Passive seismic for delineation of concealed channel iron deposits: Dream or reality?
Forward looking statements

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Outline

• Hamersley Channel Iron Deposits
• Surveys Over Channel Iron Deposits
• Surveys Over Mining Embankments
• Conclusions
Iron Exploration Within The Pilbara
Hamersley Channel Iron Deposits

IRON DEPOSIT TYPES

- BID: Bedded Iron Deposit
- DID: Detrital Iron Deposit
- CID: Channel Iron Deposit

- Consists of Fe-rich ooids and pisoids cemented by goethite with Fe-replaced fossil wood.
- Major deposits include Robe Formation, the Marillana Formation and the Poondano Formation
CID Stratigraphy

Upper CID: goethite/hematite-rich, well-formed ooids
Lower CID: dominated limonite and clay, massive
Basal Conglomerate: BIF clasts overlying bedrock

Oakover Formation: Micritic limestone and clays often calcretised
Hamersley Channel Iron Deposits

Channel Expressions

- Partial topographic inversion
- Complete topographic inversion
- Increasing erosion
- Buried
- Gorge country

[Diagram showing topographic changes and erosion processes]
Outline

- Hamersley Channel Iron Deposits
- **Surveys Over Channel Iron Deposits**
- Surveys Over Mining Embankments
- Conclusions
Surveys Over Channel Iron Deposits
Surveys Over Channel Iron Deposits
Surveys Over Channel Iron Deposits

Far West Pilbara

Dolerite Dyke

Ashburton Formation

Mount Minnie Group
Surveys Over Channel Iron Deposits

Far West Pilbara

Mount Minnie Group

Tanpool Beds

high

low
Outline

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Surveys Over Mining Embankments
Surveys Over Mining Embankments

- Brampton South Line 1
Surveys Over Mining Embankments

- Brampton South line 2
Surveys Over Mining Embankments

- Brampton South Line 3
## Surveys Over Mining Embankments

### Shear Velocity Contrasts

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<tr>
<th>Site</th>
<th>Site Description</th>
<th>Average Vs</th>
<th>S.D. of Vs</th>
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<td>Vasse</td>
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<td>South Wall, Line 1</td>
<td>Mine fleet constructed embankment</td>
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<tr>
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<tr>
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<td>Gohman Creek</td>
<td>Loosely compacted shallow levee (4m) and overburden</td>
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<td>13</td>
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<td>Tailings North Pit</td>
<td>Moist tailings over shallow bedrock</td>
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<tr>
<td>Tailings South Pit</td>
<td>Dry tailings over shallow bedrock</td>
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Compaction
Conclusions

• HVSR method is cheap, non-invasive method of CID delineation not without limitations however.
• Requires an ideal geological scenario and is influenced by morphology, lithology and structure.
• Results in an ideal two layered model effectively prove the viability of the method
Final Thought

~5m

~35m
Final Thought

What Are We Actually Measuring?