



Table 2.1.1 Summary of Baseline (Pre Operational) Groundwater– Sub Program

Sub Program	Objective	Period	Frequency	Location(s)	Methodology	Parameters	Interpretation & reporting	Other details
Conceptual modelling	To provide the Director with the up-to-date knowledge of the three dimensional hydrogeological systems associated with the mill site and surrounding areas gained from all relevant investigations and studies undertaken during the development process to date and identify any data gaps	Prior to construction	Once only	The area encompassing the mill site and the landfill and the immediate surrounding areas	An approved methodology or as approved by the Director The conceptual model will be refined as additional monitoring information is collected	A three dimensional conceptual model, including: - Horizontal and vertical extent of geological formations containing or affecting groundwater - piezometric surfaces in spring and autumn - groundwater flow directions, locally and regionally - groundwater fluxes - recharge and discharge areas. Os approved by the Director	Report provided to the Director prior to commencement of construction on the mill site	A qualified and experienced hydrogeologist must develop the model and the report.
Depth to groundwater	Build a dataset of baseline changes in depth to groundwater	2.5 Years, commencing no later than 2007 or as required by The Director	Monthly or as required by the Director	Sample sites currently defined as GW1 to GW17, or others as approved by the Director	Physical measurement (Dip meter)	Water Level – (reported as metres AHD)	Annual return, with comparison to historical records when collated. Interpretation of the data, including any changes identified in relation to the historic data, in the context of the conceptual model.	As above

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Sub Program	Objective	Period	Frequency	Location(s)	Methodology	Parameters	Interpretation & reporting	Other details
Baseline detailed chemical and physico-chemical condition of groundwater	Build a dataset of baseline physico-chemical condition of groundwater	As above	Monthly or as required by the Director	As above	A suitable Water Quality Field Meter, maintained and operated in accordance with manufacturers instructions. <i>In situ</i> sampling may require pumping to surface to flow cell via a peristaltic pump (Micropurge technique), but bailer or electric pump may be used	Analyte Group A as per Table 2.1.3 or as required by the Director	Annual Return. Full data set with statistical summaries with comparison to historical records when collated. Interpretation of the data, including any changes identified in relation to the historic data, in the context of the conceptual model.	Meter calibration records to be maintained and made available to The Director of Environmental Management on request. A qualified and experienced hydrogeologist must develop the model and the report.
	As above	As above	Phased 3-6 monthly or as required by the Director	As above	Micropurge into dedicated bladder & hose set for each bore.	3-monthly for Analyte Groups B,C,D,E; 6-monthly for Group F as per Table 2.1.3 or as required by The Director	As above	A qualified and experienced hydrogeologist must develop the model and the report.
	As above	As above	Annual or as required by the Director	Sample sites defined as GW11,13,14,16 Figure 2.1.1 or others as approved by the Director	As above	Analyte Groups G and H as per Table 2.1.3 or as required by The Director	As above	As above

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Table 2.1.2 Summary of Operational Groundwater– Sub Program

Sub Program	Objective	Period	Frequency	Location(s)	Methodology	Parameters	Interpretation & reporting	Other details
Depth to groundwater	Monitor groundwater levels post disturbance.	Ongoing, Commencing at start of commissioning period, with first review after 3 years.	As required by the Director	As required by the Director	Physical measurement (Dip meter)	Water Level – (reported as metres AHD)	As required by the Director	A qualified and experienced hydrogeologist must develop the model and the report.
Surveillance of physico-chemical condition of groundwater	Monitor groundwater physico-chemical condition indicators post disturbance.	As above	As above	As above	A suitable Water Quality Field Meter maintained and operated in accordance with manufacturers instructions. <i>In situ</i> sampling may require pumping to surface to flow cell via a peristaltic pump (Micropurge technique), but bailer or electric pump may be used	As required by the director	As required by the director	Meter calibration records to be maintained and made available to The Director of Environmental Management on request. A qualified and experienced hydrogeologist must develop the model and the report.
	As above	As above	As above	As above	Micropurge into dedicated bladder & hose set for each bore.	As required by the Director	As required by the Director	A qualified and experienced hydrogeologist must develop the model and the report.
	As above	As above	As above	As above	As above	As required by the Director	As required by the Director	As above