

## Appendix A2 Waste Activities triggered by GNR 921, in terms of the NEM:WA (Waste Management Licence)

<b>CATEGORY A</b>	
<b>Storage of waste</b>	
(1) The storage of general waste in lagoons.	Yes, as listed below.
<b>Recycling or recovery of waste</b>	
<b>Treatment of waste</b>	
(6) The treatment of general waste using any form of treatment at a facility that has the capacity to process in excess of 10 tons but less than 100 tons.	Yes, as listed below.
(7) The treatment of hazardous waste using any form of treatment at a facility that has the capacity to process in excess of 500 kg but less than 1 ton per day excluding the treatment of effluent, wastewater or sewage.	Yes, as listed below.
<b>Construction, expansion or decommissioning of facilities and associated structures and infrastructure</b>	
(12) The construction of a facility for a waste management activity listed in Category A of this Schedule (not in isolation to associated waste management activity).	Yes, for the above.
<b>CATEGORY B</b>	
<b>Storage of hazardous waste</b>	
(1) The storage of hazardous waste in lagoons excluding storage of effluent, wastewater or sewage.	Yes, as listed below.
<b>Treatment of waste</b>	
(4) The treatment of hazardous waste in excess of 1 ton per day calculated as a monthly average; using any form of treatment excluding the treatment of effluent, wastewater or sewage.	Yes, as listed below.
(5) The treatment of hazardous waste in lagoons, excluding the treatment of effluent, wastewater or sewage.	Yes, as listed below.
(6) The treatment of general waste in excess of 100 tons per day calculated as a monthly average, using any form of treatment.	Yes, as listed below.
<b>Construction of facilities and associated structures and infrastructure</b>	
(10) The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity).	Yes, for the above.
<b>CATEGORY C</b>	
<b>Storage of waste</b>	
(1) The storage of general waste at a facility that has the capacity to store in excess of 100 m <sup>3</sup> of general waste at any one time, excluding the storage of waste in lagoons or temporary storage of such waste.	Yes, as listed below.
(2) The storage of hazardous waste at a facility that has the capacity to store in excess of 80 m <sup>3</sup> of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste.	Yes, as listed below.

# Waste Streams and Quantities

<b>A. Waste Streams and Treatment</b>			
• <b>Desalination</b>			
	Treatment	First Phase	Target (Long-Term)
		For a 15 MI/d plant	For a 60 MI/d plant
<b>Waste Water</b>			Scope and Threshold for Assessment and Application
Total brine stream (include backwash water) 60 % of seawater intake	Not treated (to be released via permitted coastal waters discharge pipeline)	20 MI/d	80 MI/d
Pre-treatment backwash water (included in brine stream listed above) ~10% of seawater intake		3.5 MI/d	14 MI/d
Staff facilities and offices grey water	Not treated, may be reused for flushing of toilets, to be stored on site for removal by tanker, or to be released to municipal sewer)	1.5 m <sup>3</sup> /d	3.0 m <sup>3</sup> /d
Staff facilities and offices sewage	Not treated (use of conservancy tank with removal by tanker, or released to municipal sewer)	0.5 m <sup>3</sup> /d	1.0 m <sup>3</sup> /d
<b>Solid Waste</b>			
Solid content mixed in backwash water (when measured as dried to 30% = ~0.022 tn/MI	Not treated or separated (typically released via permitted coastal waters discharge pipeline)	0.33 tn/d	1.32 tn/d
Waste water treated or separated		None anticipated unless specifically dictated by the coastal waters discharge permit requirements	
Solid waste treated or separated			

- Abalone Flow-Through Aquaculture**

	Treatment	Initial	Target	Long-Term Maximum
		150 tn/yr	600 tn/yr	Scope and Threshold for Assessment and Application 1520 tn/yr
<b>Waste Water</b>				
Abalone production water outflow	Not treated (released via permitted coastal waters discharge pipeline)	108 MI/d	432 MI/d	1100 MI/d
Processing plant waste water (containing organic effluent, and small quantities of cleaning agents)	May require treatment depending on qualities before release to sewer or permitted coastal waters pipeline (as per options in Section 4.9 of EIR).	6 m <sup>3</sup> /d	24 m <sup>3</sup> /d	130 m <sup>3</sup> /d
Staff facilities and offices grey water	Not treated, may be reused for flushing of toilets, to be stored on site for removal by tanker, or to be released to municipal sewer.	11 m <sup>3</sup> /d	42 m <sup>3</sup> /d	110 m <sup>3</sup> /d
Staff facilities and offices sewage	Not treated (initial use of conservancy tank with removal by tanker, or released to municipal sewer)	3 m <sup>3</sup> /d	13 m <sup>3</sup> /d	34 m <sup>3</sup> /d
<b>Solid Waste</b>				
Abalone production solid waste component (mixed with production water outflow)	Not treated or separated (typically released via permitted coastal waters discharge pipeline)	15 tn/yr	60 tn/yr	150 tn/yr
Processing plant solid waste (only 30-35% of an abalone is edible)	Removed to landfill site as the base case management option unless further processed (as per options in Section 4.9 of EIR).	105 tn/yr	429 tn/yr	1030 tn/yr
Waste water treated	None anticipated unless specifically dictated by the coastal waters discharge permit requirements			
<b>Solid waste treated or processed as by-products</b>	<b>Maximum 1030 tn/yr (if not disposed at landfill)</b> (Air emissions licence required, including an assessment of odour risks and impacts)			



• **Marine (Seawater) Recirculating Aquaculture**

	Treatment	Initial	Target	Long-Term Maximum
		275 tn/yr production	5500 tn/yr production	Scope and Threshold for Assessment and Application 20425 tn/yr production <sup>(c)</sup>
<b>Waste Water</b>				
Production water outflow	Production water circulated within the aquaculture system is continuously treated to ensure optimal conditions for fish health and growth. It is unlikely that further treatment of the outflow water (effluent) would be required. Depending on qualities of outflow water achieved, treatment of the outflow water (effluent) may be required before release to the sewer or permitted coastal waters pipeline (as per options in Section 4.9 of EIR).	0.6 MI/d	11 MI/d	44 MI/d
Processing plant waste water (containing organic effluent, and small quantities of cleaning agents)	May require treatment depending on qualities before release to sewer or permitted coastal waters pipeline (as per options in Section 4.9 of EIR).	7.2 m <sup>3</sup> /d (0.007 ML/d)	144 m <sup>3</sup> /d (0.144 ML/d)	570 m <sup>3</sup> /d (0.57 ML/d)
Staff facilities and offices grey water	Not treated, may be reused for flushing of toilets, to be stored on site for removal by tanker, or to be released to municipal sewer.	3 m <sup>3</sup> /d	55 m <sup>3</sup> /d	220 m <sup>3</sup> /d
Staff facilities and offices sewage	Not treated (initial use of conservancy tank with removal by tanker, or released to municipal sewer)	1 m <sup>3</sup> /d	17 m <sup>3</sup> /d	70 m <sup>3</sup> /d
<b>Solid Waste</b>				
Production solid waste (aquaculture sludge), measured as dry weight	Removed to landfill as the base case management option unless processed or treated (as per options in Section 4.9 of EIR).	90 tn/yr <sup>(a)</sup>	1788 tn/yr <sup>(a)</sup>	7100 tn/yr <sup>(a)</sup>
Processing plant solid waste (for filleted finfish)	Removed to landfill as the base case management option unless processed or treated (as per options in Section 4.9 of EIR).	193 tn/yr <sup>(b)</sup>	3850 tn/yr <sup>(b)</sup>	1500 tn/yr <sup>(b)</sup>
<b>Waste water treated</b>		Treatment of production water outflow not anticipated. But is dictated by the quality requirements of the coastal waters discharge		

	<p>permit, maximum of 44 MI/d of effluent treatment may be required</p>
	<p><b>Processing plant waste water is likely to require treatment: 0.57 MI/d</b></p>
<p><b>Solid waste treated or processed as by-products</b></p>	<p><b>Maximum 8600 tn/yr (if not disposed at landfill)</b>  (Air emissions licence required, including an assessment of odour risks and impacts for fish processing waste)</p>

*(a) dry weight equivalent, total weight would depend on moisture content and level of dewatering*

*(b) wet weight*

*(c) 50% of total long-term marine and fresh water finfish and shellfish production (tabled above)*

• **Freshwater Recirculating Aquaculture**

	Treatment	Initial 550 tn/yr production	Target 5500 tn/yr production	Long-Term Scope and Threshold for Assessment and Application 20425 tn/yr production <sup>(c)</sup>
<b>Waste Water</b>				
Production water outflow	Production water circulated within the aquaculture system is continuously treated to ensure optimal conditions for fish health and growth. It is unlikely further treatment of the outflow water (effluent) would be required but depending on qualities of outflow water achieved, treatment of the outflow water (effluent) may be required before release to to sewer or permitted coastal waters pipeline (as per options in Section 4.9 of EIR).	1.1 MI/d	44 MI/d	44 MI/d
Processing plant waste water (containing organic effluent, and small quantities of cleaning agents)	May require treatment depending on qualities before release to sewer or permitted coastal waters pipeline (as per options in Section 4.9 of EIR).	15 m <sup>3</sup> /d	570 m <sup>3</sup> /d	570 m <sup>3</sup> /d
Staff facilities and offices grey water	Not treated, may be reused for flushing of toilets, to be stored on site for removal by tanker, or to be released to municipal sewer.	6 m <sup>3</sup> /d	220 m <sup>3</sup> /d	220 m <sup>3</sup> /d
Staff facilities and offices sewage	Not treated (initial use of conservancy tank with removal by tanker, or released to municipal sewer)	2 m <sup>3</sup> /d	70 m <sup>3</sup> /d	70 m <sup>3</sup> /d
<b>Solid Waste</b>				
Production solid waste dry weight, in solution	Removed to landfill as the base case management option unless processed or treated (as per options in Section 4.9 of EIR).	179 tn/yr <sup>(a)</sup>	7100 tn/yr <sup>(a)</sup>	7100 tn/yr <sup>(a)</sup>
Processing plant solid waste (for filleted finfish)	Removed to landfill as the base case management option unless processed or treated (as per options in Section 4.9 of EIR).	385 tn/yr <sup>(b)</sup>	1500 tn/yr <sup>(b)</sup>	1500 tn/yr <sup>(b)</sup>
<b>Waste water treated</b>		Treatment of production water outflow not anticipated. But is dictated by the quality requirements of the coastal waters discharge permit, maximum of 44 MI/d of effluent treatment may be required		

	<p><b>Processing plant waste water is likely to require treatment: 0.57 MI/d</b></p>
<p><b>Solid waste treated or processed as by-products</b></p>	<p><b>Maximum 8600 tn/yr (if not disposed at landfill)</b></p> <p>(Air emissions licence required, including an assessment of odour risks and impacts for fish processing waste)</p>

*(a) dry weight equivalent, total weight would depend on moisture content*

*(b) wet weight*

*(c) 50% of total long-term marine and fresh water finfish and shellfish production (tabled above)*



<b>B. Water, Waste Water and Solid Waste Storage</b>		
• <b>Desalination</b>		
	First Phase For a 15 MI/d plant	Target Scope and Threshold for Assessment and Application For a 60 MI/d plant
Fresh Water:		
Product Water <sup>(a)</sup>	0.46 MI	1.83 MI
Water Containing Waste :		
Brine <sup>(a)</sup>	0.61 MI	2.44 MI
Pre-Treatment backwash water <sup>(a)</sup>	0.11 MI	0.43 MI

(a) 30 minute buffer tanks, assuming 18 hours pumping per day

• <b>Intake Water Storage <sup>(a)</sup></b>			
	Initial	Target	Long-Term Scope and Threshold for Assessment and Application
Seawater intake water in reservoir	250 MI	500 MI	1000 MI
Fresh water intake in reservoir or tanks	2 MI	20 MI	100 MI
<b>Total</b>	<b>252 MI</b>	<b>520 MI</b>	<b>1100 MI</b>

(a) 24 hour storage

• <b>Aquaculture Production Water Storage <sup>(a)</sup></b>			
	Initial	Target	Long-Term Scope and Threshold for Assessment and Application
Seawater in various tanks, ponds and raceways <sup>(a)</sup>	95 750 ML	1 419 000ML	5 152 600 ML
Fresh water in various tanks, ponds and raceways <sup>(b)</sup>	71 250 ML	742 500ML	2 451 000 ML
<b>Total</b>	<b>167 000 ML</b>	<b>2 161 500 ML</b>	<b>7 603 600 ML</b>

(a) 30 kg/m<sup>3</sup>

(b) 60 kg/m<sup>3</sup>

(c) 30 kg/m<sup>3</sup> with a 50/50 split between seawater and fresh water aquaculture production

(d) 60 kg/m<sup>3</sup> with a 50/50 split between seawater and fresh water aquaculture production

• <b>Processing Plant Waste</b>			
	Initial	Target	Long-Term Maximum Scope and Threshold for Assessment and Application
<b>Waste Water <sup>(c)</sup></b>			
Abalone	42 m <sup>3(a)</sup>	168 m <sup>3(b)</sup>	504 m <sup>3(b)</sup>
Finfish and Shellfish	101 m <sup>3(a)</sup>	114 m <sup>3(b)</sup>	2280 m <sup>3(b)</sup>

<b>Solid Waste</b>			
Scenario 1: If all waste is stored frozen for 7 days	13 tn	156 tn	3118 tn
Scenario 2: If all waste is cold stored for 48 hours	4 tn	45 tn	891 tn

(a) 7 day storage (interim)

(b) 1 day storage

(c) Can be above-ground tanks

<b>• Sewage and Grey Water (Offices and Staff Facilities)</b>			
	Initial	Target	Long-Term Scope and Threshold for Assessment and Application
Sewage	30 m <sup>3</sup> (a) (b)	N/A. Linked to sewer system	
Grey Water (c)	88 m <sup>3</sup> (a)	220 m <sup>3</sup> (a)	4400 m <sup>3</sup> (a)

(a) 4 day storage

(b) 5 x 6000 L conservancy tanks in the ADZ

(c) Can be above-ground tanks

<b>• Aquaculture Production Waste (Sludge)</b>			
	Initial	Target	Long-Term Scope and Threshold for Assessment and Application
<b>Sludge separated from process</b> (a)			
Scenario 1: As dewatered solids	8 tn	60 tn	600 tn
Scenario 2: Slurry (~5% solids)	160 tn	1200 tn	12000 tn

(a) 7 day storage



The activities listed above will take place within the following area:

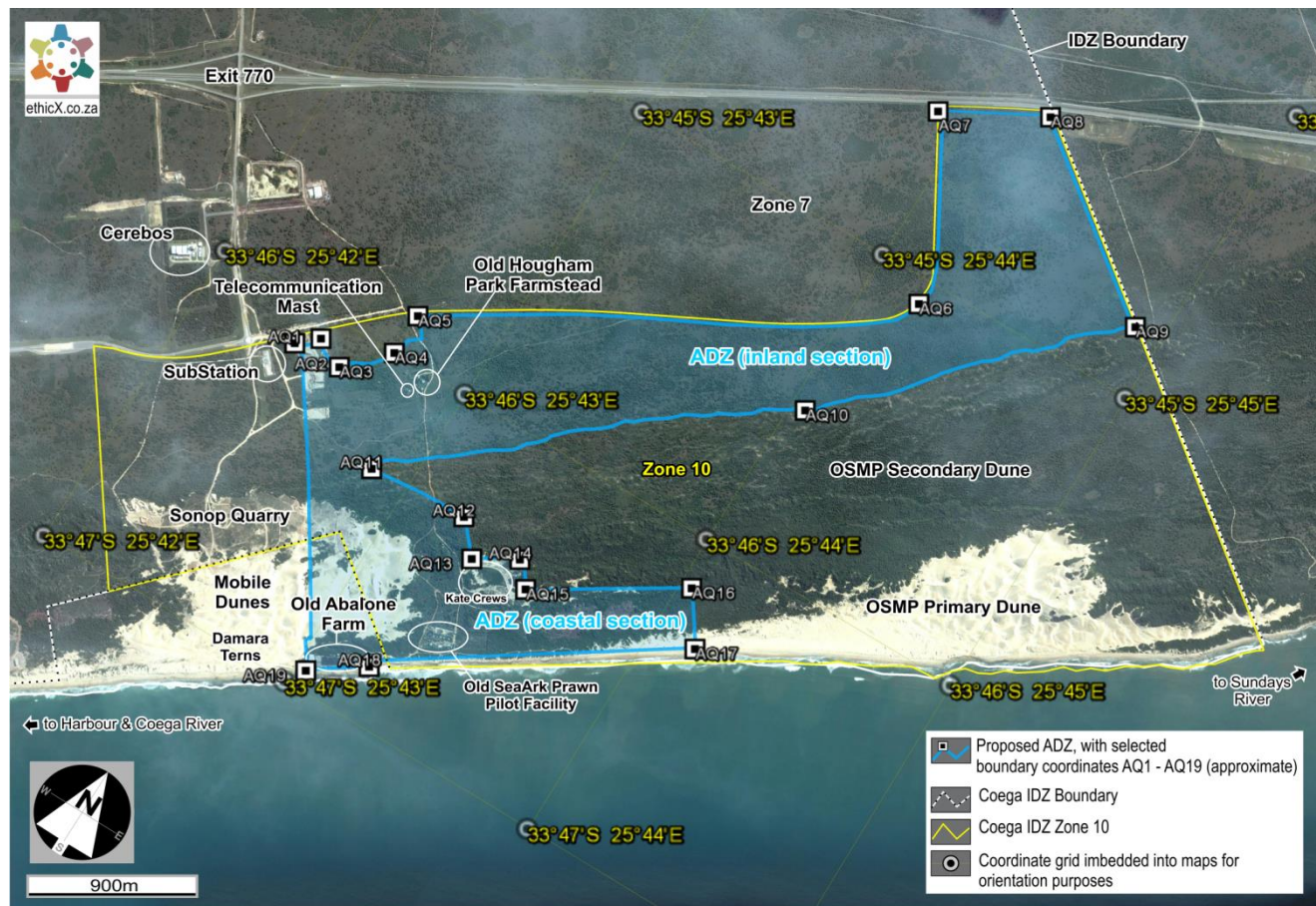


Figure Error! No text of specified style in document.-1: Orientation Map with Coordinate References

EIR Report Figure 1-5: Ref	Latitude	Longitude
AQ1	33°46'7.41"S	25°42'24.47"E
AQ2	33°46'5.18"S	25°42'27.79"E
AQ3	33°46'7.35"S	25°42'34.18"E
AQ4	33°46'0.13"S	25°42'42.53"E
AQ5	33°45'52.30"S	25°42'42.58"E
AQ6	33°45'4.33"S	25°44'12.16"E
AQ7	33°44'32.49"S	25°43'53.98"E
AQ8	33°44'22.99"S	25°44'15.16"E
AQ9	33°44'48.00"S	25°44'54.03"E
AQ10	33°45'31.23"S	25°44'3.47"E
AQ11	33°46'19.90"S	25°42'51.63"E
AQ12	33°46'18.77"S	25°43'13.75"E
AQ13	33°46'24.44"S	25°43'19.90"E
AQ14	33°46'20.14"S	25°43'28.65"E
AQ15	33°46'24.14"S	25°43'33.03"E
AQ16	33°46'8.81"S	25°44'2.81"E
AQ17	33°46'17.72"S	25°44'10.15"E
AQ18	33°46'50.06"S	25°43'13.56"E
AQ19	33°46'56.44"S	25°43'2.64"E