

**APPENDIX 8
COST ESTIMATE**

Option 1 - Do nothing

Description	Undertake a risk assessment to demonstrate no remediation is required
Base Year	2018
Date	09/2017
Phase	Remedial Options Study
Revision	1
Units	\$AUD

Capital Costs	Item	Description	QTY	units	UNIT COST	TOTAL
		1 Investigations and reporting				
		SUBTOTAL initial investigation and risk assessment				\$415,950
		Subtotal				\$415,950
		CAPITAL COSTS				\$415,950

Option 2 Construct a purpose built containment cell

Description	Construct a new containment cell, move and encapsulate all capped waste stockpile wastes
Base Year	2018
Date	09/2017
Phase	Remedial Options Study
Revision	1
Units	\$AUD

Capital Costs	Item	Description	QTY	units	UNIT COST	SUBTOTAL
Construction containment cell						
	1	Pre-Design Activities				
	2	Preparation of RAP and Planning Approval				
		SUBTOTAL Preliminary documentation				\$0
	3	Project Engineering Tasks				
		SUBTOTAL Engineering/Technical Tasks Capital Cost				\$502,712
	4	Access Temporary Haul Roads and Erosion Controls, Relocation of Stockpiles in cells				
		SUBTOTAL Site Preparation				\$1,386,317
	5	Construction of cell liner				
		SUBTOTAL Cell Construction				\$8,150,917
	6	Placement of Wastes				
		SUBTOTAL Excavation Works for CWS				\$9,079,548
	7	Reinstatement of CWS footprint				
		SUBTOTAL Reinstatement				\$580,800
	8	Cap construction				
		SUBTOTAL Cap Construction				\$6,506,000
	9	Removal of Haul Roads and finalising access roads				
		SUBTOTAL Haul Road reinstatement				\$333,353
Groundwater monitoring at CWS						
	10	Monitoring of Groundwater at the CWS				
		SUBTOTAL Groundwater treatment				\$225,000
	11	Final Reporting				
		Sub-total reporting				\$260,000
		Subtotal				\$27,024,647
		Preliminaries and Margin (14%)				\$3,783,451
		Contingency (30%)				\$9,242,429
		CAPITAL COSTS TOTAL				\$40,050,527

Option 3 - Sorting of CWS to remove recycle components, treat remainder and place within containment cell

Description **Placement within a purpose built containment cell within the Hydro site after sorting and treating for fluoride**

Base Year **2018**

Date **09/2017**

Phase **Remedial Options Study**

Revision **1**

Units **\$AUD**

Capital Costs	Item	Description	QTY	units	UNIT COST	SUBTOTAL
Construction containment cell						
	1	Pre-Design Activities				
	2	Preparation of RAP and Planning Approval				
		SUBTOTAL Preliminary documentation				\$600,000
	3	Project Engineering Tasks				
		SUBTOTAL Engineering/Technical Tasks Capital Cost				\$3,360,194
	4	Access Temporary Haul Roads and Erosion Controls, Relocation of Stockpiles in cells				
		SUBTOTAL Site Preparation				\$1,386,317
	5	Construction of cell liner				
		SUBTOTAL Cell Construction				\$8,150,917
	6	Excavation and Placement of Wastes				
		SUBTOTAL Excavation Works for CWS				\$52,032,474
	7	Crushing and treating				
		SUBTOTAL Excavation Works for CWS				\$42,431,598
	7	Reinstatement of CWS footprint				
		SUBTOTAL Reinstatement				\$580,800
	8	Cap construction				
		SUBTOTAL Cap Construction				\$6,506,000
	9	Removal of Haul Roads and finalising access roads				
		SUBTOTAL Haul Road reinstatement				\$333,353
Groundwater monitoring at CWS						
	10	Groundwater monitoring beneath CWS				
		SUBTOTAL Groundwater treatment				\$225,000
	11	Final Reporting				
		Sub-total reporting				\$360,000
		Subtotal				\$115,966,652
		Preliminaries and Margin (14%)				\$16,235,331
		Contingency (30%)				\$39,660,595
		CAPITAL COSTS TOTAL				\$171,862,578

Option 4 - Treat and place within a purpose built containment cell

Description **Placement within a purpose built containment cell within the Hydro site with addition of dry lime at 10% mixed for treating soluble fluoride**
 Base Year **2018**
 Date **09/2017**
 Phase **Remedial Options Study**
 Revision **1**
 Units **\$AUD**

Capital Costs	Item	Description	QTY	units	UNIT COST	SUBTOTAL
Construction containment cell						
	1	Pre-Design Activities				
	2	Preparation of RAP and Planning Approval				
		SUBTOTAL Preliminary documentation				\$0
	3	Project Engineering Tasks				
		SUBTOTAL Engineering/Technical Tasks Capital Cost				\$1,802,022
	4	Access Temporary Haul Roads and Erosion Controls, Relocation of Stockpiles in cells				
		SUBTOTAL Site Preparation				\$1,386,317
	5	Construction of cell liner				
		SUBTOTAL Cell Construction				\$8,150,917
	6	Excavation and Placement of Wastes				
		SUBTOTAL Excavation Works for CWS				\$9,079,548
	7	Lime treatment enroute to cell				
		SUBTOTAL Excavation Works for CWS				\$9,518,500
	7	Reinstatement of CWS footprint				
		SUBTOTAL Reinstatement				\$580,800
	8	Cap construction				
		SUBTOTAL Cap Construction				\$6,506,000
	9	Removal of Haul Roads and finalising access roads				
		SUBTOTAL Haul Road reinstatement				\$333,353
Groundwater monitoring at CWS						
	10	Groundwater monitoring beneath CWS				
		SUBTOTAL Groundwater treatment				\$225,000
	11	Final Reporting				
		Sub-total reporting				\$260,000
		Subtotal				\$37,842,456
		Preliminaries and Margin (14%)				\$5,297,944
		Contingency (30%)				\$12,942,120
		CAPITAL COSTS TOTAL				\$56,082,520

Option 5 Dispose of all wastes off-site

Description **Dispose of all wastes off-site, recycle steel, crush and treat with 10% lime**
 Base Year **2018**
 Date **09/2017**
 Phase **Remedial Options Study**
 Revision **1**
 Units **\$AUD**

Capital Costs	Item	Description	QTY	units	UNIT COST	SUBTOTAL
Construction containment cell						
	1	Pre-Design Activities				
	2	Preparation of RAP and Planning Approval				
		SUBTOTAL Preliminary documentation				\$200,000
	3	Project Engineering Tasks				
		SUBTOTAL Engineering/Technical Tasks Capital Cost				\$4,193,687
	4	Access Temporary Haul Roads and Erosion Controls, Relocation of Stockpiles in cells				
		SUBTOTAL Site Preparation				\$1,386,317
	5	Excavation and Placement of Wastes				
		SUBTOTAL Excavation Works for CWS				\$55,232,737
	6	Crushing, treating, transport and disposal to NSW				
		SUBTOTAL Excavation Works for CWS				\$151,666,120
	7	Reinstatement of CWS footprint				
		SUBTOTAL Reinstatement				\$580,800
	9	Removal of Haul Roads and finalising access roads				
		SUBTOTAL Haul Road reinstatement				\$333,353
Groundwater monitoring at CWS						
	10	Groundwater Monitoring at CWS				
		SUBTOTAL Groundwater treatment				\$225,000
	11	Final Reporting				
		Sub-total reporting				\$260,000
		Subtotal				\$214,078,013
		Preliminaries and Margin (14%)				\$29,970,922
		Contingency (30%)				\$73,214,680
		CAPITAL COSTS TOTAL				\$317,263,615

Option 6 Thermally treat to reduce reactivity and transport to salt repository

Description **Crush and thermally treat to reduce reactivity, bag and transport to salt repository in NT**
 Base Year **2018**
 Date **09/2017**
 Phase **Remedial Options Study**
 Revision **1**
 Units **SAUD**

Capital Costs	Item	Description	QTY	units	UNIT COST	SUBTOTAL
	1	Preparation of RAP and DA Sub-total preliminary documentation				\$400,000
	2	Pilot Trial Sub-total pilot trial				\$500,000
	3	Project Tasks Sub-total Technical Tasks Capital Cost				\$5,076,989
	4	Access Temproary Haul Roads and Erosion Controls, Relocation of Stockpiles in cells SUBTOTAL Site Preparation				\$1,324,314
	5	Excavation and Placement of Wastes SUBTOTAL Excavation Works for CWS				\$37,499,424
	6	Crushing, treating, transport and disposal to Salt Repository SUBTOTAL Excavation Works for CWS				\$975,174,900
	7	Reinstatement of CWS footprint SUBTOTAL Reinstatement				\$580,800
	9	Removal of Haul Roads and finalising access roads SUBTOTAL Haul Road reinstatement				\$333,353
	Groundwater monitoring at CWS					
	10	Groundwater monitoring at CWS SUBTOTAL Groundwater treatment				\$225,000
	11	Final Reporting Sub-total reporting				\$260,000
		Subtotal				\$1,021,374,780
		Preliminaries and Margin (14%)				\$142,992,469
		Contingency (30%)				\$349,310,175
		CAPITAL COSTS TOTAL				\$1,513,677,424

Option 7 Onsite Destruction by Plasma Arc

Description **Segregation for steel recovery, crush and homogenise, onsite disposal by plasma arc, production of Syngas and inert slag,**
 Base Year **2018**
 Date **09/2017**
 Phase **Remedial Options Study**
 Revision **1**
 Units **\$AUD**

Capital Costs	Item	Description	QTY	units	UNIT COST	SUBTOTAL
	1	Preparation of RAP and DA Sub-total preliminary documentation				\$400,000
	2	Pilot Trial Sub-total pilot trial				\$1,000,000
	3	Project Tasks Sub-total Technical Tasks Capital Cost				\$7,973,556
	4	Access Temporary Haul Roads and Erosion Controls, Relocation of Stockpiles in cells SUBTOTAL Site Preparation				\$1,386,317
	5	Excavation and Placement of Wastes SUBTOTAL Excavation Works for CWS				\$38,479,022
	6	Crushing, treating, transport and disposal to QLD SUBTOTAL Excavation Works for CWS				\$118,206,621
	7	Reinstatement of CWS footprint SUBTOTAL Reinstatement				\$580,800
	9	Removal of Haul Roads and finalising access roads SUBTOTAL Haul Road reinstatement				\$333,353
	Groundwater monitoring at CWS					
	10	Groundwater monitoring at CWS SUBTOTAL Groundwater treatment				\$225,000
	11	Final Reporting Sub-total reporting				\$260,000
		Subtotal				\$168,844,668
		Preliminaries and Margin (14%)				\$23,638,254
		Contingency (30%)				\$57,744,876
		CAPITAL COSTS TOTAL				\$250,227,798