverse	Short term	Air Quality Mgmt Plan	
13	Biodiversity	Construction light, noise and vibration	Almost certain	Minor	High	Adverse	Temporary	Noise Mgmt Plan	
14	Biodiversity	Operational light, noise and vibration	Almost certain	Minor	High	Adverse	Long term	Noise Mgmt Plan	
15	Biodiversity	Introduction and spread of weeds and invasive species	Likely	Minor	Medium	Adverse	Short term	Weed Mgmt Plan	
16	Biodiversity	Increased predator species	Likely	Minor	Medium	Adverse	Short term	Pest Mgmt Plan	
17	Biodiversity	Increased introduced fauna	Likely	Minor	Medium	Adverse	Short term	Pest Mgmt Plan	
18	Biodiversity	Bushfire	Possible	Catastrophic	High	Adverse	Short term	Bushfire Mgmt Plan	
19	Biodiversity	Salt erosion and spoil erosion	Likely	Catastrophic	Extreme	Adverse	Temporary	Sediment and Erosion Mgmt Plan	
20	Biodiversity	Soil compaction and topsoil loss	Possible	Minor	Medium	Adverse	Short term	Sediment and Erosion Mgmt Plan	
21	Groundwater	Changes to groundwater levels	Almost certain	Minor	High	Adverse	Long term	Water Mgmt Plan	
22	Groundwater	Changes to groundwater chemistry	Possible	Minor	Medium	Adverse	Short term	Water Mgmt Plan	
23	Groundwater	Changes to groundwater flow (direction)	Possible	Moderate	Medium	Adverse	Long term	Water Mgmt Plan	
24	Groundwater	Contamination of Horseshoe Bend Shale aquatards from drilling activities	Remote	Major	Medium	Adverse	Temporary	Design of decline and shafts in line with best practice techni	
25	Groundwater	Contamination of Langra aquifer from drilling activities	Remote	Major	Medium	Adverse	Temporary	Design of decline and shafts in line with best practice techni	
26	Groundwater	Contamination of Hermannsberg Formation groundwater from drilling activ	Remote	Major	Medium	Adverse	Temporary	Design of decline and shafts in line with best practice techni	
27	Groundwater	Contamination of Stairway Sandstone groundwater from drilling activities	Remote	Minor	Low	Adverse	Temporary	Design of decline and shafts in line with best practice techni	
28	Groundwater	Contamination of Jay Creek Limestone groundwater from drilling activities	Remote	Minor	Low	Adverse	Temporary	Design of decline and shafts in line with best practice techni	
29	Groundwater	Contamination of Titjikala water supply through loss of containment	Eliminated	Catastrophic	Eliminated	Neutral	Not applicable	No pathway	
30	Groundwater	Contamination of Alice Springs aquifer through loss of containment	Eliminated	Catastrophic	Eliminated	Neutral	Not applicable	No pathway	
31	Groundwater	Contamination of Great Artesian Basin through loss of containment	Eliminated	Major	Eliminated	Neutral	Not applicable	No pathway	
32	Groundwater	Contamination of livestock through loss of containment	Eliminated	Major	Eliminated	Neutral	Not applicable	Water Mgmt Plan	
33	Groundwater	Uncontrolled inflow of groundwater during construction	Unlikely	Minor	Low	Adverse	Temporary	Surface water design / bunding	
34	Groundwater	Uncontrolled inflow of groundwater during operations	Remote	Catastrophic	Medium	Adverse	Temporary	Surface water design / bunding	
35	Groundwater	Engineered uses of naturally occurring corrosive groundwater	Almost certain	Major	Extreme	Adverse	Long term	Management of saline waters / desalination	
36	Groundwater	Over abstraction of groundwater leading to local or regional drawdown	Remote	Minor	Low	Adverse	Long term	Do not over abstract demand requirement and undertake gr	
37	Groundwater	Lack of groundwater for supply	Remote	Major	Medium	Adverse	Long term	Water Mgmt Plan	
38	Surfacewater	Surface water ingress into decline area and general mining infrastructure	Likely	Moderate	High	Adverse	Temporary	Sediment and Erosion Mgmt Plan	
39	Surfacewater	Contaminated surface water runoff off-site	Unlikely	Minor	Low	Adverse	Temporary	Water Mgmt Plan, bunding	
40	Surfacewater	Salt dissolution and transport off-site	Likely	Major	High	Adverse	Long term	Water Mgmt Plan, bunding	

Hazard Indentification			Risk Pre-Mitigation						
Risk ID	Hazard	Aspect / Descriptor	Likelihood	Consequence	CRI Pre-M	Nature	Duration	Likelihood	Description
41	Surfacewater	Flash flooding into mine infrastructure area	Possible	Major	High	Adverse	Temporary	Storm water drains / flood relief	
42	Surfacewater	Flooding of access/haul roads	Likely	Moderate	High	Adverse	Temporary	Sediment and Erosion Mgmt Plan	
43	Surfacewater	Soil erosion leading to excess sedimentation in watercourses	Possible	Major	High	Adverse	Long term	Sediment and Erosion Mgmt Plan	
44	Surfacewater	Contamination of regional surface waters (Hugh and Finke Rivers) through	Remote	Major	Medium	Adverse	Short term	No pathway	
45	Surfacewater	Contamination of Hugh River through loss of containment	Remote	Major	Medium	Adverse	Short term	Water Mgmt Plan	
46	Surfacewater	Contamination of Finke River through loss of containment	Remote	Major	Medium	Adverse	Short term	Water Mgmt Plan	
47	Surfacewater	Altered hydrology surrounding Maryvale Hills	Almost certain	Moderate	High	Adverse	Short term	Water Mgmt Plan	
48	Surfacewater	Altered hydrology surrounding the mine infrastructure area	Almost certain	Major	Extreme	Beneficial	Long term	Water Mgmt Plan	
49	Cultural heritage	Physical disturbance to known sites	Likely	Moderate	High	Adverse	Medium term	Cultural heritage field surveys / Cultural Heritage Managem	
50	Cultural heritage	Physical disturbance to unknown sites	Remote	Moderate	Low	Adverse	Medium term	Cultural Heritage Mgmt Plan / TO involvement	
51	Cultural heritage	Loss of trees (>5m) of value to traditional owners	Almost certain	Moderate	High	Adverse	Short term	Pre-clearance tree survey / TO involvement	
52	Cultural heritage	Loss of scarred trees	Unlikely	Moderate	Medium	Adverse	Long term	Cultural Heritage Mgmt Plan / TO involvement	
53	Cultural heritage	Disturbance of sensitive land at the decline entry	Eliminated	Minor	Eliminated	Neutral	Not applicable	Vibration assessment	
54	Human health and safety	Exposure from dry waste	Unlikely	Moderate	Medium	Adverse	Long term	Air Quality Mgmt Plan	
55	Human health and safety	Exposure from wet waste	Unlikely	Moderate	Medium	Adverse	Long term	Air Quality Mgmt Plan	
56	Human health and safety	Exposure from fuel spills	Remote	Minor	Low	Adverse	Long term	Training	
57	Human health and safety	Exposure from surface traffic fumes	Remote	Minor	Low	Adverse	Long term	Enclosure air extraction	
58	Human health and safety	Vehicle collision with pedestrians (above and below ground)	Likely	Catastrophic	Extreme	Adverse	Long term	Traffic Mgmt Plan	
59	Human health and safety	Vehicle accidents (above and below ground)	Likely	Catastrophic	Extreme	Adverse	Long term	Traffic Mgmt Plan	
60	Human health and safety	Exposure from mine gas extraction	Almost certain	Minor	High	Adverse	Long term	Emission design	
61	Human health and safety	Ventilation failure	Likely	Moderate	High	Adverse	Medium term	Backup power supplies, management systems	
62	Human health and safety	Underground vehicle fire	Likely	Major	High	Adverse	Long term	Use of battery vehicles / isolation areas /	
63	Human health and safety	Underground vehicle exhaust exposure	Almost certain	Major	Extreme	Adverse	Long term	Ventilation design	
64	Human health and safety	Heat stress above and below ground	Almost certain	Moderate	High	Adverse	Long term	Ventilation design and temperature controls	
65	Human health and safety	Construction accidents -surface infrastructure	Possible	Catastrophic	High	Adverse	Long term	Traffic Mgmt Plan	
66	Human health and safety	Construction accidents -underground infrastructure	Possible	Catastrophic	High	Adverse	Long term	Traffic Mgmt Plan	
67	Human health and safety	Uncontrolled gas release - underground pressure release	Unlikely	Catastrophic	High	Adverse	Long term	Ventilation design / Health and Safety Plan / AQMP	
68	Human health and safety	Uncontrolled gas release - underground ignition	Unlikely	Catastrophic	High	Adverse	Long term	Ventilation design / Health and Safety Plan / AQMP	
69	Human health and safety	Uncontrolled gas release - underground asphyxiation	Unlikely	Catastrophic	High	Adverse	Long term	Ventilation design / Health and Safety Plan / AQMP	
70	Human health and safety	Waste stability with heat	Unlikely	Major	Medium	Adverse	Long term	Waste Zoning Guide	
71	Human health and safety	Bites / stings	Almost certain	Catastrophic	Extreme	Adverse	Long term	Health and Safety Mgmt Plan	
72	Human health and safety	Drugs and alcohol abuse	Almost certain	Major	Extreme	Adverse	Long term	Health and Safety Mgmt Plan	
73	Human health and safety	Strata / ground stability	Unlikely	Catastrophic	High	Adverse	Long term	Detailed geotechnical design	
74	Human health and safety	Mine drill and blasting	Eliminated	Insignificant	Eliminated	Neutral	Not applicable	Blasting Management Plan	
75	Human health and safety	Ignition of flammable materials	Possible	Major	High	Adverse	Short term	Health and Safety Mgmt Plan	
76	Human health and safety	Fall from height	Possible	Catastrophic	High	Adverse	Medium term	Health and Safety Mgmt Plan	
77	Human health and safety	Electrical incident	Possible	Major	High	Adverse	Short term	Health and Safety Mgmt Plan	
78	Human health and safety	Exposure from Naturally Occurring Radioactive Material (NORM)	Unlikely	Major	Medium	Adverse	Long term	Waste Zoning Guide	
79	Socio economics	Community acceptance of the Proposal (Titjikala)	Possible	Major	High	Adverse	Long term	Community consultation	
80	Socio economics	Community acceptance of the Proposal (Alice Springs)	Likely	Major	High	Adverse	Long term	Community consultation	
81	Socio economics	Regional acceptance of the Proposal (NT/Australia)	Unlikely	Major	Medium	Adverse	Long term	Community consultation	
82	Socio economics	Not mining salt (no product export)	Eliminated	Insignificant	Eliminated	Neutral	Not applicable	Community consultation	
83	Socio economics	Not mining salt (no product local)	Eliminated	Insignificant	Eliminated	Neutral	Not applicable	Community consultation	
84	Socio economics	Not mining salt (tourism)	Eliminated	Insignificant	Eliminated	Neutral	Not applicable	Community consultation	
85	Socio economics	Not mining salt (employment)	Eliminated	Insignificant	Eliminated	Neutral	Not applicable	Community consultation	
86	Socio economics	Not mining salt (royalties)	Eliminated	Insignificant	Eliminated	Neutral	Not applicable	Community consultation	
87	Socio economics	Employment opportunities - construction	Almost certain	Major	Extreme	Beneficial	Long term	Community engagement and training programs	

Hazard Indentification			Risk Pre-Mitigation						
Risk ID	Hazard	Aspect / Descriptor	Likelihood	Consequence	CRI Pre-M	Nature	Duration	Likelihood	Description
88	Socio economics	Employment opportunities - operations	Almost certain	Major	Extreme	Beneficial	Long term	Community engagement and training programs	
89	Socio economics	Employment opportunities - ancillary employment	Almost certain	Moderate	High	Beneficial	Long term	Community engagement and training programs	
90	Closure and rehabilitatior	Room seal failure	Possible	Minor	Medium	Adverse	Long term	Design specifications	
91	Closure and rehabilitatior	Accident during surface to underground decommissioning	Remote	Catastrophic	Medium	Adverse	Short term	Health and Safety Mgmt Plan	
92	Closure and rehabilitatior	Shaft seals fail	Remote	Major	Medium	Adverse	Short term	Design specifications	
93	Closure and rehabilitatior	Decline seals fail	Remote	Insignificant	Low	Neutral	Not applicable	Design specifications	
94	Closure and rehabilitatior	No surface remediation (environmental)	Unlikely	Minor	Low	Adverse	Long term	Rehabilitation and Closure Plan	
95	Closure and rehabilitatior	No surface remediation	Unlikely	Major	Medium	Adverse	Long term	Rehabilitation and Closure Plan	
96	Closure and rehabilitatior	No groundwater monitoring	Remote	Moderate	Low	Adverse	Long term	Rehabilitation and Closure Plan	
97	Closure and rehabilitatior	No gas monitoring is undertaken	Remote	Minor	Low	Adverse	Long term	Institutional control management	
98	Closure and rehabilitatior	No institutional control period monitoring	Possible	Moderate	Medium	Neutral	Long term	Institutional control management	
99	Closure and rehabilitatior	Future land uses (other land grazing)	Remote	Insignificant	Low	Adverse	Temporary	Institutional control management	
100	Closure and rehabilitatior	Earthquakes	Remote	Insignificant	Low	Adverse	Long term	Geotechnical assessment	
101	Closure and rehabilitatior	Climate change	Possible	Insignificant	Low	Adverse	Long term	Post operational risk assessment	
102	Closure and rehabilitatior	Human intrusion	Remote	Minor	Low	Adverse	Short term	Rehabilitation and Closure Plan	
103	Bushfire	Natural bushfires occurring	Possible	Major	High	Adverse	Short term	Bushfire Mgmt Plan	
104	Bushfire	Back burning on surrounding pastoral land	Possible	Major	High	Adverse	Short term	Bushfire Mgmt Plan	
105	Bushfire	Hot works resulting in spontaneous ignition	Possible	Major	High	Adverse	Short term	Bushfire Mgmt Plan	
106	Bushfire	Smoking cigarettes	Likely	Major	High	Adverse	Short term	Bushfire Mgmt Plan	
107	Bushfire	Increased ignition sources	Likely	Major	High	Adverse	Short term	Bushfire Mgmt Plan	
108	Bushfire	Flammable and/or volatile fuels	Likely	Major	High	Adverse	Short term	Bushfire Mgmt Plan	
109	Air quality	Construction phase impacts (construction traffic in Alice Springs)	Almost certain	Moderate	High	Adverse	Short-term	CEMP, mitigation measures identified	
110	Air quality	Emissions to air (combustion gases and particulates) from mining activities	Likely	Major	High	Adverse	Long-term	AQMP, including stockpile management	
111	Air quality	Loss of containment of 1 TEU of product salt at the Chandler Facility impa	Possible	Insignificant	Low	Adverse	Temporary	EMS (incl EMP), in-cab collision avoidance & comms	
112	Air quality	Loss of containment of 1 TEU of solid waste (as beryllium) at the Chandler	Possible	Insignificant	Low	Adverse	Temporary	EMS (incl EMP), in-cab collision avoidance & comms	
113	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium) at	Unlikely	Insignificant	Low	Adverse	Temporary	EMS (incl EMP), in-cab collision avoidance & comms	
114	Air quality	Loss of containment of 1 TEU liquid/sludge waste (as formaldehyde) at the	Possible	Minor	Medium	Adverse	Temporary	EMS (incl EMP), in-cab collision avoidance & comms	
115	Air quality	Simultaneous loss of containment of 2 TEU liquid/sludge waste (as formal	Unlikely	Moderate	Medium	Adverse	Temporary	EMS (incl EMP), in-cab collision avoidance & comms	
116	Air quality	Loss of containment of 1 TEU of product salt at Apirnta Facility	Possible	Insignificant	Low	Adverse	Temporary	EMS (incl EMP), in-cab collision avoidance & comms	
117	Air quality	Loss of containment of 1 TEU of solid waste (as beryllium) at Apirnta Facil	Possible	Insignificant	Low	Adverse	Temporary	EMS (incl EMP), in-cab collision avoidance & comms	
118	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium) at	Unlikely	Insignificant	Low	Adverse	Temporary	EMS (incl EMP), in-cab collision avoidance & comms	
119	Air quality	Loss of containment of 1 TEU liquid/sludge waste (as formaldehyde) at Ap	Possible	Insignificant	Low	Adverse	Temporary	EMS (incl EMP), in-cab collision avoidance & comms	
120	Air quality	Loss of containment of 1 TEU of product salt at Apirnta Facility	Possible	Insignificant	Low	Adverse	Temporary	EMS (incl EMP), in-cab collision avoidance & comms	
121	Air quality	Loss of containment of 1 TEU of solid waste (as beryllium) at Apirnta Facil	Possible	Insignificant	Low	Adverse	Temporary	EMS (incl EMP), in-cab collision avoidance & comms	
122	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium) at	Unlikely	Insignificant	Low	Adverse	Temporary	EMS (incl EMP), in-cab collision avoidance & comms	
123	Air quality	Loss of containment of 1 TEU liquid/sludge waste (as formaldehyde) at Ap	Possible	Insignificant	Low	Adverse	Temporary	EMS (incl EMP), in-cab collision avoidance & comms	
124	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium) at	Unlikely	Insignificant	Low	Adverse	Temporary	EMS (incl EMP), in-cab collision avoidance & comms	
125	Noise and vibration	Blasting activities result in increased noise levels	Almost certain	Insignificant	High	Adverse	Temporary	Blasting Mgmt Plan	
126	Noise and vibration	Blasting activities result in vibration	Almost certain	Major	Extreme	Adverse	Temporary	Blasting Mgmt Plan	
127	Noise and vibration	Blasting activities result in vibration on known items of cultural heritage sig	Possible	Major	High	Adverse	Long term	Blasting Mgmt Plan	
128	Noise and vibration	Construction and operation noise	Almost certain	Moderate	High	Adverse	Temporary	Noise Mgmt Plan	
129	Visual amenity	Visibility of above ground infrastructure	Almost certain	Minor	High	Adverse	Long term	Landscape Mgmt Plan	
130	Visual amenity	Visibility of decline entry	Almost certain	Minor	High	Adverse	Long term	Landscape Mgmt Plan	
131	Visual amenity	Visibility of spoil stockpiles	Almost certain	Minor	High	Adverse	Long term	Landscape Mgmt Plan	
132	Visual amenity	Visibility of run of mine salt stockpile	Almost certain	Minor	High	Adverse	Long term	Landscape Mgmt Plan	
133	Visual amenity	Visibility of detention/sedimentation ponds	Almost certain	Minor	High	Adverse	Long term	Landscape Mgmt Plan	
134	Visual amenity	Visibility of access roads	Almost certain	Minor	High	Adverse	Permanent	Landscape Mgmt Plan	

Hazard Indentification			Risk Pre-Mitigation						
Risk ID	Hazard	Aspect / Descriptor	Likelihood	Consequence	CRI Pre-M	Nature	Duration	Likelihood	Description
135	Visual amenity	Visibility of accommodation village	Almost certain	Minor	High	Adverse	Long term	Landscape Mgmt Plan	
136	Visual amenity	Subsidence causing changes to land form	Unlikely	Moderate	Medium	Adverse	Permanent	Landscape Mgmt Plan	

Northstar No: 16.1012
Project: Chandler Facility
Scenario: Option 3
Client: Tellus Holdings

Description (examples)				
	Environmental	Financial Loss	Project Delivery	Social
ries	None	Low financial loss	Trivial	Insignificant
d treatment	On-site release immediately contained	Medium financial loss	Project can be completed with changes	Additional ical engagement
d treatment d	On-site release contained with outside assistance	High financial loss	Project can be completed with moderate changes	Additional meetings.
ive injuries	Off-site release with no detrimental effects	Loss of production capability Major financial loss	Project can only be completed with major changes (redesign)	Reactive media plan, recovery plan, working committees
	Toxic release off-site with detrimental effect	Cessation of production capability / Huge financial loss	Project incapable of completion / Unviable	No social licence to operate

Likelihood [L]

Level	Descriptor	Description (examples)	Probabilty (P)	Mid Interval
A	Almost certain	Is expected to occur in most circumstances	0.91<P<1.00	0.95
B	Likely	Will probably occur in most circumstances	0.61<P<0.90	0.75
C	Possible	Might occur at some time	0.41<P<0.60	0.50
D	Unlikely	Could occur at some time	0.11<P<0.40	0.25
E	Rare	May occur only in exceptional circumstances	0.01<P<0.10	0.05
F	Eliminated	Probability removed	P<0.01	0.00

Hazard Indentification			Mitigation (Controls Applied)						
Risk ID	Hazard	Aspect / Descriptor	Owner	Value	Consequence	Description	Owner	Value	Confidence	Actions
1	Biodiversity	Loss of habitat and/or mortality of threatened fauna species			Biodiversity Mgmt Plan				Moderate	
2	Biodiversity	Removal of vegetation			Biodiversity Mgmt Plan				Moderate	
3	Biodiversity	Loss of fauna habitat from removal of vegetation			Biodiversity Mgmt Plan				Moderate	
4	Biodiversity	Habitat fragmentation from removal of vegetation			Biodiversity Mgmt Plan				Moderate	
5	Biodiversity	Fauna displacement injury or mortality from removal of vegetation			Biodiversity Mgmt Plan				Moderate	
6	Biodiversity	Fauna strike (vehicle)			Speed restrictions				Moderate	
7	Biodiversity	Removal of vegetation resulting in edge effects			Biodiversity Mgmt Plan				Moderate	
8	Biodiversity	Altered hydrology leading to flora mortality and loss of habitat			Detailed engineering design				Moderate	
9	Biodiversity	Groundwater abstraction (at 50 m below ground level) impacting vegetati			Bore design				Moderate	
10	Biodiversity	Contamination of soil and water			Bunding and detailed engineering				Moderate	
11	Biodiversity	Erosion and sedimentation of soils			Bunding and detailed engineering				Moderate	
12	Biodiversity	Dust deposition from vehicle traffic and earthworks			Air Quality Mgmt Plan				Moderate	
13	Biodiversity	Construction light, noise and vibration			Noise Mgmt Plan				Moderate	
14	Biodiversity	Operational light, noise and vibration			Noise Mgmt Plan				Moderate	
15	Biodiversity	Introduction and spread of weeds and invasive species			Weed Management Plan				Moderate	
16	Biodiversity	Increased predator species			Pest Mgmt Plan				Moderate	
17	Biodiversity	Increased introduced fauna			Pest Mgmt Plan				Moderate	
18	Biodiversity	Bushfire			Bushfire Mgmt Plan				Moderate	
19	Biodiversity	Salt erosion and spoil erosion			Sediment and Erosion Mgmt Plan				Moderate	
20	Biodiversity	Soil compaction and topsoil loss			Sediment and Erosion Mgmt Plan				Moderate	
21	Groundwater	Changes to groundwater levels			Do not over abstract				Moderate	
22	Groundwater	Changes to groundwater chemistry			Water Mgmt Plan				Moderate	
23	Groundwater	Changes to groundwater flow (direction)			Water Mgmt Plan				Moderate	
24	Groundwater	Contamination of Horseshoe Bend Shale aquatards from drilling activities	ques		Design of decline and shafts in line with best practice techniques				High	
25	Groundwater	Contamination of Langra aquifer from drilling activities	ques		Design of decline and shafts in line with best practice techniques				High	
26	Groundwater	Contamination of Hermannsberg Formation groundwater from drilling act	ques		Design of decline and shafts in line with best practice techniques				High	
27	Groundwater	Contamination of Stairway Sandstone groundwater from drilling activities	ques		Design of decline and shafts in line with best practice techniques				High	
28	Groundwater	Contamination of Jay Creek Limestone groundwater from drilling activitie	ques		Design of decline and shafts in line with best practice techniques				Moderate	
29	Groundwater	Contamination of Titjikala water supply through loss of containment			No pathway				Moderate	
30	Groundwater	Contamination of Alice Springs aquifer through loss of containment			No pathway				Moderate	
31	Groundwater	Contamination of Great Artesian Basin through loss of containment			No pathway				Moderate	
32	Groundwater	Contamination of livestock through loss of containment			Water Mgmt Plan				Moderate	
33	Groundwater	Uncontrolled inflow of groundwater during construction			Surface water design / bunding				Moderate	
34	Groundwater	Uncontrolled inflow of groundwater during operations			Surface water design / bunding				Moderate	
35	Groundwater	Engineered uses of naturally occurring corrosive groundwater			Management of saline waters / desalination				Moderate	
36	Groundwater	Over abstraction of groundwater leading to local or regional drawdown	roundwater monitoring		Do not over abstract demand requirement and undertake groundwater m				Moderate	
37	Groundwater	Lack of groundwater for supply			Water Mgmt Plan				Eliminated	
38	Surfacewater	Surface water ingress into decline area and general mining infrastructure			Sediment and Erosion Mgmt Plan				Moderate	
39	Surfacewater	Contaminated surface water runoff off-site			Water Mgmt Plan, bunding				Moderate	
40	Surfacewater	Salt dissolution and transport off-site			Water Mgmt Plan, bunding				Moderate	

Hazard Indentification			Mitigation (Controls Applied)							
Risk ID	Hazard	Aspect / Descriptor	Owner	Value	Consequence	Description	Owner	Value	Confidence	Actions
41	Surfacewater	Flash flooding into mine infrastructure area			Storm water drains / flood relief				Moderate	
42	Surfacewater	Flooding of access/haul roads			Sediment and Erosion Mgmt Plan				Moderate	
43	Surfacewater	Soil erosion leading to excess sedimentation in watercourses			Sediment and Erosion Mgmt Plan				Moderate	
44	Surfacewater	Contamination of regional surface waters (Hugh and Finke Rivers) throug			No pathway				Moderate	
45	Surfacewater	Contamination of Hugh River through loss of containment			Sediment and Erosion Mgmt Plan, bunding				Moderate	
46	Surfacewater	Contamination of Finke River through loss of containment			Sediment and Erosion Mgmt Plan, bunding				Moderate	
47	Surfacewater	Altered hydrology surrounding Maryvale Hills			Sediment and Erosion Mgmt Plan				Moderate	
48	Surfacewater	Altered hydrology surrounding the mine infrastructure area			Sediment and Erosion Mgmt Plan				Moderate	
49	Cultural heritage	Physical disturbance to known sites	ent Plan /TO involveme		Cultural heritage field surveys / Cultural Heritage Management Plan /TO i				Moderate	
50	Cultural heritage	Physical disturbance to unknown sites			Cultural Heritage Mgmt Plan / TO involvement				Moderate	
51	Cultural heritage	Loss of trees (>5m) of value to traditional owners			Pre-clearance tree survey / TO involvement				Moderate	
52	Cultural heritage	Loss of scarred trees			Cultural Heritage Mgmt Plan / TO involvement				Moderate	
53	Cultural heritage	Disturbance of sensitive land at the decline entry			Blasting Mgmt Plan				Moderate	
54	Human health and safety	Exposure from dry waste			Air Quality Mgmt Plan				Moderate	
55	Human health and safety	Exposure from wet waste			Air Quality Mgmt Plan				Moderate	
56	Human health and safety	Exposure from fuel spills			Emergency spill response				Moderate	
57	Human health and safety	Exposure from surface traffic fumes			Air Quality Mgmt Plan				Moderate	
58	Human health and safety	Vehicle collision with pedestrians (above and below ground)			Traffic Mgmt Plan				Moderate	
59	Human health and safety	Vehicle accidents (above and below ground)			Traffic Mgmt Plan				Moderate	
60	Human health and safety	Exposure from mine gas extraction			Air Quality Mgmt Plan				Moderate	
61	Human health and safety	Ventilation failure			Air Quality Mgmt Plan				Moderate	
62	Human health and safety	Underground vehicle fire			Emergency Response Mgmt Plan				Moderate	
63	Human health and safety	Underground vehicle exhaust exposure			Emergency Response Mgmt Plan				Moderate	
64	Human health and safety	Heat stress above and below ground			Emergency Response Mgmt Plan				Moderate	
65	Human health and safety	Construction accidents -surface infrastructure			Emergency Response Mgmt Plan				Moderate	
66	Human health and safety	Construction accidents -underground infrastructure			Emergency Response Mgmt Plan				Moderate	
67	Human health and safety	Uncontrolled gas release - underground pressure release			Emergency Response Mgmt Plan				Moderate	
68	Human health and safety	Uncontrolled gas release - underground ignition			Emergency Response Mgmt Plan				Moderate	
69	Human health and safety	Uncontrolled gas release - underground asphyxiation			Emergency Response Mgmt Plan				Moderate	
70	Human health and safety	Waste stability with heat			Waste Zoning Guide				Moderate	
71	Human health and safety	Bites / stings			Health and Safety Mgmt Plan				Moderate	
72	Human health and safety	Drugs and alcohol abuse			Health and Safety Mgmt Plan				Moderate	
73	Human health and safety	Strata / ground stability			Construction Environmental Mgmt Plan				Moderate	
74	Human health and safety	Mine drill and blasting			Construction Environmental Mgmt Plan				Moderate	
75	Human health and safety	Ignition of flammable materials			Emergency Response Mgmt Plan				Moderate	
76	Human health and safety	Fall from height			Emergency Response Mgmt Plan				Moderate	
77	Human health and safety	Electrical incident			Emergency Response Mgmt Plan				Moderate	
78	Human health and safety	Exposure from Naturally Occurring Radioactive Material (NORM)			Health and Safety Mgmt Plan				Moderate	
79	Socio economics	Community acceptance of the Proposal (Titjikala)			Community consultation				Moderate	
80	Socio economics	Community acceptance of the Proposal (Alice Springs)			Community consultation				Moderate	
81	Socio economics	Regional acceptance of the Proposal (NT/Australia)			Community consultation				Moderate	
82	Socio economics	Not mining salt (no product export)			Community consultation				Moderate	
83	Socio economics	Not mining salt (no product local)			Community consultation				Moderate	
84	Socio economics	Not mining salt (tourism)			Community consultation				Moderate	
85	Socio economics	Not mining salt (employment)			Community consultation				Moderate	
86	Socio economics	Not mining salt (royalties)			Community consultation				Moderate	
87	Socio economics	Employment opportunities - construction			Community engagement and training programs				Moderate	

Hazard Indentification			Mitigation (Controls Applied)							
Risk ID	Hazard	Aspect / Descriptor	Owner	Value	Consequence	Description	Owner	Value	Confidence	Actions
88	Socio economics	Employment opportunities - operations			Community engagement and training programs				Moderate	
89	Socio economics	Employment opportunities - ancillary employment			Community engagement and training programs				Moderate	
90	Closure and rehabilitatior	Room seal failure			Rehabilitation Closure Plan				Moderate	
91	Closure and rehabilitatior	Accident during surface to underground decommissioning			Health and Safety Mgmt Plan				Moderate	
92	Closure and rehabilitatior	Shaft seals fail			Rehabilitation Closure Plan				Moderate	
93	Closure and rehabilitatior	Decline seals fail			Design specifications				Moderate	
94	Closure and rehabilitatior	No surface remediation (environmental)			Rehabilitation and Closure Plan				Moderate	
95	Closure and rehabilitatior	No surface remediation			Rehabilitation and Closure Plan				Moderate	
96	Closure and rehabilitatior	No groundwater monitoring			Rehabilitation and Closure Plan				Moderate	
97	Closure and rehabilitatior	No gas monitoring is undertaken			Institutional control management				Moderate	
98	Closure and rehabilitatior	No institutional control period monitoring			Institutional control management				Moderate	
99	Closure and rehabilitatior	Future land uses (other land grazing)			Institutional control management				Moderate	
100	Closure and rehabilitatior	Earthquakes			Detailed design				Moderate	
101	Closure and rehabilitatior	Climate change			Detailed design /				Moderate	
102	Closure and rehabilitatior	Human intrusion			Institutional control management				Moderate	
103	Bushfire	Natural bushfires occurring			Bushfire Mgmt Plan				Moderate	
104	Bushfire	Back burning on surrounding pastoral land			Bushfire Mgmt Plan				Moderate	
105	Bushfire	Hot works resulting in spontaneous ignition			Bushfire Mgmt Plan				Moderate	
106	Bushfire	Smoking cigarettes			Bushfire Mgmt Plan				Moderate	
107	Bushfire	Increased ignition sources			Bushfire Mgmt Plan				Moderate	
108	Bushfire	Flammable and/or volatile fuels			Bushfire Mgmt Plan				Moderate	
109	Air quality	Construction phase impacts (construction traffic in Alice Springs)			CEMP, mitigation measures identified				High	
110	Air quality	Emissions to air (combustion gases and particulates) from mining activiti			USEPA Tier 4 emission standards, stockpile				High	
111	Air quality	Loss of containment of 1 TEU of product salt at the Chandler Facility imp			waste handling procedures and restrictive load management to manage t				Moderate	
112	Air quality	Loss of containment of 1 TEU of solid waste (as beryllium) at the Chandl			waste handling procedures and restrictive load management to manage t				Moderate	
113	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)			waste handling procedures and restrictive load management to manage t				Moderate	
114	Air quality	Loss of containment of 1 TEU liquid/sludge waste (as formaldehyde) at tl			waste handling procedures and restrictive load management to manage t				Moderate	
115	Air quality	Simultaneous loss of containment of 2 TEU liquid/sludge waste (as forma			waste handling procedures and restrictive load management to manage t				Moderate	
116	Air quality	Loss of containment of 1 TEU of product salt at Apirnta Facility							Moderate	
117	Air quality	Loss of containment of 1 TEU of solid waste (as beryllium) at Apirnta Fac			waste handling procedures and restrictive load management to manage t				Moderate	
118	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)			waste handling procedures and restrictive load management to manage t				Moderate	
119	Air quality	Loss of containment of 1 TEU liquid/sludge waste (as formaldehyde) at A			waste handling procedures and restrictive load management to manage t				Moderate	
120	Air quality	Loss of containment of 1 TEU of product salt at Apirnta Facility							Moderate	
121	Air quality	Loss of containment of 1 TEU of solid waste (as beryllium) at Apirnta Fac			waste handling procedures and restrictive load management to manage t				Moderate	
122	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)			waste handling procedures and restrictive load management to manage t				Moderate	
123	Air quality	Loss of containment of 1 TEU liquid/sludge waste (as formaldehyde) at A			waste handling procedures and restrictive load management to manage t				Moderate	
124	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)			waste handling procedures and restrictive load management to manage t				Moderate	
125	Noise and vibration	Blasting activities result in increased noise levels			Construction Environmental Mgmt Plan				Moderate	
126	Noise and vibration	Blasting activities result in vibration			Construction Environmental Mgmt Plan				Moderate	
127	Noise and vibration	Blasting activities result in vibration on known items of cultural heritage s			Construction Environmental Mgmt Plan				Moderate	
128	Noise and vibration	Construction and operation noise			Construction Environmental Mgmt Plan				Moderate	
129	Visual amenity	Visibility of above ground infrastructure			Consultation with Traditional Owners				Moderate	
130	Visual amenity	Visibility of decline entry			Consultation with Traditional Owners		Tellus		Moderate	
131	Visual amenity	Visibility of spoil stockpiles			Consultation with Traditional Owners				Moderate	
132	Visual amenity	Visibility of run of mine salt stockpile			Consultation with Traditional Owners				Moderate	
133	Visual amenity	Visibility of detention/sedimentation ponds			Consultation with Traditional Owners				Moderate	
134	Visual amenity	Visibility of access roads			Consultation with Traditional Owners				Moderate	

Hazard Indentification			Mitigation (Controls Applied)							
Risk ID	Hazard	Aspect / Descriptor	Owner	Value	Consequence	Description	Owner	Value	Confidence	Actions
135	Visual amenity	Visibility of accommodation village			Consultation with Traditional Owners				Moderate	
136	Visual amenity	Subsidence causing changes to land form			Consultation with Traditional Owners				Moderate	

IDENTIFY
ANALYSE
PLAN RESPONSE
MONITOR & CONTROL

Northstar No: 16.1012
Project: Chandler Facility
Scenario: Option 3
Client: Tellus Holdings

Hazard Indentification			Mitigation Management				Risk (Post- Mitigation)			
Risk ID	Hazard	Aspect / Descriptor	Description	Duration (wks)	Cost estimate	Review	Likelihood	Consequence	CRI Post-M	Nature
1	Biodiversity	Loss of habitat and/or mortality of threatened fauna species					Unlikely	Major	Medium	Adverse
2	Biodiversity	Removal of vegetation					Almost certain	Minor	High	Adverse
3	Biodiversity	Loss of fauna habitat from removal of vegetation					Almost certain	Minor	High	Adverse
4	Biodiversity	Habitat fragmentation from removal of vegetation					Possible	Moderate	Medium	Adverse
5	Biodiversity	Fauna displacement injury or mortality from removal of vegetation					Unlikely	Minor	Low	Adverse
6	Biodiversity	Fauna strike (vehicle)					Unlikely	Catastrophic	High	Adverse
7	Biodiversity	Removal of vegetation resulting in edge effects					Possible	Minor	Medium	Adverse
8	Biodiversity	Altered hydrology leading to flora mortality and loss of habitat					Unlikely	Minor	Low	Adverse
9	Biodiversity	Groundwater abstraction (at 50 m below ground level) impacting vegetati					Eliminated	Insignificant	Eliminated	Neutral
10	Biodiversity	Contamination of soil and water					Eliminated	Minor	Eliminated	Neutral
11	Biodiversity	Erosion and sedimentation of soils					Unlikely	Major	Medium	Adverse
12	Biodiversity	Dust deposition from vehicle traffic and earthworks					Possible	Minor	Medium	Adverse
13	Biodiversity	Construction light, noise and vibration					Likely	Minor	Medium	Adverse
14	Biodiversity	Operational light, noise and vibration					Likely	Minor	Medium	Adverse
15	Biodiversity	Introduction and spread of weeds and invasive species					Unlikely	Minor	Low	Adverse
16	Biodiversity	Increased predator species					Unlikely	Minor	Low	Adverse
17	Biodiversity	Increased introduced fauna					Unlikely	Minor	Low	Adverse
18	Biodiversity	Bushfire					Possible	Minor	Medium	Adverse
19	Biodiversity	Salt erosion and spoil erosion					Remote	Major	Medium	Adverse
20	Biodiversity	Soil compaction and topsoil loss					Unlikely	Minor	Low	Adverse
21	Groundwater	Changes to groundwater levels					Possible	Minor	Medium	Adverse
22	Groundwater	Changes to groundwater chemistry					Remote	Minor	Low	Adverse
23	Groundwater	Changes to groundwater flow (direction)					Remote	Minor	Low	Adverse
24	Groundwater	Contamination of Horseshoe Bend Shale aquatards from drilling activitie					Eliminated	Major	Eliminated	Neutral
25	Groundwater	Contamination of Langra aquifer from drilling activities					Eliminated	Major	Eliminated	Neutral
26	Groundwater	Contamination of Hermannsberg Formation groundwater from drilling act					Eliminated	Major	Eliminated	Neutral
27	Groundwater	Contamination of Stairway Sandstone groundwater from drilling activities					Eliminated	Minor	Eliminated	Adverse
28	Groundwater	Contamination of Jay Creek Limestone groundwater from drilling activitie					Eliminated	Minor	Eliminated	Adverse
29	Groundwater	Contamination of Titjikala water supply through loss of containment					Eliminated	Catastrophic	Eliminated	Neutral
30	Groundwater	Contamination of Alice Springs aquifer through loss of containment					Eliminated	Catastrophic	Eliminated	Neutral
31	Groundwater	Contamination of Great Artesian Basin through loss of containment					Eliminated	Major	Eliminated	Neutral
32	Groundwater	Contamination of livestock through loss of containment					Eliminated	Major	Eliminated	Neutral
33	Groundwater	Uncontrolled inflow of groundwater during construction					Remote	Minor	Low	Adverse
34	Groundwater	Uncontrolled inflow of groundwater during operations					Remote	Major	Medium	Adverse
35	Groundwater	Engineered uses of naturally occurring corrosive groundwater					Almost certain	Minor	High	Adverse
36	Groundwater	Over abstraction of groundwater leading to local or regional drawdown					Eliminated	Minor	Eliminated	Neutral
37	Groundwater	Lack of groundwater for supply					Eliminated	Minor	Eliminated	neutral
38	Surfacewater	Surface water ingress into decline area and general mining infrastructure					Remote	Moderate	Low	Adverse
39	Surfacewater	Contaminated surface water runoff off-site					Remote	Minor	Low	Adverse
40	Surfacewater	Salt dissolution and transport off-site					Remote	Minor	Low	Adverse

Hazard Indentification			Mitigation Management				Risk (Post- Mitigation)			
Risk ID	Hazard	Aspect / Descriptor	Description	Duration (wks)	Cost estimate	Review	Likelihood	Consequence	CRI Post-M	Nature
41	Surfacewater	Flash flooding into mine infrastructure area					Remote	Moderate	Low	Adverse
42	Surfacewater	Flooding of access/haul roads					Possible	Minor	Medium	Adverse
43	Surfacewater	Soil erosion leading to excess sedimentation in watercourses					Remote	Minor	Low	Adverse
44	Surfacewater	Contamination of regional surface waters (Hugh and Finke Rivers) throug					Eliminated	Major	Eliminated	Adverse
45	Surfacewater	Contamination of Hugh River through loss of containment					Eliminated	Major	Eliminated	Neutral
46	Surfacewater	Contamination of Finke River through loss of containment					Eliminated	Major	Eliminated	Neutral
47	Surfacewater	Altered hydrology surrounding Maryvale Hills					Almost certain	Minor	High	Adverse
48	Surfacewater	Altered hydrology surrounding the mine infrastructure area					Almost certain	Major	Extreme	Beneficial
49	Cultural heritage	Physical disturbance to known sites					Eliminated	Moderate	Eliminated	Neutral
50	Cultural heritage	Physical disturbance to unknown sites					Remote	Moderate	Low	Adverse
51	Cultural heritage	Loss of trees (>5m) of value to traditional owners					Almost certain	Minor	High	Adverse
52	Cultural heritage	Loss of scarred trees					Remote	Moderate	Low	Adverse
53	Cultural heritage	Disturbance of sensitive land at the decline entry					Eliminated	Minor	Eliminated	Neutral
54	Human health and safety	Exposure from dry waste					Remote	Moderate	Low	Adverse
55	Human health and safety	Exposure from wet waste					Remote	Moderate	Low	Adverse
56	Human health and safety	Exposure from fuel spills					Remote	Minor	Low	Adverse
57	Human health and safety	Exposure from surface traffic fumes					Remote	Minor	Low	Adverse
58	Human health and safety	Vehicle collision with pedestrians (above and below ground)					Unlikely	Catastrophic	High	Adverse
59	Human health and safety	Vehicle accidents (above and below ground)					Unlikely	Catastrophic	High	Adverse
60	Human health and safety	Exposure from mine gas extraction					Unlikely	Minor	Low	Adverse
61	Human health and safety	Ventilation failure					Unlikely	Moderate	Medium	Adverse
62	Human health and safety	Underground vehicle fire					Unlikely	Major	Medium	Adverse
63	Human health and safety	Underground vehicle exhaust exposure					Remote	Major	Medium	Adverse
64	Human health and safety	Heat stress above and below ground					Unlikely	Moderate	Medium	Adverse
65	Human health and safety	Construction accidents -surface infrastructure					Remote	Catastrophic	Medium	Adverse
66	Human health and safety	Construction accidents -underground infrastructure					Remote	Catastrophic	Medium	Adverse
67	Human health and safety	Uncontrolled gas release - underground pressure release					Remote	Catastrophic	Medium	Adverse
68	Human health and safety	Uncontrolled gas release - underground ignition					Remote	Catastrophic	Medium	Adverse
69	Human health and safety	Uncontrolled gas release - underground asphyxiation					Remote	Catastrophic	Medium	Adverse
70	Human health and safety	Waste stability with heat					Eliminated	Major	Eliminated	Neutral
71	Human health and safety	Bites / stings					Unlikely	Moderate	Medium	Adverse
72	Human health and safety	Drugs and alcohol abuse					Remote	Major	Medium	Adverse
73	Human health and safety	Strata / ground stability					Remote	Catastrophic	Medium	Adverse
74	Human health and safety	Mine drill and blasting					Eliminated	Insignificant	Eliminated	Neutral
75	Human health and safety	Ignition of flammable materials					Unlikely	Major	Medium	Adverse
76	Human health and safety	Fall from height					Unlikely	Catastrophic	High	Adverse
77	Human health and safety	Electrical incident					Unlikely	Major	Medium	Adverse
78	Human health and safety	Exposure from Naturally Occurring Radioactive Material (NORM)					Eliminated	Major	Eliminated	Neutral
79	Socio economics	Community acceptance of the Proposal (Titjikala)					Remote	Moderate	Low	Adverse
80	Socio economics	Community acceptance of the Proposal (Alice Springs)					Unlikely	Moderate	Medium	Adverse
81	Socio economics	Regional acceptance of the Proposal (NT/Australia)					Remote	Moderate	Low	Adverse
82	Socio economics	Not mining salt (no product export)					Eliminated	Insignificant	Eliminated	Neutral
83	Socio economics	Not mining salt (no product local)					Eliminated	Insignificant	Eliminated	Neutral
84	Socio economics	Not mining salt (tourism)					Eliminated	Insignificant	Eliminated	Neutral
85	Socio economics	Not mining salt (employment)					Eliminated	Insignificant	Eliminated	Neutral
86	Socio economics	Not mining salt (royalties)					Eliminated	Insignificant	Eliminated	Neutral
87	Socio economics	Employment opportunities - construction					Almost certain	Major	Extreme	Beneficial

Hazard Indentification			Mitigation Management				Risk (Post- Mitigation)			
Risk ID	Hazard	Aspect / Descriptor	Description	Duration (wks)	Cost estimate	Review	Likelihood	Consequence	CRI Post-M	Nature
88	Socio economics	Employment opportunities - operations					Almost certain	Major	Extreme	Beneficial
89	Socio economics	Employment opportunities - ancillary employment					Almost certain	Major	Extreme	Beneficial
90	Closure and rehabilitatior	Room seal failure					Remote	Minor	Low	Adverse
91	Closure and rehabilitatior	Accident during surface to underground decommissioning					Remote	Catastrophic	Medium	Adverse
92	Closure and rehabilitatior	Shaft seals fail					Eliminated	Moderate	Eliminated	Adverse
93	Closure and rehabilitatior	Decline seals fail					Eliminated	Insignificant	Eliminated	Neutral
94	Closure and rehabilitatior	No surface remediation (environmental)					Remote	Minor	Low	Adverse
95	Closure and rehabilitatior	No surface remediation					Remote	Major	Medium	Adverse
96	Closure and rehabilitatior	No groundwater monitoring					Remote	Minor	Low	Adverse
97	Closure and rehabilitatior	No gas monitoring is undertaken					Eliminated	Minor	Eliminated	Adverse
98	Closure and rehabilitatior	No institutional control period monitoring					Unlikely	Minor	Low	Adverse
99	Closure and rehabilitatior	Future land uses (other land grazing)					Eliminated	Insignificant	Eliminated	Neutral
100	Closure and rehabilitatior	Earthquakes					Remote	Insignificant	Low	Adverse
101	Closure and rehabilitatior	Climate change					Possible	Insignificant	Low	Adverse
102	Closure and rehabilitatior	Human intrusion					Eliminated	Minor	Eliminated	Neutral
103	Bushfire	Natural bushfires occurring					Unlikely	Major	Medium	Adverse
104	Bushfire	Back burning on surrounding pastoral land					Possible	Major	High	Adverse
105	Bushfire	Hot works resulting in spontaneous ignition					Unlikely	Major	Medium	Adverse
106	Bushfire	Smoking cigarettes					Likely	Major	High	Adverse
107	Bushfire	Increased ignition sources					Unlikely	Major	Medium	Adverse
108	Bushfire	Flammable and/or volatile fuels					Unlikely	Major	Medium	Adverse
109	Air quality	Construction phase impacts (construction traffic in Alice Springs)					Almost certain	Insignificant	High	Adverse
110	Air quality	Emissions to air (combustion gases and particulates) from mining activiti					Likely	Minor	Medium	Adverse
111	Air quality	Loss of containment of 1 TEU of product salt at the Chandler Facility imp					Unlikely	Insignificant	Low	Adverse
112	Air quality	Loss of containment of 1 TEU of solid waste (as beryllium) at the Chandl					Unlikely	Insignificant	Low	Adverse
113	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)					Remote	Insignificant	Low	Adverse
114	Air quality	Loss of containment of 1 TEU liquid/sludge waste (as formaldehyde) at tl					Unlikely	Minor	Low	Adverse
115	Air quality	Simultaneous loss of containment of 2 TEU liquid/sludge waste (as forma					Remote	Moderate	Low	Adverse
116	Air quality	Loss of containment of 1 TEU of product salt at Apirnta Facility					Unlikely	Insignificant	Low	Adverse
117	Air quality	Loss of containment of 1 TEU of solid waste (as beryllium) at Apirnta Fac					Unlikely	Insignificant	Low	Adverse
118	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)					Remote	Insignificant	Low	Adverse
119	Air quality	Loss of containment of 1 TEU liquid/sludge waste (as formaldehyde) at A					Unlikely	Insignificant	Low	Adverse
120	Air quality	Loss of containment of 1 TEU of product salt at Apirnta Facility					Unlikely	Insignificant	Low	Adverse
121	Air quality	Loss of containment of 1 TEU of solid waste (as beryllium) at Apirnta Fac					Unlikely	Insignificant	Low	Adverse
122	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)					Remote	Insignificant	Low	Adverse
123	Air quality	Loss of containment of 1 TEU liquid/sludge waste (as formaldehyde) at A					Unlikely	Insignificant	Low	Adverse
124	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)					Remote	Insignificant	Low	Adverse
125	Noise and vibration	Blasting activities result in increased noise levels					Likely	Insignificant	Medium	Adverse
126	Noise and vibration	Blasting activities result in vibration					Unlikely	Major	Medium	Adverse
127	Noise and vibration	Blasting activities result in vibration on known items of cultural heritage s					Remote	Major	Medium	Adverse
128	Noise and vibration	Construction and operation noise					Possible	Minor	Medium	Adverse
129	Visual amenity	Visibility of above ground infrastructure					Unlikely	Minor	Low	Adverse
130	Visual amenity	Visibility of decline entry					Unlikely	Minor	Low	Adverse
131	Visual amenity	Visibility of spoil stockpiles					Unlikely	Minor	Low	Adverse
132	Visual amenity	Visibility of run of mine salt stockpile					Unlikely	Minor	Low	Adverse
133	Visual amenity	Visibility of detention/sedimentation ponds					Unlikely	Minor	Low	Adverse
134	Visual amenity	Visibility of access roads					Unlikely	Minor	Low	Adverse

Hazard Indentification			Mitigation Management				Risk (Post- Mitigation)			
Risk ID	Hazard	Aspect / Descriptor	Description	Duration (wks)	Cost estimate	Review	Likelihood	Consequence	CRI Post-M	Nature
135	Visual amenity	Visibility of accommodation village					Unlikely	Minor	Low	Adverse
136	Visual amenity	Subsidence causing changes to land form					Unlikely	Minor	Low	Adverse

Northstar No: 16.1012
Project: Chandler Facility
Scenario: Option 3
Client: Tellus Holdings

Hazard Indentification				Residual Risk (Opportunity) and Mitigation Evaluation						
Risk ID	Hazard	Aspect / Descriptor	Duration	Nature	Warning	Management	Residual		Likelihood	Co
1	Biodiversity	Loss of habitat and/or mortality of threatened fauna species	Long term	Adverse		Risk reduced	Medium	✓	mitigation	!
2	Biodiversity	Removal of vegetation	Long term	Adverse	residual	Risk reduced	High	!	unmitigated	✓
3	Biodiversity	Loss of fauna habitat from removal of vegetation	Long term	Adverse	residual	Risk reduced	High	!	unmitigated	✓
4	Biodiversity	Habitat fragmentation from removal of vegetation	Long term	Adverse		Risk reduced	Medium	✓	mitigation	!
5	Biodiversity	Fauna displacement injury or mortality from removal of vegetation	Short term	Adverse		Risk reduced	Low	✓	mitigation	✓
6	Biodiversity	Fauna strike (vehicle)	Temporary	Adverse	residual	Risk reduced	High	✓	mitigation	!
7	Biodiversity	Removal of vegetation resulting in edge effects	Short term	Adverse		Risk reduced	Medium	✓	mitigation	!
8	Biodiversity	Altered hydrology leading to flora mortality and loss of habitat	Long term	Adverse		Risk reduced	Low	✓	mitigation	!
9	Biodiversity	Groundwater abstraction (at 50 m below ground level) impacting vegetati	Not applicable	Neutral		Risk reduced	Eliminated	✓	mitigation	✓
10	Biodiversity	Contamination of soil and water	Not applicable	Neutral		Risk reduced	Eliminated	✓	mitigation	!
11	Biodiversity	Erosion and sedimentation of soils	Temporary	Adverse		Risk reduced	Medium	✓	mitigation	!
12	Biodiversity	Dust deposition from vehicle traffic and earthworks	Temporary	Adverse		Risk reduced	Medium	✓	mitigation	!
13	Biodiversity	Construction light, noise and vibration	Temporary	Adverse		Risk reduced	Medium	✓	mitigation	!
14	Biodiversity	Operational light, noise and vibration	Long term	Adverse		Risk reduced	Medium	✓	mitigation	!
15	Biodiversity	Introduction and spread of weeds and invasive species	Short term	Adverse		Risk reduced	Low	✓	mitigation	!
16	Biodiversity	Increased predator species	Short term	Adverse		Risk reduced	Low	✓	mitigation	!
17	Biodiversity	Increased introduced fauna	Short term	Adverse		Risk reduced	Low	✓	mitigation	!
18	Biodiversity	Bushfire	Short term	Adverse		Risk reduced	Medium	!	unmitigated	✓
19	Biodiversity	Salt erosion and spoil erosion	Temporary	Adverse		Risk reduced	Medium	✓	mitigation	✓
20	Biodiversity	Soil compaction and topsoil loss	Short term	Adverse		Risk reduced	Low	✓	mitigation	!
21	Groundwater	Changes to groundwater levels	Short term	Adverse		Risk reduced	Medium	✓	mitigation	!
22	Groundwater	Changes to groundwater chemistry	Short term	Adverse		Risk reduced	Low	✓	mitigation	!
23	Groundwater	Changes to groundwater flow (direction)	Long term	Adverse		Risk reduced	Low	✓	mitigation	✓
24	Groundwater	Contamination of Horseshoe Bend Shale aquatards from drilling activities	Not applicable	Neutral		Risk reduced	Eliminated	✓	mitigation	!
25	Groundwater	Contamination of Langra aquifer from drilling activities	Not applicable	Neutral		Risk reduced	Eliminated	✓	mitigation	!
26	Groundwater	Contamination of Hermannsberg Formation groundwater from drilling act	Not applicable	Neutral		Risk reduced	Eliminated	✓	mitigation	!
27	Groundwater	Contamination of Stairway Sandstone groundwater from drilling activities	Not applicable	Adverse		Risk reduced	Eliminated	✓	mitigation	!
28	Groundwater	Contamination of Jay Creek Limestone groundwater from drilling activitie	Not applicable	Adverse		Risk reduced	Eliminated	✓	mitigation	!
29	Groundwater	Contamination of Titjikala water supply through loss of containment	Not applicable	Neutral		Risk same	Eliminated	!	unmitigated	!
30	Groundwater	Contamination of Alice Springs aquifer through loss of containment	Not applicable	Neutral		Risk same	Eliminated	!	unmitigated	!
31	Groundwater	Contamination of Great Artesian Basin through loss of containment	Not applicable	Neutral		Risk same	Eliminated	!	unmitigated	!
32	Groundwater	Contamination of livestock through loss of containment	me level of ris	Neutral		Risk same	Eliminated	!	unmitigated	!
33	Groundwater	Uncontrolled inflow of groundwater during construction	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
34	Groundwater	Uncontrolled inflow of groundwater during operations	Temporary	Adverse		Risk reduced	Medium	!	unmitigated	✓
35	Groundwater	Engineered uses of naturally occurring corrosive groundwater	Long term	Adverse	residual	Risk reduced	High	!	unmitigated	✓
36	Groundwater	Over abstraction of groundwater leading to local or regional drawdown	Short term	Neutral		Risk reduced	Eliminated	✓	mitigation	!
37	Groundwater	Lack of groundwater for supply	Not applicable	neutral		Risk reduced	Eliminated	✓	mitigation	✓
38	Surfacewater	Surface water ingress into decline area and general mining infrastructure	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
39	Surfacewater	Contaminated surface water runoff off-site	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
40	Surfacewater	Salt dissolution and transport off-site	Temporary	Adverse		Risk reduced	Low	✓	mitigation	✓

Hazard Indentification				Residual Risk (Opportunity) and Mitigation Evaluation						
Risk ID	Hazard	Aspect / Descriptor	Duration	Nature	Warning	Management	Residual		Likelihood	Co
41	Surfacewater	Flash flooding into mine infrastructure area	Temporary	Adverse		Risk reduced	Low	✓	mitigation	✓
42	Surfacewater	Flooding of access/haul roads	Temporary	Adverse		Risk reduced	Medium	✓	mitigation	✓
43	Surfacewater	Soil erosion leading to excess sedimentation in watercourses	Temporary	Adverse		Risk reduced	Low	✓	mitigation	✓
44	Surfacewater	Contamination of regional surface waters (Hugh and Finke Rivers) throu	Not applicable	Adverse		Risk reduced	Eliminated	✓	mitigation	!
45	Surfacewater	Contamination of Hugh River through loss of containment	Not applicable	Neutral		Risk reduced	Eliminated	✓	mitigation	!
46	Surfacewater	Contamination of Finke River through loss of containment	Not applicable	Neutral		Risk reduced	Eliminated	✓	mitigation	!
47	Surfacewater	Altered hydrology surrounding Maryvale Hills	Short term	Adverse	residual	Risk reduced	High	!	unmitigated	✓
48	Surfacewater	Altered hydrology surrounding the mine infrastructure area	Long term	Beneficial	immediate	Risk same	Extreme	!	unmitigated	!
49	Cultural heritage	Physical disturbance to known sites	Short term	Neutral		Risk reduced	Eliminated	✓	mitigation	!
50	Cultural heritage	Physical disturbance to unknown sites	Temporary	Adverse		Risk same	Low	!	unmitigated	!
51	Cultural heritage	Loss of trees (>5m) of value to traditional owners	Short term	Adverse	residual	Risk reduced	High	!	unmitigated	✓
52	Cultural heritage	Loss of scarred trees	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
53	Cultural heritage	Disturbance of sensitive land at the decline entry	Not applicable	Neutral		Risk same	Eliminated	!	unmitigated	!
54	Human health and safety	Exposure from dry waste	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
55	Human health and safety	Exposure from wet waste	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
56	Human health and safety	Exposure from fuel spills	Temporary	Adverse		Risk same	Low	!	unmitigated	!
57	Human health and safety	Exposure from surface traffic fumes	Temporary	Adverse		Risk same	Low	!	unmitigated	!
58	Human health and safety	Vehicle collision with pedestrians (above and below ground)	Temporary	Adverse	residual	Risk reduced	High	✓	mitigation	!
59	Human health and safety	Vehicle accidents (above and below ground)	Long term	Adverse	residual	Risk reduced	High	✓	mitigation	!
60	Human health and safety	Exposure from mine gas extraction	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
61	Human health and safety	Ventilation failure	Temporary	Adverse		Risk reduced	Medium	✓	mitigation	!
62	Human health and safety	Underground vehicle fire	Temporary	Adverse		Risk reduced	Medium	✓	mitigation	!
63	Human health and safety	Underground vehicle exhaust exposure	Temporary	Adverse		Risk reduced	Medium	✓	mitigation	!
64	Human health and safety	Heat stress above and below ground	Long term	Adverse		Risk reduced	Medium	✓	mitigation	!
65	Human health and safety	Construction accidents -surface infrastructure	Long term	Adverse		Risk reduced	Medium	✓	mitigation	!
66	Human health and safety	Construction accidents -underground infrastructure	Long term	Adverse		Risk reduced	Medium	✓	mitigation	!
67	Human health and safety	Uncontrolled gas release - underground pressure release	Temporary	Adverse		Risk reduced	Medium	✓	mitigation	!
68	Human health and safety	Uncontrolled gas release - underground ignition	Temporary	Adverse		Risk reduced	Medium	✓	mitigation	!
69	Human health and safety	Uncontrolled gas release - underground asphyxiation	Temporary	Adverse		Risk reduced	Medium	✓	mitigation	!
70	Human health and safety	Waste stability with heat	Long term	Neutral		Risk reduced	Eliminated	✓	mitigation	!
71	Human health and safety	Bites / stings	Long term	Adverse		Risk reduced	Medium	✓	mitigation	✓
72	Human health and safety	Drugs and alcohol abuse	Long term	Adverse		Risk reduced	Medium	✓	mitigation	!
73	Human health and safety	Strata / ground stability	Long term	Adverse		Risk reduced	Medium	✓	mitigation	!
74	Human health and safety	Mine drill and blasting	Not applicable	Neutral		Risk same	Eliminated	!	unmitigated	!
75	Human health and safety	Ignition of flammable materials	Short term	Adverse		Risk reduced	Medium	✓	mitigation	!
76	Human health and safety	Fall from height	Medium term	Adverse	residual	Risk reduced	High	✓	mitigation	!
77	Human health and safety	Electrical incident	Short term	Adverse		Risk reduced	Medium	✓	mitigation	!
78	Human health and safety	Exposure from Naturally Occurring Radioactive Material (NORM)	Not applicable	Neutral		Risk reduced	Eliminated	✓	mitigation	!
79	Socio economics	Community acceptance of the Proposal (Titjikala)	Short term	Adverse		Risk reduced	Low	✓	mitigation	✓
80	Socio economics	Community acceptance of the Proposal (Alice Springs)	Short term	Adverse		Risk reduced	Medium	✓	mitigation	✓
81	Socio economics	Regional acceptance of the Proposal (NT/Australia)	Temporary	Adverse		Risk reduced	Low	✓	mitigation	✓
82	Socio economics	Not mining salt (no product export)	Not applicable	Neutral		Risk same	Eliminated	!	unmitigated	!
83	Socio economics	Not mining salt (no product local)	Not applicable	Neutral		Risk same	Eliminated	!	unmitigated	!
84	Socio economics	Not mining salt (tourism)	Not applicable	Neutral		Risk same	Eliminated	!	unmitigated	!
85	Socio economics	Not mining salt (employment)	Not applicable	Neutral		Risk same	Eliminated	!	unmitigated	!
86	Socio economics	Not mining salt (royalties)	Not applicable	Neutral		Risk same	Eliminated	!	unmitigated	!
87	Socio economics	Employment opportunities - construction	Long term	Beneficial	immediate	Risk same	Extreme	!	unmitigated	!

Hazard Indentification				Residual Risk (Opportunity) and Mitigation Evaluation						
Risk ID	Hazard	Aspect / Descriptor	Duration	Nature	Warning	Management	Residual		Likelihood	Co
88	Socio economics	Employment opportunities - operations	Long term	Beneficial	immediate	Risk same	Extreme	!	unmitigated	!
89	Socio economics	Employment opportunities - ancillary employment	Long term	Beneficial	immediate	Risk reduced	Extreme	!	unmitigated	✓
90	Closure and rehabilitatior	Room seal failure	Long term	Adverse		Risk reduced	Low	✓	mitigation	!
91	Closure and rehabilitatior	Accident during surface to underground decommissioning	Short term	Adverse		Risk same	Medium	!	unmitigated	!
92	Closure and rehabilitatior	Shaft seals fail	Not applicable	Adverse		Risk reduced	Eliminated	✓	mitigation	✓
93	Closure and rehabilitatior	Decline seals fail	Not applicable	Neutral		Risk reduced	Eliminated	✓	mitigation	!
94	Closure and rehabilitatior	No surface remediation (environmental)	Long term	Adverse		Risk reduced	Low	✓	mitigation	!
95	Closure and rehabilitatior	No surface remediation	Long term	Adverse		Risk reduced	Medium	✓	mitigation	!
96	Closure and rehabilitatior	No groundwater monitoring	Long term	Adverse		Risk reduced	Low	!	unmitigated	✓
97	Closure and rehabilitatior	No gas monitoring is undertaken	Not applicable	Adverse		Risk reduced	Eliminated	✓	mitigation	!
98	Closure and rehabilitatior	No institutional control period monitoring	Long term	Adverse		Risk reduced	Low	✓	mitigation	✓
99	Closure and rehabilitatior	Future land uses (other land grazing)	Temporary	Neutral		Risk reduced	Eliminated	✓	mitigation	!
100	Closure and rehabilitatior	Earthquakes	Long term	Adverse		Risk same	Low	!	unmitigated	!
101	Closure and rehabilitatior	Climate change	Long term	Adverse		Risk same	Low	!	unmitigated	!
102	Closure and rehabilitatior	Human intrusion	Not applicable	Neutral		Risk reduced	Eliminated	✓	mitigation	!
103	Bushfire	Natural bushfires occurring	Short term	Adverse		Risk reduced	Medium	✓	mitigation	!
104	Bushfire	Back burning on surrounding pastoral land	Short term	Adverse	residual	Risk same	High	!	unmitigated	!
105	Bushfire	Hot works resulting in spontaneous ignition	Short term	Adverse		Risk reduced	Medium	✓	mitigation	!
106	Bushfire	Smoking cigarettes	Short term	Adverse	residual	Risk same	High	!	unmitigated	!
107	Bushfire	Increased ignition sources	Short term	Adverse		Risk reduced	Medium	✓	mitigation	!
108	Bushfire	Flammable and/or volatile fuels	Short term	Adverse		Risk reduced	Medium	✓	mitigation	!
109	Air quality	Construction phase impacts (construction traffic in Alice Springs)	Short-term	Adverse	residual	Risk reduced	High	!	unmitigated	✓
110	Air quality	Emissions to air (combustion gases and particulates) from mining activiti	Long-term	Adverse		Risk reduced	Medium	!	unmitigated	✓
111	Air quality	Loss of containment of 1 TEU of product salt at the Chandler Facility imp	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
112	Air quality	Loss of containment of 1 TEU of solid waste (as beryllium) at the Chandl	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
113	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
114	Air quality	Loss of containment of 1 TEU liquid/sludge waste (as formaldehyde) at tl	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
115	Air quality	Simultaneous loss of containment of 2 TEU liquid/sludge waste (as forma	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
116	Air quality	Loss of containment of 1 TEU of product salt at Apirnta Facility	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
117	Air quality	Loss of containment of 1 TEU of solid waste (as beryllium) at Apirnta Fac	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
118	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
119	Air quality	Loss of containment of 1 TEU liquid/sludge waste (as formaldehyde) at A	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
120	Air quality	Loss of containment of 1 TEU of product salt at Apirnta Facility	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
121	Air quality	Loss of containment of 1 TEU of solid waste (as beryllium) at Apirnta Fac	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
122	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
123	Air quality	Loss of containment of 1 TEU liquid/sludge waste (as formaldehyde) at A	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
124	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)	Temporary	Adverse		Risk reduced	Low	✓	mitigation	!
125	Noise and vibration	Blasting activities result in increased noise levels	Temporary	Adverse		Risk reduced	Medium	✓	mitigation	!
126	Noise and vibration	Blasting activities result in vibration	Temporary	Adverse		Risk reduced	Medium	✓	mitigation	!
127	Noise and vibration	Blasting activities result in vibration on known items of cultural heritage si	Long term	Adverse		Risk reduced	Medium	✓	mitigation	!
128	Noise and vibration	Construction and operation noise	Temporary	Adverse		Risk reduced	Medium	✓	mitigation	✓
129	Visual amenity	Visibility of above ground infrastructure	Long term	Adverse		Risk reduced	Low	✓	mitigation	!
130	Visual amenity	Visibility of decline entry	Long term	Adverse		Risk reduced	Low	✓	mitigation	!
131	Visual amenity	Visibility of spoil stockpiles	Long term	Adverse		Risk reduced	Low	✓	mitigation	!
132	Visual amenity	Visibility of run of mine salt stockpile	Long term	Adverse		Risk reduced	Low	✓	mitigation	!
133	Visual amenity	Visibility of detention/sedimentation ponds	Long term	Adverse		Risk reduced	Low	✓	mitigation	!
134	Visual amenity	Visibility of access roads	Long term	Adverse		Risk reduced	Low	✓	mitigation	!

Hazard Indentification				Residual Risk (Opportunity) and Mitigation Evaluation						
Risk ID	Hazard	Aspect / Descriptor	Duration	Nature	Warning	Management	Residual		Likelihood	Co
135	Visual amenity	Visibility of accommodation village	Long term	Adverse		Risk reduced	Low	✓	mitigation	!
136	Visual amenity	Subsidence causing changes to land form	Long term	Adverse		Risk reduced	Low	!	unmitigated	✓

Northstar No: 16.1012
Project: Chandler Facility
Scenario: Option 3
Client: Tellus Holdings

Hazard Indentification				CRI	
Risk ID	Hazard	Aspect / Descriptor	nsequence	CRI Pre-M	CRI Post-M
1	Biodiversity	Loss of habitat and/or mortality of threatened fauna species	unmitigated	12	8
2	Biodiversity	Removal of vegetation	mitigation	15	10
3	Biodiversity	Loss of fauna habitat from removal of vegetation	mitigation	15	10
4	Biodiversity	Habitat fragmentation from removal of vegetation	unmitigated	15	9
5	Biodiversity	Fauna displacement injury or mortality from removal of vegetation	mitigation	9	4
6	Biodiversity	Fauna strike (vehicle)	unmitigated	15	10
7	Biodiversity	Removal of vegetation resulting in edge effects	unmitigated	10	6
8	Biodiversity	Altered hydrology leading to flora mortality and loss of habitat	unmitigated	6	4
9	Biodiversity	Groundwater abstraction (at 50 m below ground level) impacting vegetati	mitigation	2	0
10	Biodiversity	Contamination of soil and water	unmitigated	6	0
11	Biodiversity	Erosion and sedimentation of soils	unmitigated	16	8
12	Biodiversity	Dust deposition from vehicle traffic and earthworks	unmitigated	10	6
13	Biodiversity	Construction light, noise and vibration	unmitigated	10	8
14	Biodiversity	Operational light, noise and vibration	unmitigated	10	8
15	Biodiversity	Introduction and spread of weeds and invasive species	unmitigated	8	4
16	Biodiversity	Increased predator species	unmitigated	8	4
17	Biodiversity	Increased introduced fauna	unmitigated	8	4
18	Biodiversity	Bushfire	mitigation	15	6
19	Biodiversity	Salt erosion and spoil erosion	mitigation	20	4
20	Biodiversity	Soil compaction and topsoil loss	unmitigated	6	4
21	Groundwater	Changes to groundwater levels	unmitigated	10	6
22	Groundwater	Changes to groundwater chemistry	unmitigated	6	2
23	Groundwater	Changes to groundwater flow (direction)	mitigation	9	2
24	Groundwater	Contamination of Horseshoe Bend Shale aquatards from drilling activitie	unmitigated	4	0
25	Groundwater	Contamination of Langra aquifer from drilling activities	unmitigated	4	0
26	Groundwater	Contamination of Hermannsberg Formation groundwater from drilling act	unmitigated	4	0
27	Groundwater	Contamination of Stairway Sandstone groundwater from drilling activities	unmitigated	2	0
28	Groundwater	Contamination of Jay Creek Limestone groundwater from drilling activitie	unmitigated	2	0
29	Groundwater	Contamination of Titjikala water supply through loss of containment	unmitigated	0	0
30	Groundwater	Contamination of Alice Springs aquifer through loss of containment	unmitigated	0	0
31	Groundwater	Contamination of Great Artesian Basin through loss of containment	unmitigated	0	0
32	Groundwater	Contamination of livestock through loss of containment	unmitigated	0	0
33	Groundwater	Uncontrolled inflow of groundwater during construction	unmitigated	4	2
34	Groundwater	Uncontrolled inflow of groundwater during operations	mitigation	5	4
35	Groundwater	Engineered uses of naturally occurring corrosive groundwater	mitigation	20	10
36	Groundwater	Over abstraction of groundwater leading to local or regional drawdown	unmitigated	2	0
37	Groundwater	Lack of groundwater for supply	mitigation	4	0
38	Surfacewater	Surface water ingress into decline area and general mining infrastructure	unmitigated	12	3
39	Surfacewater	Contaminated surface water runoff off-site	unmitigated	4	2
40	Surfacewater	Salt dissolution and transport off-site	mitigation	16	2

Hazard Indentification				CRI	
Risk ID	Hazard	Aspect / Descriptor	nsequence	CRI Pre-M	CRI Post-M
41	Surfacewater	Flash flooding into mine infrastructure area	mitigation	12	3
42	Surfacewater	Flooding of access/haul roads	mitigation	12	6
43	Surfacewater	Soil erosion leading to excess sedimentation in watercourses	mitigation	12	2
44	Surfacewater	Contamination of regional surface waters (Hugh and Finke Rivers) throu	unmitigated	4	0
45	Surfacewater	Contamination of Hugh River through loss of containment	unmitigated	4	0
46	Surfacewater	Contamination of Finke River through loss of containment	unmitigated	4	0
47	Surfacewater	Altered hydrology surrounding Maryvale Hills	mitigation	15	10
48	Surfacewater	Altered hydrology surrounding the mine infrastructure area	unmitigated	20	20
49	Cultural heritage	Physical disturbance to known sites	unmitigated	12	0
50	Cultural heritage	Physical disturbance to unknown sites	unmitigated	3	3
51	Cultural heritage	Loss of trees (>5m) of value to traditional owners	mitigation	15	10
52	Cultural heritage	Loss of scarred trees	unmitigated	6	3
53	Cultural heritage	Disturbance of sensitive land at the decline entry	unmitigated	0	0
54	Human health and safety	Exposure from dry waste	unmitigated	6	3
55	Human health and safety	Exposure from wet waste	unmitigated	6	3
56	Human health and safety	Exposure from fuel spills	unmitigated	2	2
57	Human health and safety	Exposure from surface traffic fumes	unmitigated	2	2
58	Human health and safety	Vehicle collision with pedestrians (above and below ground)	unmitigated	20	10
59	Human health and safety	Vehicle accidents (above and below ground)	unmitigated	20	10
60	Human health and safety	Exposure from mine gas extraction	unmitigated	10	4
61	Human health and safety	Ventilation failure	unmitigated	12	6
62	Human health and safety	Underground vehicle fire	unmitigated	16	8
63	Human health and safety	Underground vehicle exhaust exposure	unmitigated	20	4
64	Human health and safety	Heat stress above and below ground	unmitigated	15	6
65	Human health and safety	Construction accidents -surface infrastructure	unmitigated	15	5
66	Human health and safety	Construction accidents -underground infrastructure	unmitigated	15	5
67	Human health and safety	Uncontrolled gas release - underground pressure release	unmitigated	10	5
68	Human health and safety	Uncontrolled gas release - underground ignition	unmitigated	10	5
69	Human health and safety	Uncontrolled gas release - underground asphyxiation	unmitigated	10	5
70	Human health and safety	Waste stability with heat	unmitigated	8	0
71	Human health and safety	Bites / stings	mitigation	25	6
72	Human health and safety	Drugs and alcohol abuse	unmitigated	20	4
73	Human health and safety	Strata / ground stability	unmitigated	10	5
74	Human health and safety	Mine drill and blasting	unmitigated	0	0
75	Human health and safety	Ignition of flammable materials	unmitigated	12	8
76	Human health and safety	Fall from height	unmitigated	15	10
77	Human health and safety	Electrical incident	unmitigated	12	8
78	Human health and safety	Exposure from Naturally Occurring Radioactive Material (NORM)	unmitigated	8	0
79	Socio economics	Community acceptance of the Proposal (Titjikala)	mitigation	12	3
80	Socio economics	Community acceptance of the Proposal (Alice Springs)	mitigation	16	6
81	Socio economics	Regional acceptance of the Proposal (NT/Australia)	mitigation	8	3
82	Socio economics	Not mining salt (no product export)	unmitigated	0	0
83	Socio economics	Not mining salt (no product local)	unmitigated	0	0
84	Socio economics	Not mining salt (tourism)	unmitigated	0	0
85	Socio economics	Not mining salt (employment)	unmitigated	0	0
86	Socio economics	Not mining salt (royalties)	unmitigated	0	0
87	Socio economics	Employment opportunities - construction	unmitigated	20	20

Hazard Indentification				CRI	
Risk ID	Hazard	Aspect / Descriptor	nsequence	CRI Pre-M	CRI Post-M
88	Socio economics	Employment opportunities - operations	unmitigated	20	20
89	Socio economics	Employment opportunities - ancillary employment	mitigation	15	20
90	Closure and rehabilitatior	Room seal failure	unmitigated	6	2
91	Closure and rehabilitatior	Accident during surface to underground decommissioning	unmitigated	5	5
92	Closure and rehabilitatior	Shaft seals fail	mitigation	4	0
93	Closure and rehabilitatior	Decline seals fail	unmitigated	1	0
94	Closure and rehabilitatior	No surface remediation (environmental)	unmitigated	4	2
95	Closure and rehabilitatior	No surface remediation	unmitigated	8	4
96	Closure and rehabilitatior	No groundwater monitoring	mitigation	3	2
97	Closure and rehabilitatior	No gas monitoring is undertaken	unmitigated	2	0
98	Closure and rehabilitatior	No institutional control period monitoring	mitigation	9	4
99	Closure and rehabilitatior	Future land uses (other land grazing)	unmitigated	1	0
100	Closure and rehabilitatior	Earthquakes	unmitigated	1	1
101	Closure and rehabilitatior	Climate change	unmitigated	3	3
102	Closure and rehabilitatior	Human intrusion	unmitigated	2	0
103	Bushfire	Natural bushfires occurring	unmitigated	12	8
104	Bushfire	Back burning on surrounding pastoral land	unmitigated	12	12
105	Bushfire	Hot works resulting in spontaneous ignition	unmitigated	12	8
106	Bushfire	Smoking cigarettes	unmitigated	16	16
107	Bushfire	Increased ignition sources	unmitigated	16	8
108	Bushfire	Flammable and/or volatile fuels	unmitigated	16	8
109	Air quality	Construction phase impacts (construction traffic in Alice Springs)	mitigation	15	5
110	Air quality	Emissions to air (combustion gases and particulates) from mining activiti	mitigation	16	8
111	Air quality	Loss of containment of 1 TEU of product salt at the Chandler Facility imp	unmitigated	3	2
112	Air quality	Loss of containment of 1 TEU of solid waste (as beryllium) at the Chandl	unmitigated	3	2
113	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)	unmitigated	2	1
114	Air quality	Loss of containment of 1 TEU liquid/sludge waste (as formaldehyde) at tl	unmitigated	6	4
115	Air quality	Simultaneous loss of containment of 2 TEU liquid/sludge waste (as form	unmitigated	6	3
116	Air quality	Loss of containment of 1 TEU of product salt at Apirnta Facility	unmitigated	3	2
117	Air quality	Loss of containment of 1 TEU of solid waste (as beryllium) at Apirnta Fac	unmitigated	3	2
118	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)	unmitigated	2	1
119	Air quality	Loss of containment of 1 TEU liquid/sludge waste (as formaldehyde) at A	unmitigated	3	2
120	Air quality	Loss of containment of 1 TEU of product salt at Apirnta Facility	unmitigated	3	2
121	Air quality	Loss of containment of 1 TEU of solid waste (as beryllium) at Apirnta Fac	unmitigated	3	2
122	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)	unmitigated	2	1
123	Air quality	Loss of containment of 1 TEU liquid/sludge waste (as formaldehyde) at A	unmitigated	3	2
124	Air quality	Simultaneous loss of containment of 2 TEU of solid waste (as beryllium)	unmitigated	2	1
125	Noise and vibration	Blasting activities result in increased noise levels	unmitigated	5	4
126	Noise and vibration	Blasting activities result in vibration	unmitigated	20	8
127	Noise and vibration	Blasting activities result in vibration on known items of cultural heritage s	unmitigated	12	4
128	Noise and vibration	Construction and operation noise	mitigation	15	6
129	Visual amenity	Visibility of above ground infrastructure	unmitigated	10	4
130	Visual amenity	Visibility of decline entry	unmitigated	10	4
131	Visual amenity	Visibility of spoil stockpiles	unmitigated	10	4
132	Visual amenity	Visibility of run of mine salt stockpile	unmitigated	10	4
133	Visual amenity	Visibility of detention/sedimentation ponds	unmitigated	10	4
134	Visual amenity	Visibility of access roads	unmitigated	10	4

Hazard Indentification				CRI	
Risk ID	Hazard	Aspect / Descriptor	nsequence	CRI Pre-M	CRI Post-M
135	Visual amenity	Visibility of accommodation village	unmitigated	10	4
136	Visual amenity	Subsidence causing changes to land form	mitigation	6	4