The Intec Polymetals Process for Hellyer Tailings

The Intec Gold Process for Refractory Gold Concentrates

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Acquisition of Hellyer Metals Project

Hellyer Metals Project

- Acquired by Intec from the Receivers to Western Metals – January 2004
- Acquisition cost: A$1.34 million
- Assets acquired:

  Mill – 1.5mtpa capacity, replacement cost A$100m

  Tailings dam – US$1.2 billion above ground metal value

  Mining & exploration tenements

  Intellectual property

Acquisition Strategy

- Receiver wanted a quick and clean exit
- Intec joined with Ammtec to make an **unconditional** offer to acquire all assets for sale:
- - Hellyer Metals Project
- - Burnie Research Laboratory
- Higher offers were received but were either partial offers and/or conditional offers

Update on Project Status

Hellyer Mine History

Total metal recoveries to concentrates were relatively low over the life of the project:

	Min (%)	Max (%)
Zinc	64	83
Lead	48	69
Silver	39	49
Gold	15	20

Hellyer Tailings Resource – 10.9mt

Element	Grade	Quantity	In-situ A$ value *	% of metal value
Gold	2.6 g/t	910,000 ozs	$492m	31%
Zinc	2.8 %	305,000t	$440m	27%
Lead	3.0 %	330,000t	$360m	22%
Silver	88 g/t	30,850,000 ozs	$248m	15%
Copper	0.16%	17,400t	$69m	4%
Total			**$1,608m**	**100%**

* Current metal prices and exchange rates

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The Intec Process for Hellyer

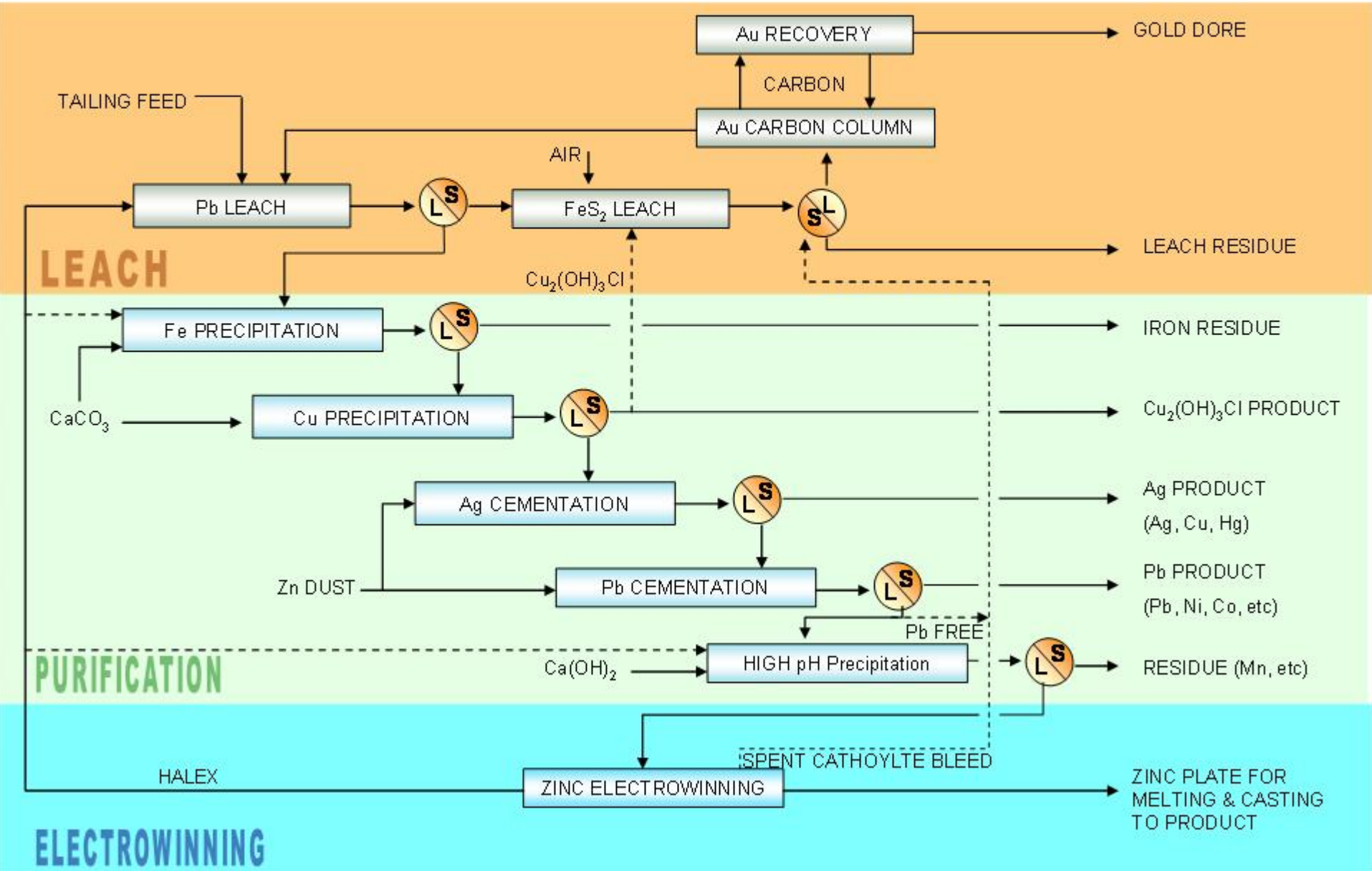
- Chloride based hydrometallurgical process
- Mild Operating Conditions (85-90oC, atmospheric pressure)
- Simultaneous zinc, lead, copper, silver and gold extraction
- Iron precipitation directly into leach residue as stable hematite
- Sulfide sulfur converted to elemental form

Hellyer Tailings – Application of Intec Process

Element	Recovery	Product
Zinc	98%	SHG cathode
Lead	98%	Bullion
Gold	50%	Bullion
Silver	80%	Bullion
Copper	80%	Intermediate

Equates to 80% extraction of metal value

INTEC POLYMETAL PROCESS
FLOW DIAGRAM FOR HELLYER TAILS



Hellyer Metals Project – Development Schedule

Ist half 2004: Pilot leach plant campaign (Sydney)
Zinc purification & EW (Syd Uni)
Gold recovery (AJ Parker Centre, Perth)

2nd half 2004: Pilot zinc EW cell (Burnie)
Construction of demonstration plant (Burnie)

2005: Operation of demonstration plant proceeding to project financing

2006: Construction and commissioning of first commercial plant

2007: First commercial production

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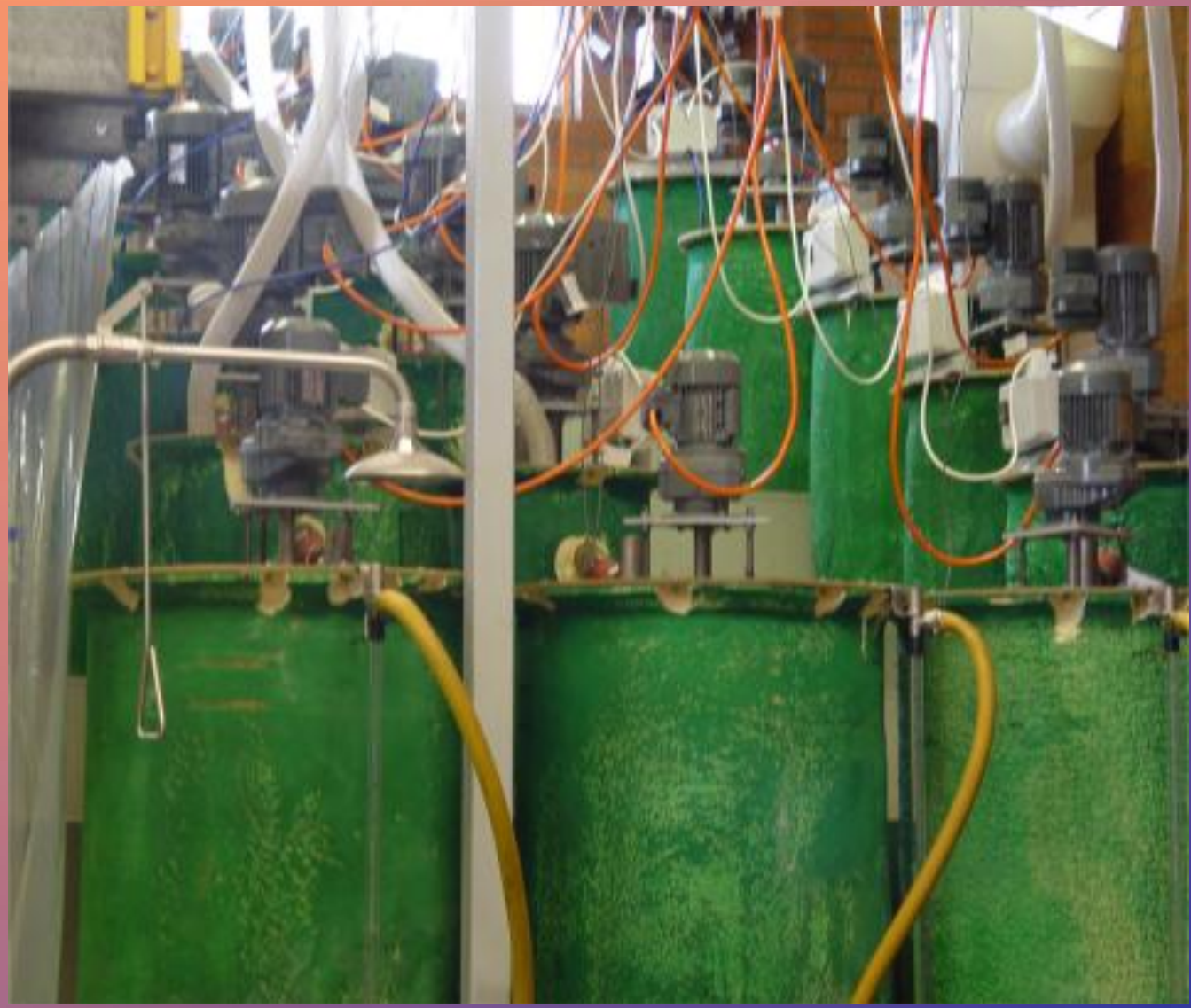
Pilot Plant at Ammtec's Sydney Laboratory



Results of two-week 'steady state' Pilot Plant Campaign

Element	% Extraction
Lead	99.0 %
Zinc	98.5 %
Copper	93.6 %
Silver	92.7 %
Gold	23.9 %

Equates to 75% extraction of metal value

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Advantages of Intec Process at Hellyer

- No flotation & grinding of tailings required
- No cyanide circuit required for gold recovery
- All payable metals recovered

Supplementary Project Feed Stock

Zeehan Slag Dump

Zeehan Slag Dump

- Residue material from lead smelting activities
- 450,000t at 13.4% Zn, 1.7 % Pb, 54 g/t Ag & 50 g/t In
- Current in-situ value of A$118 million (A$262/t)
- Acquisition subject to due diligence

Benefits of Zeehan Slag Feed

- Increased project life
- Higher grade feed
- Requires shorter leach residence time
- Assists in oxidation of gold bearing pyrite at Hellyer

Other Potential Supplementary Feedstocks

- Primary Leach Residue at Zinifex's Risdon smelter
- Jarosite Residue at Zinifex's Risdon smelter
- Electric Arc Furnace Dust from Australian mainland and south-east Asia

Hellyer Metals Project

Related Activities:

Toll Treatment

Exploration

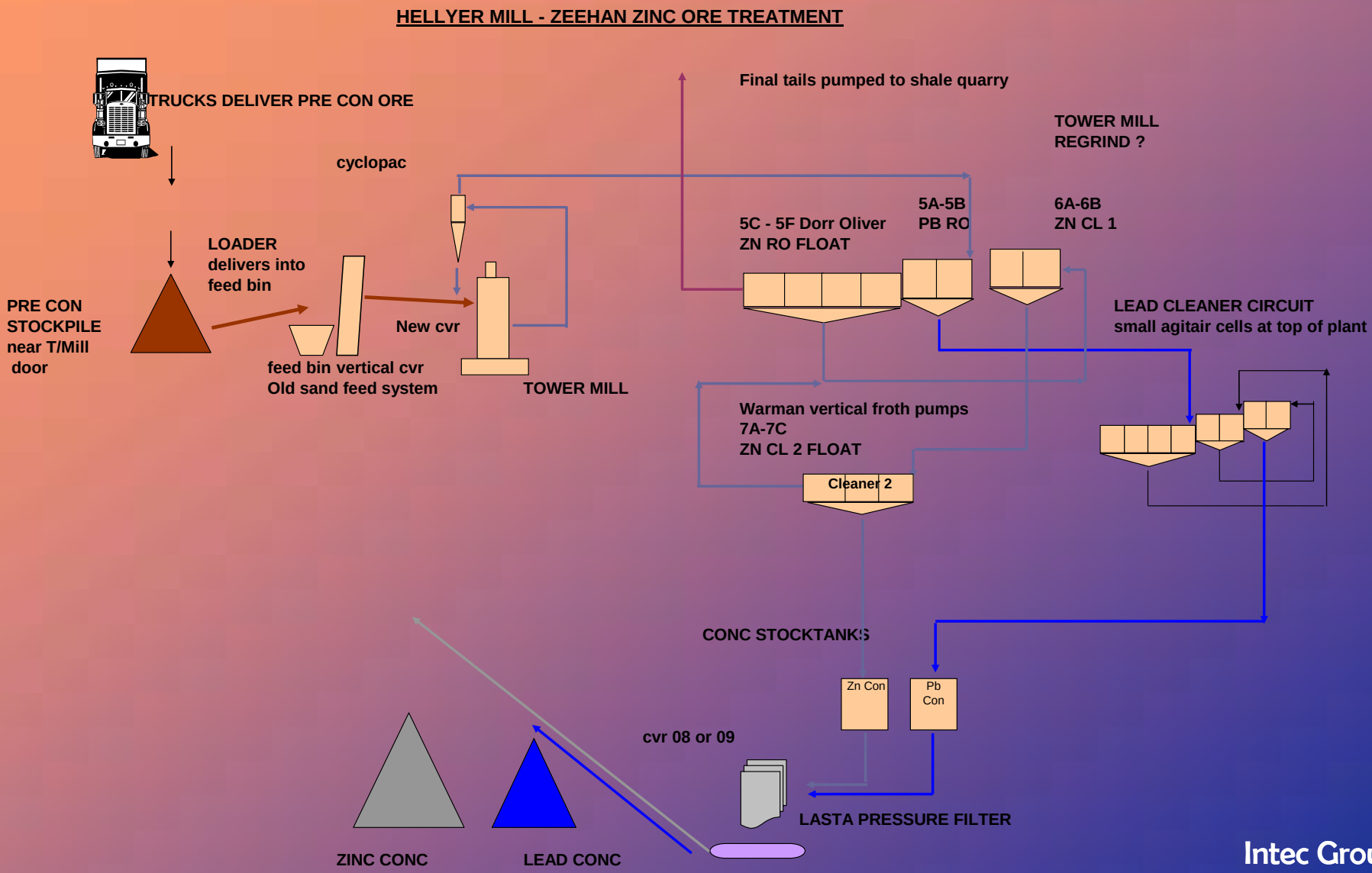
Toll Treatment Initiatives

- Hellyer mill built to treat 1.5 mpta of Hellyer ore
- Mill re-configured to handle material flows at 15 tonnes per hour allowing smaller parcels of ore/concentrate to be treated economically; for example

  Zinc pre-concentrate from Zeehan Zinc

  Nickel ore from Allegiance Mining's Melba Flats and Avebury Projects

De-tuned Hellyer Mill Circuit for Toll Treatment



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Exploration Review Completed

- Potential exists for:
  - Cu – rich massive sulphides
  - Au – rich barite deposits
  - polymetallic Zn-Pb-Ag-Cu-Au deposits

- Previous exploration strongly driven by a Zn-Pb-Ag focus

Preliminary Review Identified Six Targets

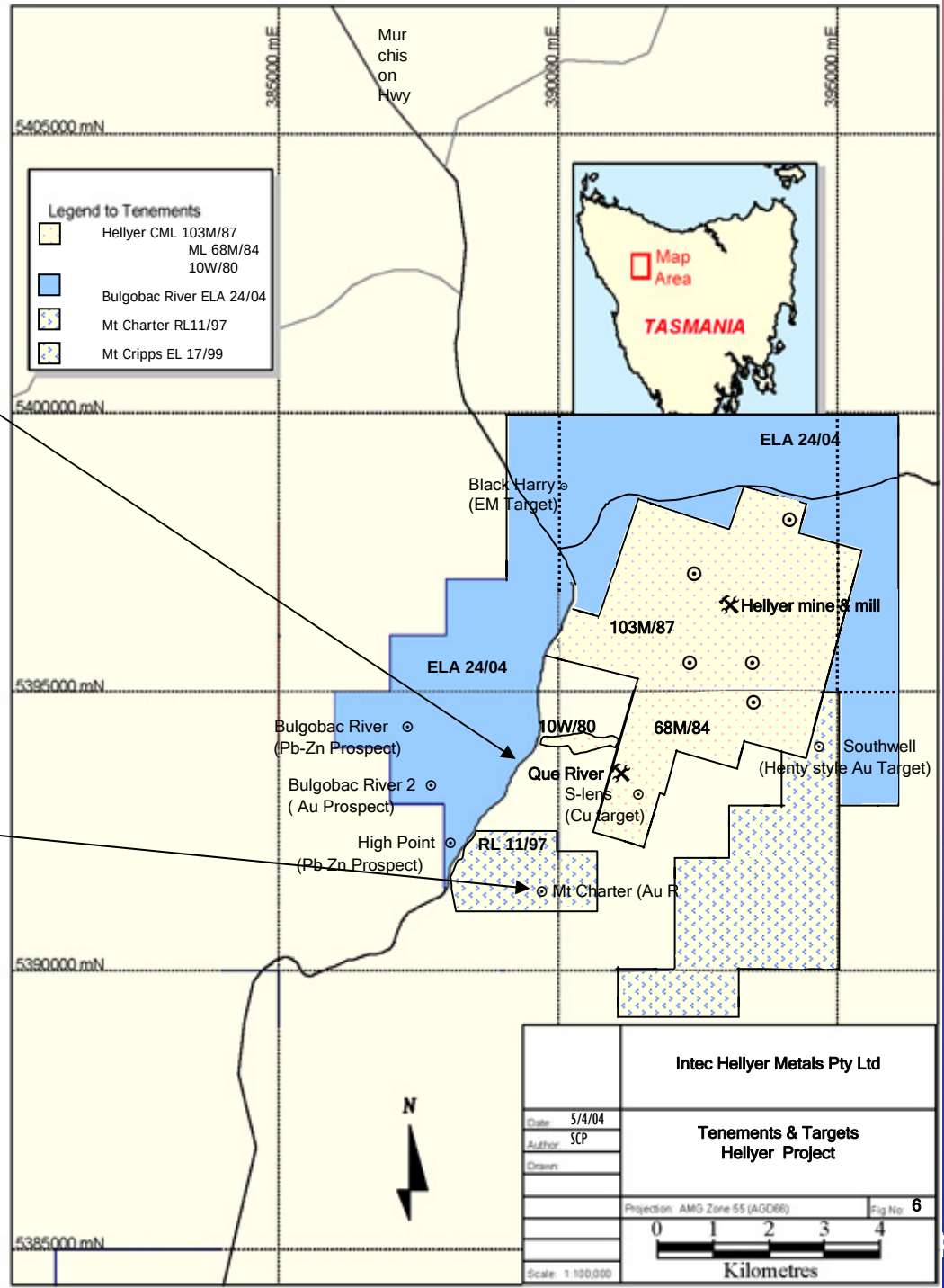
- Two advanced Cu and Au prospects:

  - Q River S Lens: Potential for a resource of 1-2 Mt @ 1- 2% Cu and 1oz/t Ag

  - Mt Charter Prospect: Potential to host a resource of 10Mt @ 3g/t Au

QUE RIVER S LENS
DRILL RESULTS
(Cu TARGET)
8.3m @ 3.3% Cu
15.2m @ 1.6% Cu

MT CHARTER DRILL RESULTS
(Au TARGET)
58m @ 1.8g/t Au
incl. 8m @ 3.6g/t Au
110m @ 0.9g/t Au
30m @ 0.9g/t Au
6m @ 2.9g/t Au



Que River S Lens

S Lens Outcrop

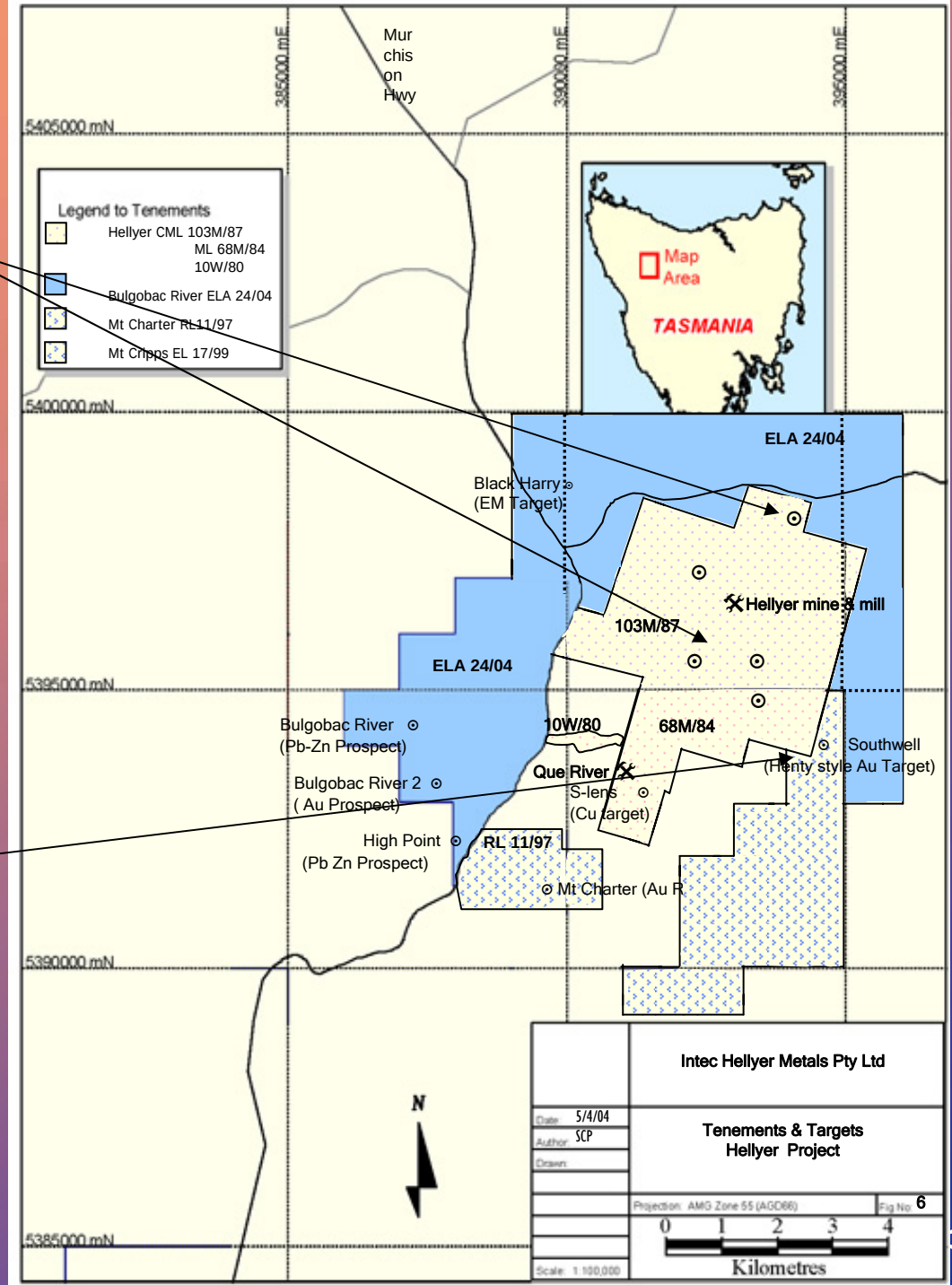
Approximate location of Cu rich S Lens

Other Prospects

- Three drill-ready or near drill ready polymetallic massive sulphide targets
- A conceptual Henty-style gold target identified using government acquired aero-magnetic and gravity data

Hellyer Style Targets
Pb-Zn-Cu-Ag-Au

Conceptual Henty-style gold target



Prospects considerably enhanced by the proximate availability of the Hellyer Mill

Intec intends to commence commercial discussions with appropriate parties to progress these exploration opportunities

The Intec Gold Process (IGP)

- One third of the world's gold production is currently sourced from deposits classed as refractory

- Gold production sourced from refractory deposits can only increase as near-surface oxidised orebodies are depleted

- 'Single' refractory deposits predominate however significant 'double' refractory deposits also exist

Key Process Features of IGP

- Mixed halide leach
- Single stage co-current
- Atmospheric pressure & moderate temperature
- Refractory gold minerals (e.g. arsenopyrite, tellurides and pyrite) leached with air
- Iron precipitated as hematite (no jarosite)
- Sulfate precipitated as anhydrite

Key Process Features of IGP (con't)

- Arsenic precipitated as crystalline scorodite (>100x more stable than amorphous)
  - 90-95°C
  - Fe/As 1:1
  - seeding

IGP Arsenopyrite Leach Chemistry

- $FeAsS + 2O_2 \rightarrow FeAsO_4 + S$
- $2Cu^+ + 1/2O_2 + 2H^+ \rightarrow 2Cu^{2+} + H_2O$
- $FeAsS + 7Cu^{2+} + 4H_2O \rightarrow H_3AsO_4 + Fe^{2+} + S + 5H^+ + 7Cu^+$
- $Cu^{2+} + Fe^{2+} \rightarrow Cu^+ + Fe^{3+}$
- $H_3AsO_4 + Fe^{3+} \rightarrow FeAsO_4 + 3H^+$
- $3Cu^{2+} + Au + 4Br^- \rightarrow AuBr_4^- + 3Cu^+$

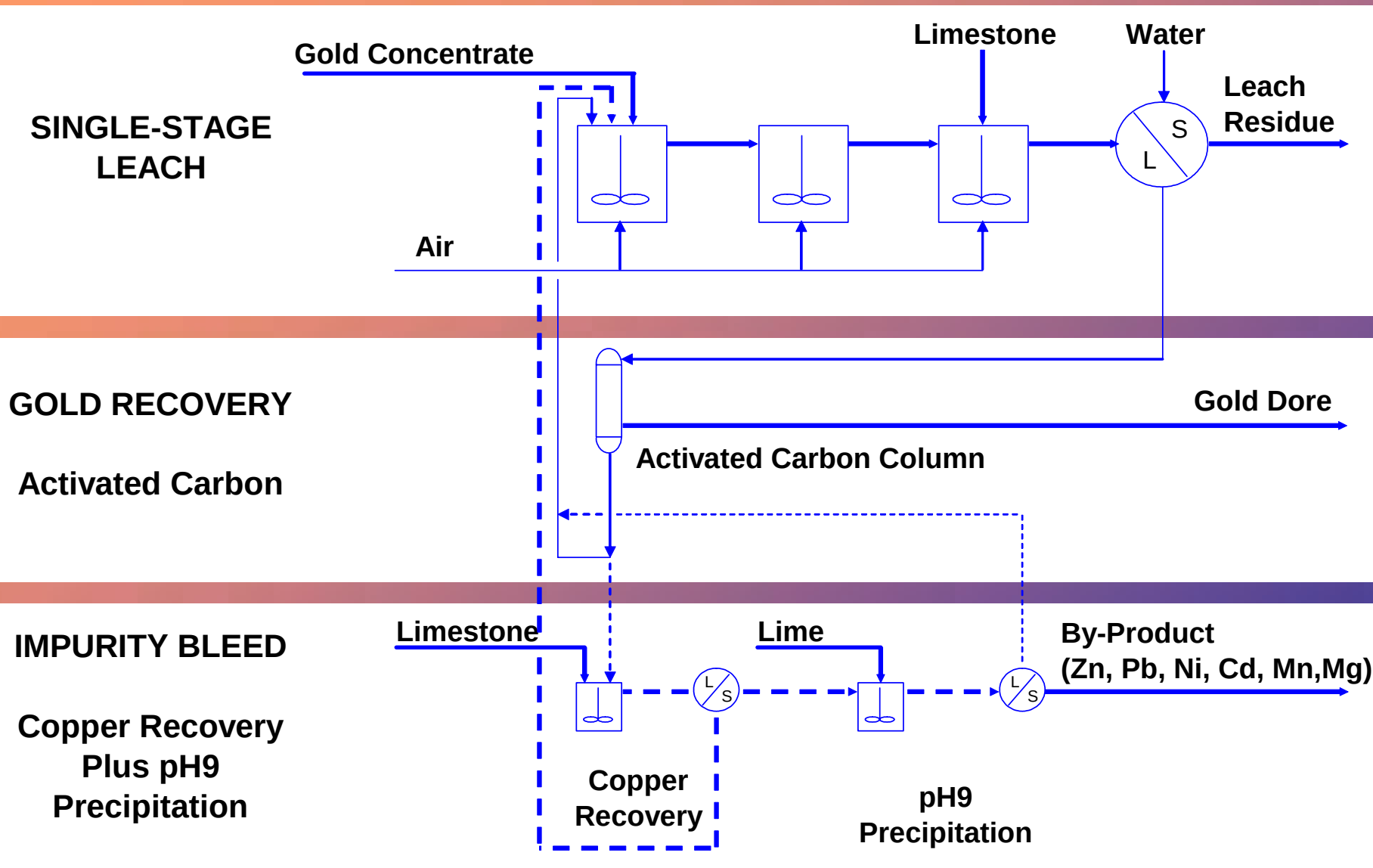
IGP Pyrite Leach Chemistry

- $4FeS_2 + 15O_2 + 2H_2O \rightarrow 8SO_4^{2-} + 4Fe^{3+} + 4H^+$
- $2Cu^+ + 1/2O_2 + 2H^+ \rightarrow 2Cu^{2+} + H_2O$
- $FeS_2 + 15Cu^{2+} + 8H_2O \rightarrow 2SO_4^{2-} + Fe^{3+} + 15Cu^+ + 16H^+$
- $Cu^{2+} + Fe^{2+} \rightarrow Cu^+ + Fe^{3+}$
- $3Cu^{2+} + Au + 4Br^- \rightarrow AuBr_4^- + 3Cu$

IGP Iron & Sulfate Control

- $2Fe^{3+} + 3H_2O \rightarrow Fe_2O_3 + 6H^+$
- $SO_4^{2-} + 2H^+ + CaCO_3 \rightarrow CaSO_4 + H_2O + CO_2$

IGP Flow Diagram



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IGP Materials of Construction

- FRP for tanks & pipes
- Titanium for mixers
- PVDF for clear liquor pumps (magdrive centrifugal)
- EPDM for slurry hose pumps

Test Results

Conditions	WA Con 1	WA Con 2
Stages	1	1
Grind size (P_{80} in µ)	8	8
Solids loading (g/l)	40	100
NaBr (g/l)	176	100
NaCl (g/l)	0	43
Cu (g/l)	80	80
CaCl2 (g/l)	250	250
SLS (g/l)	0	0.25
Retention Time (hrs)	20	20
Temperature (^{0}C)	100	100
Au extraction (%)	98	98

Comparative Refractory Gold Process Costings

Independent analysis by John R. Goode & Associates

Processes considered:

- **Bacterial oxidation**
- **Pressure oxidation**

IGP costing performed by H.G. Engineering, Toronto, Canada

Economic Assumptions

Cost basis:	**US$ in North America**
Power cost:	**US3c/kWh**
Throughput:	**50,000 tpa concentrate**

Battery Limits

- INCLUDES
  - All unit operations from concentrate input to dore output
- EXCLUDES
  - Grinding and flotation
  - Tailings treatment and storage facilities
  - Bullion marketing
  - External infrastructure

Assumed Concentrate Assay *

Element/Mineral	Grade
Au	57.3 g/t
Ag	10.0 g/t
S	20.2 %
As	7.9 %
Sb	0.4 %
Fe	23.5 %
SiO2	10.6 %

* Average of assays for 19 North American refractory gold concentrates

Comparison at 50,000 tpa concentrate

Capital Cost

IGP	US$8-10 million
Bacterial oxidation	US$14.6 million
Pressure oxidation	US$20.0 million

Comparison at 50,000 tpa concentrate

Operating Cost

	US$ per tonne	US$ per oz Au
IGP	65-70	36-39
Bacterial oxidation	84.10	47.0
Pressure oxidation	93.10	52.0

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