

4. IDENTIFICATION OF POTENTIAL ENVIRONMENTAL IMPACTS

- 4.1.1 This Chapter of the report aims to identify and summarise the potential environmental impacts of the Qatalum Project from construction through to operation. The significance of the potential environmental impacts is assessed in Chapter 6, taking into account the sensitivity of the baseline conditions (described in the following Chapter) and proposed mitigation / control techniques. A summary of the impact assessment is presented in Chapter 9.
- 4.1.2 The potential impacts have been identified on the basis of the description of the Project, the processes involved, materials usage and the anticipated emissions and wastes, as described in the previous Chapter. The results of the potential impact identification process are presented in Table 4.1 below, which describes the activity / part of the process that could result in impacts, the associated environmental aspect and the potential impact.
- 4.1.3 Non-routine operation and minor accidents (e.g. small scale spillages) are included in the impact identification; however, large scale emergency events / activities with the potential to result in environmental impacts are identified and addressed in Section 6.10. Social impacts are identified and assessed in Chapter 7.
- 4.1.4 At this early stage in the Project, insufficient information is available to usefully identify (and subsequently assess) the potential impacts associated with the decommissioning phase of the Project. However, as a guideline, it is anticipated that decommissioning impacts will be similar to those that could occur during the construction and commissioning Phases of the project. At the end of plant life, and prior to decommissioning, a detailed EIA will be undertaken to address environmental impacts associated with decommissioning, thus, this is not discussed further here.

Table 4.1 – Potential Environmental Impacts

Ref No	Activity / Source	Aspect	Potential Impact ^{a,b,c}	Impact Assessment Section
Typical Operation (main activities)				
1.	Operation of the main plant	Combustion gases (CO ₂ , CO, NO _x and water vapour) and Process gases (SO ₂ , fluorides, PAH, particulates, traces of PFC)	Degradation in air quality Contribution to global warming and ground level ozone formation	6.3, 6.6 & 6.11
2.	Operation of the Qatalum Project	Noise generation	Disturbance to surrounding environment (residential populations, workers and fauna)	6.6, 6.7 & 6.11
3.	Aluminium Plant operation – seawater scrubber	Seawater discharge (heat load, pH, COD)	Degradation in seawater quality	6.5
4.	Aluminium Plant operation – seawater scrubber	Seawater discharge (sulphite)	Improvement in quality of QASCO discharge (residual chloride destruction)	6.5
5.	Aluminium Plant – fresh process water systems	Untreated process water	Contamination of soil and groundwater	6.10
6.	Cooling tower systems	Salt aerosol	Increased corrosion potential	6.3
7.	Generation, handling and storage of process specific wastes hazardous wastes (e.g. spent pot liner)	Spillage / leakage from inappropriate storage	Contamination of soil and groundwater	6.4, 6.8 & 6.10

Ref No	Activity / Source	Aspect	Potential Impact ^{a,b,c}	Impact Assessment Section
Abnormal / Upset Operational Conditions				
8.	Initial start-up of pots	CO ₂ , CO, SO ₂ , NO _x , HF, PM ₁₀ , PAH, traces of PFC)	Degradation in air quality Contribution to global warming and ground level ozone formation	6.3 & 6.11
9.	Venting (power station start-up / shut down)	Natural gas	Contribution to global warming	6.3
10.	Emergency diesel generator / black start generators	CO ₂ , CO, SO ₂ , NO _x , PM ₁₀ , VOC	Degradation in air quality Contribution to global warming and ground level ozone formation	6.3
11.	Failure of supply of QASCO discharge	Acidic seawater discharge	Degradation in seawater quality	6.10
General Activities (Operational / Construction / Commissioning)				
12.	Presence of facilities (construction workers camp, Aluminium Plant, Power Plant, Service Corridor, Port facilities, storage area for dredged fines)	Footprint (land-take)	Loss of terrestrial habitat / species	6.6
13.		Visibility	Visual impact	6.12
14.		Lighting	Visual impact (night time)	6.12
15.	Presence of facilities (Port facilities, Service Corridor)	Footprint (seabed)	Loss of marine habitat	6.5 & 6.6
16.	Construction of facilities and operation of plant	Use of raw materials	Depletion of natural resources	6.12

Ref No	Activity / Source	Aspect	Potential Impact ^{a,b,c}	Impact Assessment Section
17.	Materials use, storage and handling	Dust generation and deposition	Smothering of flora and fauna	6.6
18.		Dust generation	Degradation in air quality	6.3
19.		Spillage / leakage from inappropriate storage / handling	Soil and groundwater contamination	6.4 & 6.10
20.			Contamination of seawater and sediment	6.5 & 6.10
21.			Physical disturbance of the seabed, loss of habitat, damage to marine flora and fauna	6.10
22.	Maintenance and use of plant / equipment and transportation	Dust generation and deposition	Smothering of flora and fauna	6.6
23.		Combustion gases (vehicle exhaust) and dust	Degradation in air quality Contribution to global warming and ground level ozone formation	6.3
24.		Noise generation	Disturbance to surrounding environment (residential populations, workers and terrestrial / marine fauna)	6.7 & 6.6
25.		Fuel leaks, particularly when refuelling / servicing	Soil and groundwater contamination	6.4
26.			Degradation in marine water and sediment quality	6.5
27.	Transport (material delivery, workers etc)	Increased traffic (use of roadways and shipping lanes)	Traffic disruption	6.9
28.	Shipping movements	Ballast water	Degradation in marine water and sediment quality	6.9 & 6.5
29.	Use and storage of hazardous materials / wastes (e.g. diesel, oils, paints, lubrication fluids)	Accidental spillage	Soil and groundwater contamination	6.4 & 6.10
30.		Spillage / leakage from inappropriate storage	Soil and groundwater contamination	6.4 & 6.8
31.	Production, handling and storage of non-hazardous liquid waste (e.g. domestic / kitchen waste, etc)	Spillage / leakage from inappropriate storage	Soil and groundwater contamination	6.4 & 6.8
32.		Inappropriate storage	Increase of pests / vermin	6.8

Ref No	Activity / Source	Aspect	Potential Impact ^{a,b,c}	Impact Assessment Section
33.	Heavy rainfall	Stormwater	Soil and groundwater contamination	6.4
Construction Specific Activities				
34.	Site preparation, filling, grading, levelling and compacting, creation of temporary roadways / access routes etc	Disturbance to land surface and vegetation	Loss of / damage to terrestrial habitat, flora and fauna	6.6
35.		Disturbance to land surface	Disturbance of archaeological remains	6.12
36.		Dust generation and deposition	Smothering of flora and fauna	6.6
37.		Dust generation	Degradation in air quality	6.3
38.		Noise generation	Disturbance to surrounding environment (residential populations, workers and fauna)	6.7 & 6.6
39.	Dredging	Disturbance of the seabed, flora and fauna	Loss of / damage to marine habitat, flora and fauna	6.5
40.		Disturbance and re-suspension of contaminated sediment	Degradation of water and sediment quality	6.5
41.		Disturbance and re-suspension of sediment	Smothering of marine flora and fauna	6.5
42.	Preparation of dredged materials - dewatering	Run-off water containing fine sediment	Smothering of marine flora and fauna	6.5
43.	Preparation, storage and use of dredged materials	Contaminated sediment	Degradation of soil and groundwater	6.4

Ref No	Activity / Source	Aspect	Potential Impact ^{a,b,c}	Impact Assessment Section
	Commissioning			
44.	In situ testing of gas fired turbines and furnaces	Combustion gases (CO ₂ , CO, NOx and water vapour)	Degradation in air quality Contribution to global warming and ground level ozone	6.3
45.	In situ testing of Power Plant	Natural gas venting	Contribution to global warming and ground level ozone	6.3
46.	In situ testing of main plan	SO ₂ , fluorides, PAH, particulates, traces of PFC	Degradation in air quality Contribution to global warming and ground level ozone	6.3
47.		Noise generation	Disturbance to surrounding environment (residential populations, workers and fauna)	6.7 & 6.6
48.		Process water effluent	Soil and groundwater contamination	6.4
49.		Seawater discharge	Degradation of seawater quality	6.5

Notes:

- a Impacts resulting in degradation of air quality can also result in impacts to human health and terrestrial flora and fauna.
- b Impacts resulting degradation of the seawater quality can also result in impacts to marine flora and fauna.
- c All impacts are adverse, unless otherwise stated.