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14.0 CAPITAL COST

14.1 Introduction

The cost estimate for Guanaco Project is a feasibility study estimate in accordance with AMEC standards, with an accuracy range of $\pm 10\%$ to $\pm 15\%$ and 85% confidence level. This standard complies with an AACE Class 3 estimate.

AMEC prepared a consolidated cost estimate based on engineering development by various sources as shown in Table 14-1.1. The estimate scope included preparation of capital costs that cover all the phases of the project including engineering, procurement, construction, and start up of all the project facilities.

Table 14.1-1: Scope of Facilities by Engineering Development

Facility Description	Engineering Development Source	Reference
Underground Mine	Guanaco Compañía Minera	Section 5.1
Open Pit & Phase II Heap Reclaim	AMEC International S. A.	Section 5.2
Crushing Plant	AJG Ingenieria	Section 6
Grinding & Thickening	AMEC International S. A	Section 6
Heap Leach Pad Phase III	VECTOR Chile Ltda.	Section 6
Agitation Leach	AMEC International S. A	Section 6
CCD Plant	AMEC International S. A	Section 6
Carbon Adsorption Circuit	AMEC International S. A	Section 6
Elution & Regeneration	AMEC International S. A	Section 6
EW & Gold Room	AMEC International S. A	Section 6
Filtration & Tailings	AMEC International S. A	Section 6
Tailings Deposit	VECTOR Chile Ltda.	Section 7
Reagents	AMEC International S. A	Section 6
Water Supply	Guanaco Compañía Minera	Section 8
Power Supply	CEYGE Limitada	Section 8
Power Distribution	CEYGE Limitada	Section 8
Communication and Control	CEYGE Limitada	Sections 6 and 8
Internal Roads	Guanaco Compañía Minera	Section 8
Operations Camp and Permanent Facilities at Site	Guanaco Compañía Minera	Section 8

The development of the cost estimate for each specific area or plant is detailed in the corresponding section of this report as stated in Table 14-1.1.

AMEC prepared a detailed cost estimate for the areas under its scope of work and consolidated the cost information provided by GCM and contractors.

The following items were excluded from the estimate (see Section 16, Financial Evaluation, for details):

- Escalation
- Taxes
- Royalties and licenses
- Financial cost
- Currency exchange fluctuation
- Force Majeure
- Environmental studies and remediation costs
- Working capital.

14.1.1 Work Breakdown Structure (WBS)

The project WBS was defined by GCM for the main project areas and is shown in Table 14.1-2.

Table 14.1-2: Project WBS

Area N°	Area Name
000	General
100	Mine
200	Crushing
250 ¹	Heap Leach Pad
300	Grinding & Thickening
400	Agitation Leach
500	CCD
600	Carbon Adsorption Circuit
650	Elution & Regeneration
670	EW & Gold Room
700	Filtration & Tailings
750 ²	Tailings Deposit
800	Reagents
900	Site Utilities & Infrastructure
1000	Plant Modification & Tie-ins
1100	Indirect Cost
1200	Contingency
1300	Others

¹ Vector used 360 as WBS Area number

² Vector used 340 as WBS area number

14.2 Basis of Estimate

The methodologies used to prepare the cost estimate are stated below. In those cases where costs were provided from other sources, AMEC included those costs directly in the cost estimate.

14.2.1 Methodology

a) Quantities

AMEC engineering produced quantity take-offs for the scope of work shown in Table 14-1.1. The main engineering input to the estimating group was:

- **Process Equipment List:** The equipment list was developed by mechanical and process engineers. This list is based on the optimized flowsheets and details are provided by engineering (capacities, load, dimension, weight)
- **Facilities:** Required for process and non-process areas
- **Material Take-Offs to estimate civil works, concrete, and structural steel:** Civil quantities were prepared from general arrangement drawings, supported by additional calculations and sketches to define earthwork and structural excavation. Concrete and structural steel quantities were estimated from preliminary sketches of concrete and steel structures.
- **Material Take-Offs to estimate architectural finishes for new facilities** were estimated on a cost per unit area basis.
- **Material Take-Offs to estimate plant piping:** Large bore piping within the process areas was based on preliminary P&IDs and small bore piping was factored from historical data for similar operations (cost or capacity).
- **Material Take-Offs to estimate yard piping:** Overland and plant site utility pipelines outside of the process areas such as water supply were based on contours and profile drawings. Fittings were covered by allowances.
- **Electrical Equipment and Services:** Electrical quantities were prepared from preliminary single line diagrams and installed loads. Detailed take-offs were prepared from primary power supply (medium voltage) up to and including MCCs and starters. Low voltage distribution within the plant was factored.
- **Instrumentation:** Was factored

Allowances

A design allowance based on the degree of engineering completed at the time of engineering design cut-off and a comparison of quantities to historical experience was applied to each discipline after the pricing was completed.

b) Pricing

Equipment

The equipment costs for the main mechanical and electrical equipment were quoted and secondary equipment was estimated using current costs from AMEC's database, budget prices, or benchmarking. Equipment costs were ex-works and freight and insurance were estimated separately.

Letter quotations from vendors were obtained for the major pieces of mechanical and electrical equipment. The estimate details are marked with a code to identify the source of pricing as follows:

- E: Estimate
- B: Benchmark
- F: Budgetary (budget quotation).

Bulk Materials

The bulk material prices were estimated using benchmark data.

Indirect Costs

The indirect costs included the following:

EPC SERVICES

EPC services were calculated based on the estimated manpower, and include labour, burden, expenses, and EPC contractor fee, risk assessment, EPC home office costs, EPC field office costs, EPC module yard, third party consultants, standards compliance, other project office costs, systems software integration, electrical engineering, and studies.

TEMPORARY FACILITIES

Includes construction of camps; site offices; security; sanitization; warehouse; QA/QC laboratory; communication, services and IT; temporary and minor construction facilities; laydown and work areas; roads; fencing and parking areas; power, water, air and sewage utilities; weather protection.

CONSTRUCTION SERVICES

This includes camp management and catering, security, water, fuel, power, waste and environmental management, medical and safety supplies, training, general and final clean up, general material handling and warehousing, construction site, mobilization and demobilization, support equipment, stevedoring, site transportation and light vehicles, professional services, and fire protection.

FREIGHT

Freight includes inland freight to port, ocean freight, port fees, and local inland freight to the plant. Insurances were also included. The factor considers that the ratio between local and imported material and equipment will be in accordance with the Guanaco site location and access (roads and port).

CONSTRUCTION TESTING & COMMISSIONING

Technical inspection during the construction, vendor representatives, pre-operations testing, and commissioning support.

SPARE PARTS

Initial capital spares, commissioning spares, and operating spares.

FIRST FILL

Includes reagents, oils, etc. necessary to operate the plant during pre-commissioning, commissioning, and ramp-up.

CUSTOM DUTIES

Custom duties were considered as a percentage of imported equipment.

OWNER'S COST

Were provided by the GCM project team.

14.2.2 Construction Labour Rates

a) Unit Manhours and Construction Labour

This estimate used the concept of all-in labour rates and unit manhours per defined activity (by item of the detailed estimate).

UNIT MANHOURS

Unit manhours were obtained from experience in similar projects in Chile.

LABOUR PRODUCTIVITY

Based on current experience in construction projects in Chile, average labour productivity was compared to US Gulf Coast rates. The productivity factor also included the following factors:

- Weather conditions
- Schedule overlap
- Availability and turnover of skilled labour
- Altitude
- Access to work areas.

Productivities used for the project are shown in Table 14.2-1.

Table 14.2-1: Project Productivities

Discipline	Productivity Factor
Earthwork	2.35
Concrete – Civil	2.42
Steel	2.52
Architectural	2.35
Perm. Equipment	2.24
Electrical	2.16
Instr. – Control	2.08
Piping	2.24
Insulation & Misc.	2.08
Average	2.27

b) All-in Rate

This rate covers all the labour direct and indirect costs. The rates were determined by crew. These crews conform to the normal crew make up for this type of project. The all-in rates include the following items:

- Base labour rate, payroll burdens and benefits, completion bonus, incentives, overtime premiums, and transportation.
- Contractor mobilization and demobilization
- Small tools and consumables including welding rods, sealants, adhesives, and lubricants
- Safety clothing and safety supplies
- Contractor supervision from general foreman and above
- Travel to and from the project site
- Travel within the site
- Contractor's receiving and warehousing
- Contractor's temporary facilities
- Contractor's head office overhead and insurance
- Contractor's mark-up and profit
- Contractor's bonding and financial guarantees

Construction equipment, including operators, fuel, insurances, transportation to the site, lube oil, and maintenance.

Construction contractor indirect costs were included in all-in rate labour rate as indicated in Table 14.2-2.

Table 14.2-2: Construction All-in Labour Rates

Work Item	Crew Rate	Crew Rate	Total	Construction	Labour
	Direct Cost	Indirect Cost ³	Labour Cost	Equipment	All-in Rate (US\$/h) ⁴
Mass Exc. Rock - Drilling and Explosive	14.85	19.40	34.25	Varies	-
Shotcrete - Injection Grouting	11.47	14.89	26.36	Varies	-
Mass Earthwork Heavy	11.87	16.72	28.59	Varies	-
Mass Earthwork Medium	10.63	14.10	24.73	Varies	-
Miscellaneous Civil - Architectural	11.79	12.92	24.72	Varies	-
Concrete	11.74	12.97	24.71	Varies	-
Structural Steel	13.26	14.82	28.08	Varies	-
Structures, high voltage towers	14.21	15.37	29.58	3.80	33.38
Mechanical	13.62	15.12	28.74	5.26	34.01
Mechanical Platework	14.66	16.00	30.66	4.84	35.50
Piping	14.62	16.08	30.70	4.92	35.62
Electrical	13.15	13.90	27.04	1.38	28.42
Instrumentation	13.28	13.96	27.24	1.10	28.33

14.2.3 Unit Construction Costs and Productivities

The unit costs and productivities shown in Tables 14.2-3 were used.

Table 14.2-3: Unit Costs (US\$)

Civil Work Unit Prices		
Description	Unit	Cost/Unit
Soil Excavation - Local	m ³	8.14
Clear and Grubbing (t=0,30 m)	m ³	2.20
Soil Excavation - Mass	m ³	2.13
Backfill Native - Mass	m ³	2.58
Backfill Structural - Local	m ³	11.37
Rock Excavation	m ³	21.61

Concrete Unit Prices		
Description	Unit	Cost/Unit
Concrete H-30 - Foundations	m ³	800.73
Concrete H-10 - Lean	m ³	379.71
Steel Reinforcement A630-420H	t	2,222.75
Embedded steel ASTM A36	t	5,775.81

³ Mobilization costs, accommodation and meals are included in the project indirect costs.

⁴ US Dollar = 524.46 CLP

Concrete Unit Prices		
Description	Unit	Cost/Unit
Anchor Bolts	ton	17,989.46
Concrete H-30 - Footings	m ³	659.17
Concrete H-30 - Pedestals	m ³	1,106.09
Concrete H-30 - Walls	m ³	1,329.55
Concrete H-30 - Elevated slabs	m ³	994.36
Steel Reinforcement AT56-50H	t	2,222.75

Structural Steel Unit Prices		
Description	Unit	Cost/Unit
Siding and roofing	m ²	134.39
A36 Light Steel - 0 to 30 kg/m	t	6,044.62
A36 Medium Steel – 30 to 60 kg/m	t	4,666.64
A36 Heavy Steel - >60 kg/m	t	3,637.31
Grating - steel A36	t	5,652.62
Handrail - steel A53	t	8,472.70

14.2.4 Owner's Activities

Owner's costs were provided by GCM and include:

- GCM management personnel
- GCM overheads
- EPC administration
- Permitting
- Environmental
- Easements
- Metallurgical testing
- Communities relations
- Owners team transport and mobilization.

14.2.5 Currency and Foreign Exchange Rates

The cost estimate was based in 2010 second quarter US Dollars. Escalation was not included.

The currency exchange rate was defined in accordance with GCM policy. Equivalence with other currencies is indicated in Table 14.2-5.

Table 14.2 4: Exchange Rates as of April 01, 2010

Currency	Rate per 1 USD
Canadian Dollar	1.0547
Euro	0.6843
Australian Dollar	1.1082
Chilean Peso	524.46

14.2.6 Escalation

No escalation was included.

14.2.7 Contingency

A probabilistic model was used to calculate the project contingency analyzing all parameters which could impact the project capital cost. The results are listed in Table 14.2-5.

Table 14.2 5: Input and Results of Contingency Calculation

Project Scope	46,119,864
<i>Reserved Compartment</i>	0
<i>Owners Cost</i>	0
Total Cost less Contingency	46,119,864
Contingency Sub Consultants (Included in project scope)	0
Total Contingency Project Scope	3,365,529
Total Cost of Project	49,485,393
Total Contingency	3,365,529
Percentage of Total Cost	7.3%

According to AMEC standards a minimum of 10% should be applied to a project in the feasibility stage. Therefore, it was agreed with GCM that a 10% contingency would be applied.

14.3 Capital Cost

The project capital cost was calculated using the basis of estimate stated in Section 14.2 for the overall project. The detailed capital estimate report is included in Appendix D. As per GCM instructions the capital cost was divided into four main areas as described below.

14.3.1 Project Sunk Costs

These are the costs for the Stage 1 facilities, including the refurbishing and construction of facilities to allow the operation of the Phase III heap leach which will process ore from the existing Phase II leach pad and the open pit. This material will be processed in the existing crushing plant, leached on the new heap, and the resulting solutions will be treated in the ADR plant. Facilities and work in Stage 1 include:

- Underground mine access ramp (pre-mining activities)
- Existing crushing plant refurbishing
- Existing ADR plant reconditioning
- Phase III heap construction
- Pond and solution handling system construction
- Electrical system refurbishing
- Existing infrastructure refurbishing.

Existing facilities will be used to the greatest possible extent, refurbishing existing facilities and replacing equipment where the process requires additional capacity.

GCM has defined these activities as sunk costs. Table 14.3-1 shows the capital cost estimated and allocated as sunk cost.

Table 14.3-1: Project Sunk Costs

Const. Phase	Level 1	Description	Labour Manhours	Amount (US\$)
00		Sunk Cost		
	100	Mine	-	3,360,847
	200	Crushing	-	3,945,333
	250	Heap Leach Pad	-	3,044,336
	600	Carbon Adsorption Circuit	12,187.75	1,346,645
	650	Elution & Regeneration	2,217.90	440,365
	670	EW & Gold Room	1,077.86	170,391
	1100	Indirect Costs	-	826,062
		Total	15,484.00	13,133,979

14.3.2 Project Initial Capital Cost

These are the costs for the Stage 2 new facilities required to process underground mine ore (of higher grade) in the grinding, agitation leach, CCD circuit, and filter plant followed by dry tailings deposition. The integrated operation is expected to start up in late 2011 and operate until at least 2016.

Facilities included are:

- Grinding plant
- Agitation leach and CCD plant
- Tailings filter plant
- Dry tailings deposit
- Reagent system
- Additional power supply
- Expansion of existing facilities (ADR plant, heap leaching, Infrastructure)

The initial capital cost, direct and indirect, is shown in Table 14.3-2.

Table 14.3 2: Project Initial Capital Cost

Const .Phase	Level 1	Description	Labour Manhours	Amount (US\$)
01		CAPEX		
	000	General	1,621.45	148,278
	100	Mine	-	9,474,000
	200	Crushing	-	410,245
	250	Heap Leaching Pad	-	179,883
	300	Grinding & Thickening	50,605.16	7,242,796
	400	Agitated Leach	21,150.68	2,130,361
	500	CCD	14,730.73	2,010,350
	600	Carbon Adsorption Circuit	642.43	486,718
	650	Elution & Regeneration	537.60	245,955
	670	EW & Gold Room	-	-
	700	Filtration & Tailings	18,274.24	4,034,665
	750	Tailings Deposit	-	848,377
	800	Reagents	6,486.17	887,698
	900	Site & Utilities & Infrastructure	20,195.58	4,681,420
	1100	Indirect Cost	-	14,381,784
		Sub Total	-	47,162,530
		Contingency	-	4,611,986
		Total	134,244	51,775,000

14.3.3 Sustaining Capital Cost

The sustaining capital required (see Table 14.3-3) for the project is related to the underground mine development and includes the following activities:

- Cachinalito Central 270 m
- Cachinalito West 810 m
- Dumbo 1,419 m.

Table 14.3-2: Sustaining Capital

Description	Year	Amount (US\$)
Underground Mine	2012	4,305,000
Underground Mine	2113	77,000

14.3.4 Closure Costs

Project closure costs were based on GCM's commitments to the Chilean authorities and are related to the following:

Process Equipment and Ancillary Facilities

- Disassembly of process equipment, pipes, cables, and tanks
- Clean-up of buildings and ancillaries facilities.

Waste Dumps, Open Pits, and Underground Mines

- Closing of all the access to underground mines
- Final configuration of waste dumps contouring to ensure stability.

Leach Pad

- Completion of acid solution irrigation and pad washing with recirculation of fresh water.
- Disassembly of pumps, removal of pipes, and clean-up of the area.

Dry Tailings Deposit

- The deposit surface and slopes will be protected by a layer of coarse material to mitigate dust emission.

The closure costs were factored as shown in Table 14.3-4.

Table 14.3-3: Closure Cost Factors and Costs

Const. Phase	Level 1 WBS	Description	Amount (US\$)	Construction Cost (%)	Closure Cost (US\$)
00 STAGE 1					
	100	Mine	3,360,847	10	336,085
	200	Crushing	3,945,333	10	394,533
	250	Heap Leach Pad	3,044,336	8	243,547
	600	Carbon Adsorption Circuit	1,346,645	6	80,799
	650	Elution & Regeneration	440,365	6	26,422
	670	EW & Gold Room	170,391	6	10,223
	1100	Indirect Cost	826,062	1	8,261
		Sub Total	13,133,979		1,099,870
01 STAGE 2					
	000	General	148,278	5	7,414
	100	Mine	8,431,334	3	252,940
	200	Crushing	410,245	3	12,307
	250	Heap Leach Pad	179,883	6	10,793
	300	Grinding & Thickening	7,242,796	6	434,568
	400	Agitation Leach	2,130,361	6	127,822
	500	CCD	2,010,350	6	120,621
	600	Carbon Adsorption Circuit	486,718	6	29,203
	650	Elution & Regeneration	245,955	6	14,757
	670	EW & Gold Room			
	700	Filtration & Tailings	4,034,665	10	403,467
	750	Tailings Deposit	848,377	6	50,903
	800	Reagents	887,698	8	71,016
	900	Site, Utilities & Infrastructure	4,681,420	6	280,885
	1100	Indirect Cost	18,993,770	1	189,938
		Sub Total	50,731,850		1,040,168
Total Closure Cost					2,140,038