

# APPENDIX C

## Capital Cost Estimate Details

*Note: The concentrate grade and feed rate were altered part way through the study, as requested by Compass Resources. Ausmelt re-designed the smelter to treat dry injected, concentrates produced during years 1 and 2 of operation.*

*As substantial work had been completed, process data sheets and the process flow diagram were not re-issued by Ausmelt. Consequently, the information presented in the data sheets and process flow diagram do not directly correspond to the final process design presented in Appendix A.*

*The information presented in this chapter is based on the process design outlined in Appendix A to treat concentrates of the grade, moisture content and feed rate detailed in table A.1.1.*

## APPENDIX C CONTENTS

C.1	SUPPLY OF ENGINEERING SERVICES AND EQUIPMENT .....	1
C.1.1	Methods of Estimation .....	3

## C.1 SUPPLY OF ENGINEERING SERVICES AND EQUIPMENT

Ausmelt will supply the following engineering services and equipment:

- ?? Process Design for the Ausmelt smelter.
- ?? Basic and detailed Engineering Design of Ausmelt equipment.
- ?? Ausmelt equipment supply items including lances, lance handling system, standby burners and furnace control system and instrumentation.
- ?? Inspection of Ausmelt equipment installation as required ensuring the correct installation of Ausmelt designed and/or supplied equipment.
- ?? Cold commissioning assistance including checking of all Ausmelt electrical and control equipment, inspecting operation of all Ausmelt mechanical equipment.
- ?? Training Services for training of site operating staff, including the provision of operating manuals.
- ?? Hot commissioning support, including services of Ausmelt engineers to provide 24 hour on-site coverage during hot commissioning of the Ausmelt smelter.
- ?? Ongoing production support on day shift basis.
- ?? Ausmelt Technology Fee.

A capital estimate of equipment and service costs for the Ausmelt plant is presented in table C.1.

Please note that the capital estimate in table C.1 does not include the design, supply and installation of copper cooling panels for the furnace. For the purpose of this study, the estimated cost of the cooling panels will be provided by Hatch.

The cost estimate provided in table C.1 does not constitute an offer to supply. Ausmelt will be pleased to enter into a Contract for the supply of all nominated equipment and services subject to agreement on specification and Contract Conditions.

**Table C.1 Capital Cost Estimate Details**

Item	Ausmelt Supply	Units	Quantity	Supply Rate AU\$	Total AU\$
<b>Ausmelt Primary Furnace &amp; Equipment</b>					
Furnace shell & roof steelwork		Tonnes	90	8,100	729,000
Cooling water pipework (based on cooled surface area)		Sq.m.	160	450	72,000
Furnace support steelwork		Tonnes	20	4,150	83,000
Furnace refractory					
AirMag brick		m3	65	9,600	624,000
Superduty fire clay		m3	7	6,400	44,800
High conductivity ramming mix.		m3	7.5	8,300	62,250
High density ramming mix		m3	9	6,600	59,400
Weir refractory		m3	2	8,900	13,350
Boards/papers/coatings (allow 5%)		Lot	1	39,500	39,500
Emergency tapping block (Cu)	££	kg	240	25.00	6,000
Outlet weir cooling block (Cu)	££	kg	3,900	25.00	97,500
Outlet weir spout cooling block	££	kg	150	25.00	3,750
Sample ladle & jib	££	Unit	1	12,500	12,500
Extra for freight	££	tonnes	400	250	100,000
Ausmelt lances & lance handling system	££	Set	1	1,520,000	1,520,000
Lance port sealing device	££	Set	1	175,000	175,000
Standby burner system	££	Set	1	275,000	275,000
Lance & furnace instrumentation & control valves	££	Set	1	340,000	340,000
Furnace DCS control system	££	Set	1	345,000	345,000
<b>Furnace Sub-Total</b>					<b>4,602,050</b>
<b>Ausmelt Engineering Services</b>					
Attend kick off and design review meetings	££				
Process engineering	££				
Basic engineering	££				
Detail engineering	££				
Furnace instrument & control system engineering	££				
Attendance during installation	££				
Provision of manuals	££				
Plant training	££				
Cold commissioning attendance	££				
Hot commissioning attendance	££				
Production support attendance	££				
<b>Services Sub-Total</b>					<b>3,850,000</b>
<b>Technology Fee</b>	££				<b>3,000,000</b>
<b>Total</b>					<b>11,452,050</b>

**Notes**

- 1 Estimate excludes the cost of equipment installation
- 2 Estimate excludes design and supply of copper cooling panels
- 3 All refractory quantities are net in place. Rates for supply include allowance for waste.
- 4 Rates for refractory brick supply include cost of mortar
- 5 Costs for attendance by Ausmelt include provision of all meals, accommodation and transport.
- 6 Costs exclude provision of site offices and amenities
- 7 Pricing accuracy ? 30%

### C.1.1 Methods of Estimation

The cost data provided by Ausmelt has been determined based on the following:

- (a) Ausmelt design services – Ausmelt experience
- (b) Ausmelt furnace – quantity of materials multiplied by the cost of supply
- (c) Lance and burner supply – Ausmelt experience
- (d) Lance and burner handling systems – Ausmelt experience
- (e) Control system supply – Ausmelt experience
- (f) Lance and burner flow control instrumentation – Ausmelt experience/indicative P&ID
- (g) Ausmelt site services – Ausmelt experience