Decision Report

Application for Works Approval

Division 3, Part V *Environmental Protection Act 1986*

Works Approval Number	W6258/2019/1
Applicant	Strandline Resources Limited
ACN	090 603 642
File Number	DER2019/000290
Premises	Coburn Mineral Sands Project M09/102, M09/103, M09/104, M09/105, M09/106, M09/111 and M09/112 COBURN WA 6532
Date of Report	2 September 2019
Status of Report	Final

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1. Definitions of terms and acronyms

In this Decision Report, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
ACN	Australian Company Number
AER	Annual Environment Report
Applicant	Strandline Resources Limited
Category/ Categories/ Cat.	Categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CFU	Colony Forming Unit
Decision Report	refers to this document.
Delegated Officer	an officer under section 20 of the EP Act.
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation As of 1 July 2017, the Department of Environment Regulation (DER), the Office of the Environmental Protection Authority (OEPA) and the Department of Water (DoW) amalgamated to form the Department of Water and Environmental Regulation (DWER). DWER was established under section 35 of the *Public Sector Management Act 1994* and is responsible for the administration of the *Environmental Protection Act 1986* along with other legislation.
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
ha	hectares
m	metres
m^3	cubic metres

Minister	the Minister responsible for the EP Act and associated regulations
MS	Ministerial Statement
mtpa	million tonnes per annum
Noise Regulations	*Environmental Protection (Noise) Regulations 1997* (WA)
Occupier	has the same meaning given to that term under the EP Act.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Project	Coburn Zircon Project
Risk Event	As described in *Guidance Statement: Risk Assessment*
SBWHP	Shark Bay World Heritage Property
Strandline	Strandline Resources Limited
TDS	Total Dissolved Solids
UDR	*Environmental Protection (Unauthorised Discharges) Regulations 2004* (WA)
WQPN 22	Water Quality Protection Note 22
WWTP	Waste Water Treatment Plant

2. Purpose and scope of assessment

Strandline Resources Limited (Strandline) (Applicant) (formerly known as Gunson Resources Limited) submitted an application for a works approval on 9 May 2019 for construction of a Waste Water Treatment Plant (WWTP) and a landfill. The WWTP and landfill will be part of the development of the Coburn Zircon Project (the Project), which will include the excavation and processing of low-grade heavy mineral sand deposit.

3. Background

Strandline previously held works approval W5962/2016/1 for construction of a Category 85 WWTP and Category 89 putrescible landfill. The works approval expired on 22 May 2019 before construction commenced. This application is for similar works at the same location. The WWTP and landfill will operate under an EP Act Part V registration or licence, which will need to be applied for after submission of construction compliance/commissioning documents.

Strandline has also held works approvals for Category 8 mineral sands mining or processing at the same premises: W4857/2011/1 which expired in 2014; and W5566/2013/1 which expired on 25 May 2019. An application for a new works approval will be required prior to constructing infrastructure for mineral sands mining.

Table 3 lists the prescribed premises categories that have been applied for by this application.

Table 2: Prescribed Premises Categories

Classification of Premises	Description	Approved Premises production or design capacity or throughput
Category 85	Sewage facility: premises – (a) on which sewage is treated (excluding septic tanks); or (b) from which treated sewage is discharged onto land or into waters	75 cubic metres per day
Category 89	Putrescible landfill site	2,700 tonnes per year

4. Location and siting

4.1 Siting context

The Coburn Mineral Sands Project area is located approximately 84 kilometres (km) southeast of the town of Denham, within the Coburn and Hamelin pastoral leases.

The Project area is adjacent to the south-east boundary of the Shark Bay World Heritage Property (SBWHP). The Hamelin Pool Marine Reserve (Marine Reserve No. 6) is part of the SBWHP and is located approximately 30 km north of the Project.

The regional setting of the Project is shown in Figure 1.

Figure 1: Regional setting of the Project area

4.2 Sensitive land uses

The distances to residential and sensitive land uses are detailed in Table 3.

Table 3: Receptors and distance from activity boundary

Sensitive Land Uses	Distance from Prescribed Activity
Coburn Station homestead	15 km away
Hamelin Station homestead	30 km away
Denham (town)	84 km away

4.3 Specified ecosystems

Relevant specified sensitive environmental receptors (*Guidance Document: Environmental Siting)* and distances from the WWTP and Landfill are listed in Table 4 below.

Table 4: Sensitive environmental receptors

Specified environmental receptors	Distance from the Premises
Shark Bay World Heritage Property - covers a total area of 2.2 million hectares, including the marine reserves and terrestrial areas.	Approximately 4 km west of the WWTP and the Landfill
Hamelin Pool Marine Reserve - part of the Shark Bay World Heritage Property and Priority 1 Ecological Community Hamelin stromatolite	Approximately 30 km north
Biological component	**Distance from the Premises**
Priority 2 Flora (*Eremophila occidens*)	Within M09/105 approximately 2 km from the Landfill, (sourced from DWER GIS records).
Threatened Flora	Approximately 4 km east
Priority Fauna - vulnerable – *Leipoa ocellata* (Mallee Fowl)	Within the premises
Vegetation communities S5 and S10 (Figure 2 below)	More than 1 km away

4.4 Groundwater and water sources

The distances to groundwater and water sources are shown in Table 5.

Table 5: Groundwater and water sources

Groundwater and water sources	Distance from Premises and Environmental value
Gascoyne Groundwater Area	Premises located within the Area
Major watercourses and waterbodies	The Project Area is internally draining and has few surface water features due to low rainfall, high evaporative conditions and inferred high infiltration capacity dune soils. There are no defined watercourses, permanent fresh water bodies, or birridas (seasonally inundated, saline lakes) within the area that will be required for the access road, borrow pits or village. There are no known

	sensitive surface water features within the proposed area of disturbance. Most rainfall typically ponds in depression areas and evaporates or quickly infiltrates.
Groundwater	Groundwater is approximately 40 metres below ground level (mbgl) within an unsaturated superficial aquifer across the Project area as determined by drilling and ground water modelling. Flow is to the northwest to discharge through marine clay deposits into the Nilemah Embayment and Hamelin Pool which are approximately 30 km away. The groundwater in the superficial environment is saline, slightly acidic with pH 6.2 to 6.7 and of the sodium-chloride type. The water ranges between 8,000 to 11,000 mg/L Total Dissolved Solids (TDS).

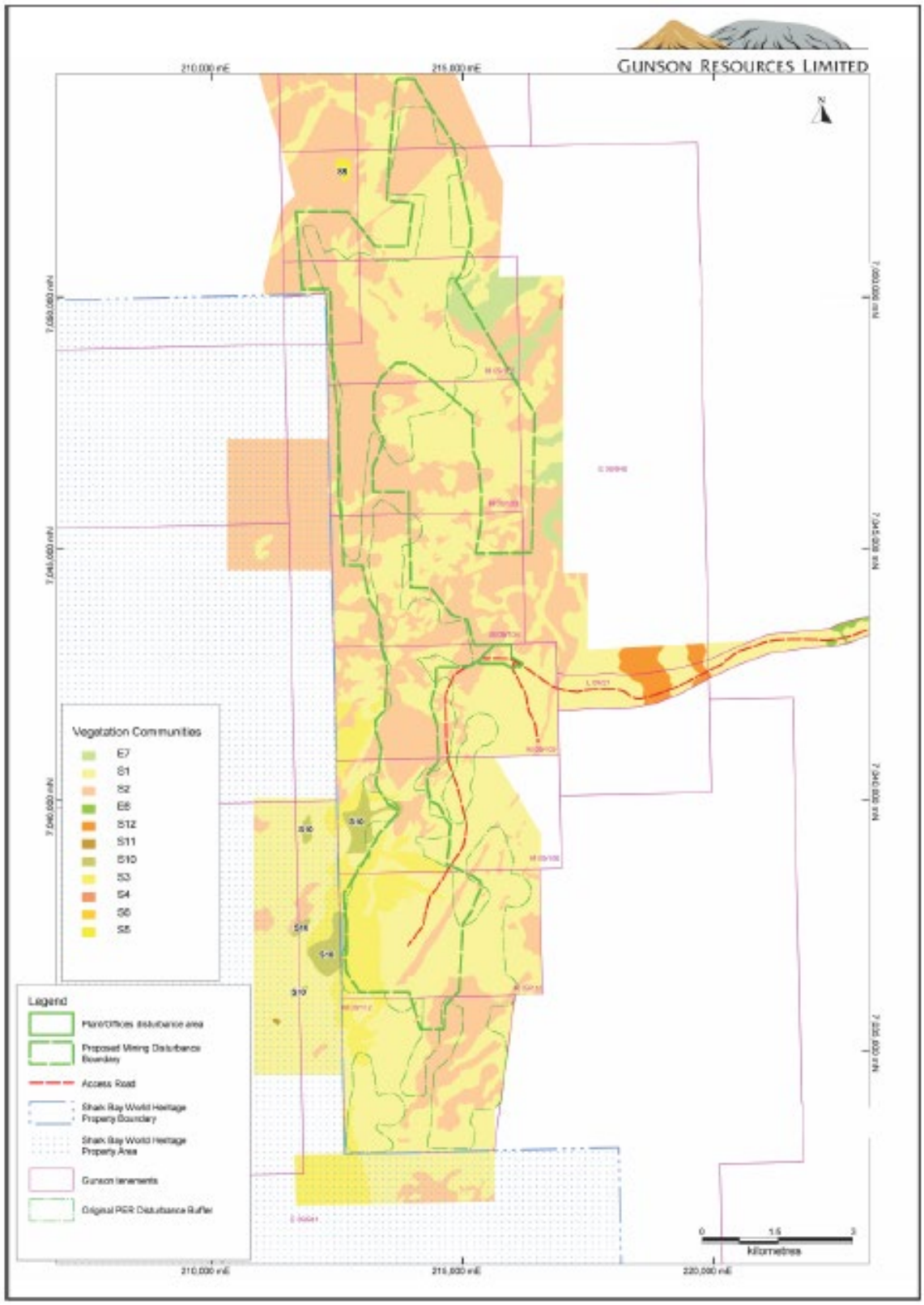
4.5 Soil type

The Edel province, which includes the Project Area, is characterised by 40-60m high active and stable, modern, calcareous dunes that formed above the Tamala Limestone over the last 10,000 years. The dunes are covered with calcareous soils of pale to reddish brown sand over loamy sand, and have deep profiles with a pH near 8.5. Soils have limited capacity to store water.

4.6 Meteorology

The region is characterised by low rainfall and high evaporation conditions. However, summer can bring significant rainfall and rare tropical cyclones.

Figure 2: Location of Vegetation communities S5 and S10



5. Overview of Premises

5.1 Operational aspects

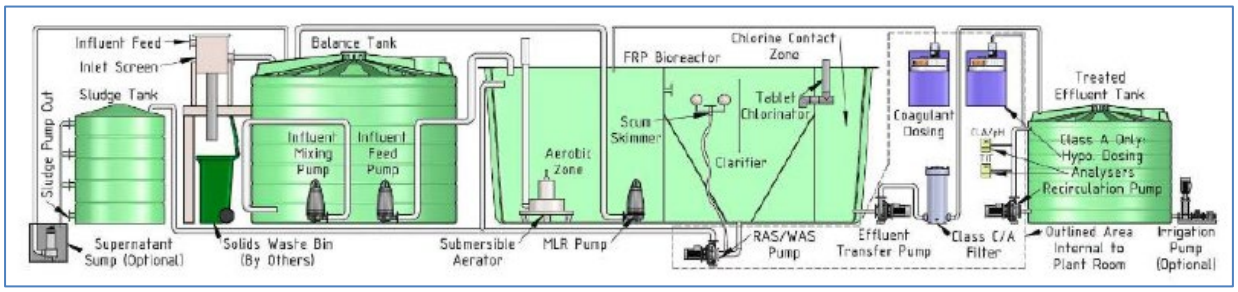
Strandline proposes to construct and operate a WWTP and a landfill to support development of the Coburn Zircon Project (sandmining). The information below is sourced from the Application.

5.1.1 Mine Village WWTP

The Mine Village WWTP will be located at a site accommodation village. The village will have the capacity to accommodate 200 people, but Strandline estimates that the maximum number of people on site at any one time will likely be 116. The WWTP will also accept macerated sewage pumped from a Minerals Separation Plant. A WWTP capacity of 75 m^3/day is proposed to ensure sufficient capacity in the system.

Sewage will be treated by a fully modular Activated Sludge Bioreactor ASBR-075 (75 m^3/day capacity) designed to treat domestic strength sewage. The elements of the activated sludge plant include:

- Anaerobic digestion of the raw sewage;
- Aeration section where oxygen is supplied and aerobic bacteria break down the sewage and remove ammonia from the effluent;
- Clarifier where the biological sludge (bacteria) and the clear effluent are separated so that the sludge can be returned into the process and the clear effluent can be allowed to exit the plant; and
- Disinfection of the clean effluent and pumping to irrigation field.



The system comprises online monitoring, analysis and control tools for the plant with alarms and controls to identify faults including faulty mixing and transfer pumps, aerators, incorrect chemical dosage, and high and low tank levels. The WWTP has a contingency storage capacity of 50 kL.

The remaining sludge will likely accumulate at a rate of 3 to 5 m^3 each month which can be stored within a 12 m^3 tank and removed offsite by a contracted septic pump out truck.

Table 6 shows the expected parameters for the effluent water.

Table 6: ASBR-075 effluent water quality

Parameter	Effluent
Biochemical Oxygen Demand	< 20 mg/L
Total Suspended Solids	< 30 mg/L
Faecal Coliform	< 10 cfu /100 ml Colony
Residual Free Chorine	0.2 – 2 mg/L
Total Nitrogen (TN)	< 50 mg/L
Total Phosphorus (TP)	4mg/L at highest coagulant dose rate
pH	6.5 – 8.5

Treated effluent will be discharged to a spray field. The main line from the WWTP to the sprayfield is approximately 1 km long and will be constructed of welded HDPE.

Based on 300 L/day per person with 116 people on site and 50 mg/L TN and 10 mg/L TP in effluent, the annual nutrient loading will be 635 kg TN and 76 kg TP per year.

A sprayfield of approximately 3.5 ha is proposed to meet the *Water Quality Protection Note 22* (WQPN 22) requirements for Risk Category B. Risk category B is for coarse grained soils (sands and gravels) with low risk of eutrophication of surface water within 500 m of the irrigation site.

5.1.2 Landfill

A 1.8 hectare (ha) putrescible landfill area will be operated for disposal of up to 2,700 tonnes per year of waste from the site village. Waste will be “domestic waste consisting of general refuse, green waste, paper and putrescibles”.

The capacity of the landfill is 54,000 tonnes and is expected to be operational for 20 years. Strandline proposes it will be managed in accordance with the *Environmental Protection (Rural Landfill) Regulations 2002.*

5.2 Infrastructure

The proposed infrastructure, as it relates to Category 85 and 89 activities, is listed in Table 7. Locations are shown in Figure 3.

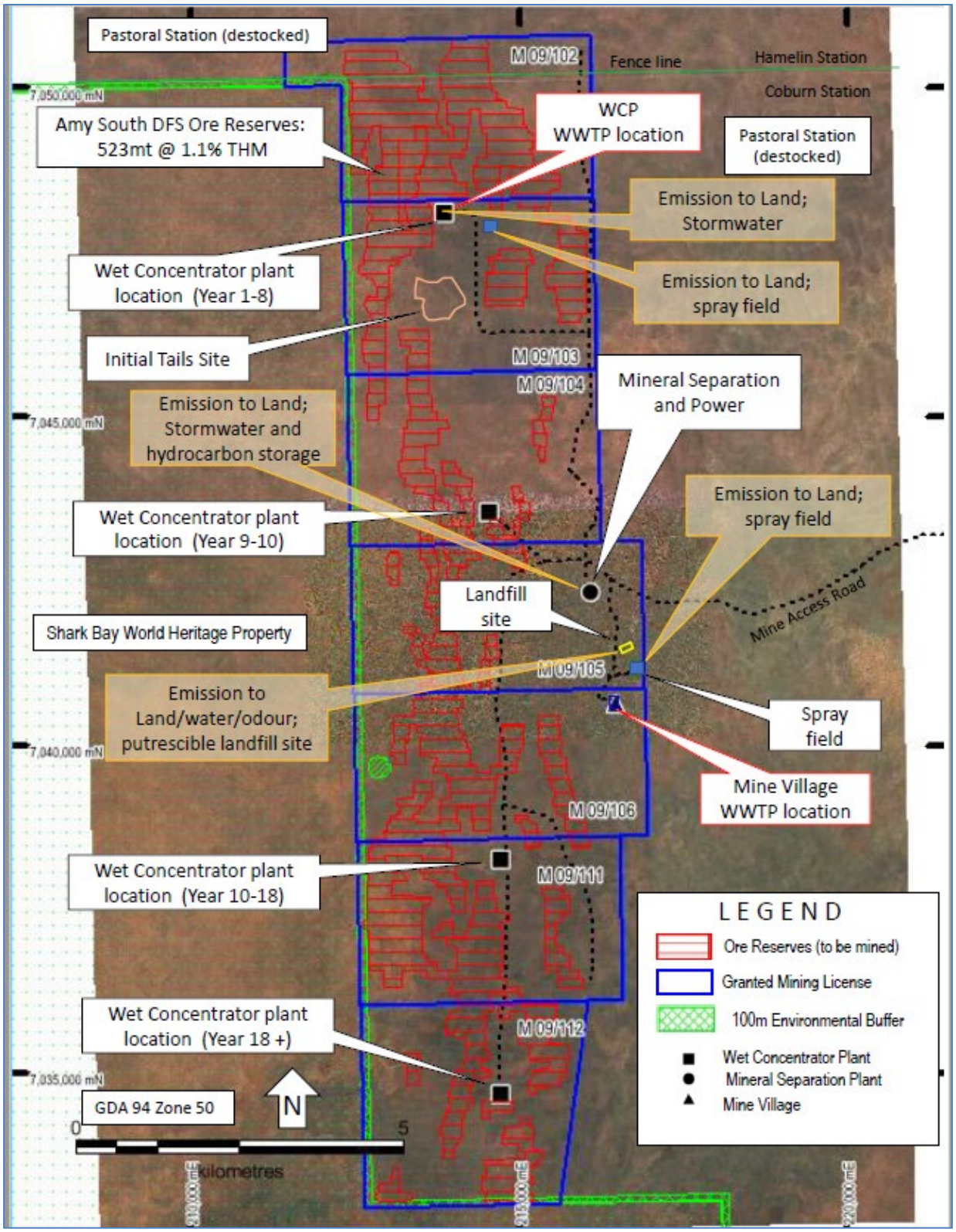
Table 7: Category 85 and 89 infrastructure

	Infrastructure
	Prescribed Activity Category 85
1	Fully modular Activated Sludge Bioreactor ASBR-075 with capacity of 75 m^3/day.
2	3.5 ha Spray Field with above ground sprinklers for dispersion of effluent
3	Pipeline to transport effluent from the WWTP to the spray field
	Prescribed Activity Category 89
1	1.8 ha landfill, fenced

5.3 Site plan

The Village WWTP and spray field is located within M09/106 and the Landfill within M09/105, as shown in Figure 3 site plan below. Construction of other infrastructure shown on the site plan will require approval by a separate works approval.

Figure 3: Site plan – location of the Mine Village WWTP and the landfill



5.4 Exclusions to the Premises

Strandline also intends to construct an additional WWTP within M09/103 to service a small number of personnel at the proposed Wet Concentrator Plant. The design capacity of this plant will be 10 m^3/day, and treated effluent will discharge to its own irrigation spray field. The plant will not meet the 20 cubic metres per day threshold for Category 85, and is not included in this assessment or works approval.

Strandline will store hydrocarbons (diesel) and chemicals at the premises. As fuel and chemical storage at the site is not expected to meet the Category 73 bulk storage of chemicals threshold, this activity is excluded from the scope of this assessment. The Applicant is referred to the requirements under the *Dangerous Goods Safety Act 2004* and associated regulations, along with the general provisions of the *Environmental Protection Act 1986* and *Environmental Protection (Unauthorised Discharges) Regulations 2004.*

6. Legislative context and other approvals

6.1 Part V of the EP Act

The overarching legislative framework of this assessment is the *Environmental Protection Act 1986 (EP Act)* and *Environmental Protection Regulations 1987* (EP Regulations).

The guidance statements which inform this assessment are:

- Guidance Statement: Regulatory Principles (July 2015);
- Guidance Statement: Setting Conditions (October 2015);
- Guidance Statement: Environmental Siting (November 2016);
- Guidance Statement: Decision Making (February 2017);
- Guidance Statement: Risk Assessment (February 2017); and
- Guideline: Industry Regulation Guide to Licensing (June 2019).

6.2 Part IV of the EP Act

The larger Coburn Mineral Sands Project (sand mining) was assessed as a Public Environmental Review (PER) under Part IV of the *Environmental Protection Act 1986* (EP Act). In addition, it is considered to be a “controlled action” under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The environmental assessment was conducted in accordance with the bilateral agreement between the Commonwealth of Australia and WA, meaning that the Commonwealth accredited the WA environmental impact assessment process. The PER was issued in July 2005 for an eight-week public review period and the Report and Recommendations of the WA Environmental Protection Authority (EPA) was published as EPA Bulletin 1211 in December 2005.

Environmental approval for the Project was granted by the State Minister for the Environment in May 2006 (Ministerial Statement No. 723) and the Commonwealth Minister for Environment and Heritage in July 2006.

Ministerial Statement 723 (MS 723) includes:

- Approval for clearing.
- Conditions 8-1 to 8-10 for conservation of significant flora species and vegetation communities that occur in the vicinity of the Project area. The Proponent is required to prepare a Declared Rare Flora Management Plan prior to the commencement of ground-disturbing activities, and maintain an undisturbed buffer of at least 50 m in width around

vegetation communities S5 and S10 as identified in Figure 3 above.

- Conditions 9-1 to 9-9 for preparation of a Threatened Fauna Management Plan prior to commencement of ground-disturbing activities.
- Conditions 12-1 to 12-5 for preparation of a Dust Management Plan prior to commencement of ground-disturbing activities, and its implementation prior to ground-disturbing activity. The Dust Management Plan must include the prevention of visible dust in the Shark Bay World Heritage Property, preventative measures to minimise fugitive dust sources as part of daily operations and monitoring of deposited dust levels at the boundary of the proposal area and at Hamelin Pool for the initial three years of the project.

6.3 Other Approvals

Other relevant approvals are listed in Table 8.

Table 8: Other approvals

Legislation	Number
EPBC Act	EPBC 2003/1221
Rights in Water and Irrigation Act 1914 administered by the Department of Water and Environmental Regulation	Groundwater licence - GWL159157(5)
Mining Act 1978- Administered by the Department of Mines, Industry Regulation and Safety	Reg. IDs 43813, 47646 and 66095

7. Consultation

The Application was advertised on the DWER website and the *West Australian* newspaper on 1 July 2019 for a 21 day comment period. No submissions were received.

The Application was referred to the Shire of Shark Bay for comment. The Shire advised that it had no objections to the proposed works approval for a waste water treatment plant and landfill at the Coburn Zircon Project.

8. Risk assessment

8.1 Determination of emission, pathway and receptor

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

The identification of the sources, pathways and receptors to determine Risk Events and the regulatory controls, are set out in Tables 9and 10 below. Applicant controls are sourced from the Application.

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

Risk Event						Consequence rating	Likelihood rating	Risk	Reasoning	Regulatory controls
Source/Activities		Potential emissions	Potential receptors	Potential pathway	Impact					
Category 85 WWTP Category 89 landfill	Construction of WWTP, irrigation spray field, and laying of pipelines. Construction of landfill	Noise	The closest sensitive land use is Coburn Station homestead - 15 km away	Air (wind borne)	Amenity	N/A	N/A	N/A	Distance to closest sensitive land use is sufficient to inform the risk of dust emissions as not foreseeable.	None specified in the Works Approval The *Environmental Protection (Noise) Regulations 1997* are applicable.
		Dust			Health and amenity					None specified in the Works Approval. The general provisions of the EP Act with respect to the causing of pollution and environmental harm apply.
		Dust	Shark Bay World Heritage Property 4 km west, Vegetation communities S5 and S10 4 km east, and P2 flora 2 km from landfill.	Air (wind borne)	Reduced health and viability of vegetation by smothering of leaves with dust.	Slight Onsite impact: minimal	Unlikely	Low	Scale of dust producing activities during construction is small and short term, with minimal on-site impact. Vegetation of conservation significance is more than 1 km away. MS 723 Conditions 8-1 to 8-10 require conservation of significant flora species and vegetation communities that occur in the vicinity of the Project area. The Proponent is required to prepare a Declared Rare Flora Management Plan prior to the commencement of ground-disturbing activities, and maintain an undisturbed buffer of at least 50 m in width around vegetation communities S5 and S10.	None specified in the Works Approval MS 723 Conditions 8-1 to 8-10 require conservation of significant flora species and vegetation communities that occur in the vicinity of the Project area. The general provisions of the EP Act with respect to the causing of pollution and environmental harm apply.
		Stormwater containing hydrocarbons by spills and leaks, from machinery and sediment from earth moving activities.	Soils and vegetation at the site of spill and along the flow path of contaminated stormwater.	Direct discharge and path of flow	Contamination of soils with hydrocarbons. Increased sediment loads impacting health and viability of terrestrial and riparian vegetation	Slight Onsite impact: minimal	Unlikely	Low	Scale of activities during construction is relatively small and short term. Vegetation of conservation significance is more than 1 km away. There are no surface water features on site.	None specified in the Works Approval The *Environmental Protection (Unauthorised Discharges) Regulations 2004* will apply. The general provisions of the EP Act with respect to the causing of pollution and environmental harm will apply.

Table 10: Identification of emissions, pathway and receptors during commissioning and operation

Risk Event						Consequence rating	Likelihood rating	Risk	Reasoning	Regulatory controls
Source/Activities		**Potential emissions**	**Potential receptors**	**Potential pathway**	**Impact**					
Category 85 WWTP	Operation of WWTP and irrigation spray field	Odour	The closest sensitive land use is Coburn Station homestead - 15 km away	Air (wind borne)	Amenity	N/A	N/A	N/A	Distance to closest sensitive land use is sufficient to inform the risk of odour as not foreseeable.	None specified in the Works Approval. The general provisions of the EP Act with respect to the causing of pollution and environmental harm apply.
	Operation of WWTP	Spills and leaks of sewage and waste water	Soils and vegetation in the vicinity of the WWTP.	Direct discharge	Increased nutrients in soils, and inundation of vegetation.	Minor Low level on site impacts	Unlikely	Medium	No conservation significant vegetation within 1 km of the WWTP, and no defined watercourses, permanent fresh water bodies or birridas on the premises. However a large spill is considered Minor due to potential contamination of soils and impact on vegetation in the spill area depending on volume of a spill. The proposed WWTP is modular and enclosed, and is fitted with alarms for malfunction, contingency storage capacity of 50 kL, and a 12 m^3 tank for storage of sludge. Given these controls, it is considered that the impacts will probably not occur.	The proposed WWTP type has reduced the risk, and will be conditioned as a construction requirement in the works approval. The *Environmental Protection (Unauthorised Discharges) Regulations 2004* will apply during the WWTP's operation.
			Groundwater	Infiltration	Contamination of groundwater	Minor	Rare	Low	Soils are sandy, but groundwater is 40 mbgl. Groundwater flow is to the northwest to discharge through marine clay deposits into the Nilemah Embayment and Hamelin Pool which are approximately 30 km away.	
	Discharge of effluent to the irrigation spray field	Nutrient rich waste water	Soils and vegetation at the spray field and within spray drift or overflow.	Direct discharge Airborne	Increased nutrients in soils and inundation by pooling – with reduced health and viability of vegetation.	Minor Low level on site impacts	Possible	Medium	There is no conservation significant vegetation within 1 km of the WWTP, and no defined watercourses, permanent fresh water bodies or birridas on the premises. Impacts considered restricted to the area of irrigation and its close vicinity. Using the expected effluent water quality, the Applicant has sized the spray field for low risk of eutrophication to a theoretical surface water within 500 m of the irrigation site (WQPN 22). Likewise, impact to soils and vegetation is considered to be low level on-site impacts.	The proposed size of the irrigation spray field has reduced the risk and will be conditioned as an infrastructure requirement in the works approval. In addition, sprinklers will be required to be evenly spaced to prevent pooling and spray drift. Commissioning and time limited operating conditions will require monitoring of effluent to confirm the WWTP is operating as expected.
	Transport of effluent by 1 km pipeline from the WWTP to the spray field.	Nutrient rich waste water	Soils and vegetation in the path of a spill	Direct discharge	Increased nutrients and other contaminants in soils and inundation by pooling.	Minor Low level on site impacts	Possible	Medium	Treated effluent is expected to meet manufacturer's specifications (as listed in Section 5.1.1). The pipeline is 1 km long. A pipeline rupture may cause 75 kL per day of treated effluent to be discharged. However, there is no conservation significant vegetation in the vicinity of the route, and no defined watercourses, permanent fresh water bodies or birridas on the premises. The Applicant states that the pipeline will be constructed of HDPE, and will be inspected daily because it is within viewing distance of frequently trafficked roadways.	The Applicant's infrastructure controls have reduced the risk and will be conditioned on the works approval as infrastructure requirements.
			Groundwater	Infiltration						

Risk Event						Consequence rating	Likelihood rating	Risk	Reasoning	Regulatory controls
Source/Activities		Potential emissions	Potential receptors	Potential pathway	Impact					
									Soils are sandy, but groundwater is 40 mbgl. Groundwater flow is to the northwest to discharge through marine clay deposits into the Nilemah Embayment and Hamelin Pool which are approximately 30 km away. The WWTP has a storage capacity of 50 kL for contingencies (almost one day capacity).	
Category 89 Landfill	Deposition and burial of waste	Odour Dust	The closest sensitive land use is Coburn Station homestead - 15 km away	Air	Heath and amenity	N/A	N/A	N/A	Distance to closest sensitive land use is sufficient to inform the risk of odour and dust as not foreseeable.	None specified in the Works Approval. The general provisions of the EP Act with respect to the causing of pollution and environmental harm apply.
		Dust	Priority 2 flora approximately 2 km from the landfill Other sensitive receptors at least 1 km away.	Air	Smothering of vegetation with dust	Slight Minimal on site impact	Unlikely	Low	The scale of operations is small (maximum of 2,700 tonnes per year but expected to be less), and fugitive dust is not expected to be produced in large amounts. Sensitive environmental receptors are at least 1 km away.	Risk is Low due in part to location of the landfill and buffer distance to sensitive receptors. The landfill location will be defined in the works approval infrastructure site plan. The general provisions of the EP Act with respect to the causing of pollution and environmental harm apply.
		Odour - windblown putrescible waste and waste attracting scavengers	Local species, and conservation significant flora and EPBC Act fauna exist on the premises.	Air	Fauna species and terrestrial ecosystems may be impacted by increase of scavenger species which may range across distances.	Moderate Mid-level on site impacts	Unlikely	Medium	Waste will include odorous putrescible waste attractive to scavengers able to travel some distance. EPBC Act fauna are found on the premises. The Applicant has stated that the landfill will be managed in accordance with the *Environmental Protection Act (Rural Landfill) Regulations 2002*. The Regulations require the landfill to be fenced to reduce entry of land animals and waste prevented from being washed or blown outside. Regulation 5 requires the tipping area to be no more than 30 m in length and 2 m above ground level which reduces amount of exposed waste. Waste is also required to be covered, which will reduce access to waste from scavengers including birds. Feral animals will be managed as per the Threatened Fauna Management Plan required by MS 724.	Applicant's controls have lowered the risk and will be conditioned as infrastructure and time limited operating requirements of the works approval. Fencing will be required to be 1.8 m high which is considered adequate to minimise windblown waste and entry by larger animals. MS 724 requires a Threatened Fauna Management Plan.
		Stormwater containing solid waste or waste leachate	Sandy soils and vegetation. Sensitive environmental receptors at least 1 km away.	Direct discharge along flow path	Contamination of soils and land by leachate and putrescible waste	Minor	Unlikely	Medium	The scale of operations is small (capacity of 2,700 tonnes per year but expected to be less), and sensitive environmental receptors are at least 1 km away. The Applicant has stated that the landfill will be managed in accordance with the *Environmental Protection Act (Rural Landfill) Regulations 2002*. Regulation 10 requires stormwater to be diverted away from waste or retained on site. Regulation 5 requires the tipping area to be no more than 30 m in length and 2 m above ground level.	The Applicant's controls have lowered the risk and will be conditioned in the works approval as infrastructure and time limited operating condition requirements.

Risk Event						Consequence rating	Likelihood rating	Risk	Reasoning	Regulatory controls
Source/Activities		Potential emissions	Potential receptors	Potential pathway	Impact					
		Waste leachate	Groundwater – 40mbgl.	Infiltration through ground	Contamination of groundwater which flows towards	Slight	Rare	Low	Scale of the landfill is relatively small. Soils are sandy, but groundwater is 40 mbgl and the landfill is relatively small. Groundwater flow is to the northwest to discharge through marine clay deposits into the Nilemah Embayment and Hamelin Pool which are approximately 30 km away.	None specified in the Works Approval.

8.2 Consequence and likelihood of risk events

A risk rating will be determined for risk events in accordance with the risk rating matrix set out in Table 11 below.

Table 11: Risk rating matrix

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

DWER will undertake an assessment of the consequence and likelihood of the Risk Event in accordance with Table 12 below.

Table 12: Risk criteria table

Likelihood		**Consequence**		
The following criteria has been used to determine the likelihood of the Risk Event occurring.		**The following criteria has been used to determine the consequences of a Risk Event occurring:**		
			Environment	**Public health* and amenity (such as air and water quality, noise, and odour)**
Almost Certain	The risk event is expected to occur in most circumstances	Severe	• **onsite impacts**: catastrophic • **offsite impacts local scale**: high level or above • **offsite impacts wider scale:** mid-level or above • Mid to long-term or permanent impact to an area of high conservation value or special significance^ • Specific Consequence Criteria (for environment) are significantly exceeded	• Loss of life • **Adverse health effects:** high level or ongoing medical treatment • Specific Consequence Criteria (for public health) are significantly exceeded • **Local scale impacts:** permanent loss of amenity
Likely	The risk event will probably occur in most circumstances	Major	• **onsite impacts**: high level • **offsite impacts local scale**: mid-level • **offsite impacts wider scale**: low level • Short-term impact to an area of high conservation value or special significance^ • Specific Consequence Criteria (for environment) are exceeded	• **Adverse health effects:** mid-level or frequent medical treatment • Specific Consequence Criteria (for public health) are exceeded • **Local scale impacts**: high level impact to amenity
Possible	The risk event could occur at some time	Moderate	• **onsite impacts**: mid-level • **offsite impacts local scale**: low level • **offsite impacts wider scale**: minimal • Specific Consequence Criteria (for environment) are at risk of not being met	• **Adverse health effects:** low level or occasional medical treatment • Specific Consequence Criteria (for public health) are at risk of not being met • **Local scale impacts:** mid-level impact to amenity
Unlikely	The risk event will probably not occur in most circumstances	Minor	• **onsite impacts**: low level • **offsite impacts local scale**: minimal • **offsite impacts wider scale**: not detectable • Specific Consequence Criteria (for environment) likely to be met	• Specific Consequence Criteria (for public health) are likely to be met • **Local scale impacts:** low level impact to amenity
Rare	The risk event may only occur in exceptional circumstances	Slight	• **onsite impact**: minimal • Specific Consequence Criteria (for environment) met	• **Local scale**: minimal to amenity • Specific Consequence Criteria (for public health) met

^ Determination of areas of high conservation value or special significance should be informed by the *Guidance Statement: Environmental Siting.*
* In applying public health criteria, DWER may have regard to the Department of Health's *Health Risk Assessment (Scoping) Guidelines.*
"onsite" means within the Prescribed Premises boundary.

8.3 Acceptability and treatment of Risk Event

DWER will determine the acceptability and treatment of Risk Events in accordance with the Risk treatment table 13 below:

Table 13: Risk treatment table

Rating of Risk Event	Acceptability	Treatment
Extreme	Unacceptable.	Risk Event will not be tolerated. DWER may refuse application.
High	May be acceptable. Subject to multiple regulatory controls.	Risk Event may be tolerated and may be subject to multiple regulatory controls. This may include both outcome-based and management conditions.
Medium	Acceptable, generally subject to regulatory controls.	Risk Event is tolerable and is likely to be subject to some regulatory controls. A preference for outcome-based conditions where practical and appropriate will be applied.
Low	Acceptable, generally not controlled.	Risk Event is acceptable and will generally not be subject to regulatory controls.

9. Applicant's comments

The Applicant was provided with the draft Decision Report and draft Works Approval on 12 August 2019. The Applicant provided comments which are summarised, along with DWER's response, in Appendix 2.

10. Conclusion

This assessment of the risks of activities on the Premises has been undertaken with due consideration of a number of factors, including the documents and policies specified in this Decision Report (summarised in Appendix 1).

Based on this assessment, it has been determined that the Works Approval will be granted subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

DWER notes that it may review the appropriateness and adequacy of controls at any time and that, following a review, DWER may initiate amendments to the approval under the EP Act.

Louise Lavery
A/Manager, Resource Industries
Delegated Officer under section 20 of the *Environmental Protection Act 1986*

Appendix 1: Key documents

	Document title	In text ref	Availability
1.	Application form dated 09/05/2019 and supporting documentation, received by email 29 April 2019 9:40AM, from Brendan Cummins, Strandline Resources Limited. *Subject: Coburn WA - mining and power generation renewal W5566/2013/1 email 3 Attachment 2 3b*,	Application	DWER records (A1789364, A1807322, A1794548)
2.	Email: received by email 6 June 2019 12:01PM, from Brendan Cummins, Strandline Resources Limited. *Re: Applicant Notification - Application For A Works Approval - Request For Further Information,* with two attachments.		
3.	Ministerial Statement 723	MS 723	accessed at www.epa.wa.gov.au/
4.	DER, July 2015. *Guidance Statement: Regulatory principles.*	-	accessed at www.dwer.wa.gov.au
5.	DER, October 2015. *Guidance Statement: Setting Conditions.*		
6.	DER, August 2016. *Guidance Statement: Licence Duration.*		
7.	DER, February 2017. *Guidance Statement: Risk Assessments*.		
8.	DER, December 2016 *Guidance Statement: Environmental Siting*.		
9.	DWER, June 2019 Guideline*: Industry Regulation Guide to Licensing*		
10.	*Water Quality Protection Note 22*	WQPN 22	accessed at www.dwer.wa.gov.au

Appendix 2: Summary of applicant's comments on risk assessment and draft conditions

Condition/Table	Summary of Licence Holder comment	DWER response
Works Approval Table 2	Applicant reviewed the quote from the manufacturer and realised that WWTP will be to Class C and not Class A. Therefore Faecal Coliform effluent is specified as <1000 cfu/1000 ml Colony – not < 10 cfu/100 ml Colony.	Risk rating remains the same and edits are made to the Decision Report and Works Approval to reflect Class C standard of effluent.
Decision Report Table 10	Applicant considered the reasoning suggests the consequence for spills and leaks from the WWTP should be Slight, not Minor.	Decision Table is edited to separate risk to groundwater and soils and vegetation. Risk to groundwater is rated Low and soils and vegetation Medium.

Attachment 1: Works Approval W6258/2019/1