Onshore Natural Gas from Lignite

Unlocking the potential of Victoria's lignite resources

Submission for the inquiry examining onshore unconventional gas in Gippsland, Victoria

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Gippsland Gas

Our Position

Where are we now?

- Evidence of gas in deeper lignite seams in the Gippsland Basin
- Increasing gas prices
- Stress on Victoria's industrial and domestic users

Gippsland Gas' vision:

- Unlocking the potential of this resource
- Delivering significant benefits to Victoria

Our approach / How do we get there?

- Exploration for gas within deeper lignite seams on EL4416
- Seeking government approval for further exploration activities
- Strictly adhering to legislation, with appropriate environmental management plans and approvals

BENEFITS

- **Create local jobs and boost the lo economy – Government royalties and increased demand for local goods and services**
- **Provide a competitive and local energy source mitigating rising ga prices**
- **Support Australia's energy securit – meeting growing demand**
- **Transition to a low carbon econo – gas generates less emissions tha black coal and brown coal**
- **The water produced can be used with lignitic fertiliser, to ultimatel achieve zero net emissions from i use**

Prospectivity

- We have completed an extensive technical review of the Gippsland Basin
- Independent experts have estimated gas resources within EL4416 lignite, validated in 2012 by Esso technical experts when the JV formed

	Low (P-90)	Best (P-50)	High (P-90)
Contingent	0.657	3.727	9.147
Prospective	0.227	1.269	3.477
Total (OGIP)	0.884	4.996	12.624

Contingent Resources: MHA have not applied a recovery factor OGIP: original gas in place.
1.Source: MHA Petroleum Consultants (Dec 2011)

GGPL PHASE ONE EXPLORATION AIMS

CAPACITY

Lignite thickness is derived from a basin model generated from over 20,000 historical holes ✓

SATURATION

Gas in lignite is evident at our Burong site, in addition to other historical wells. ✓

PERMEABILITY

Evaluate ability of gas to flow from lignite.
Testing will provide necessary data (planned).

WHAT HAVE WE LEARNED?

- Gas is present within deeper lignite seams
- Gas in lignite is biogenic - low in CO2 and other contaminants
- Water produced from lignite seams has/can be used in agricultural activities

Gippsland Gas is actively assisting the Victorian Government and Geoscience Australia by providing and collecting additional data, especially with respect to groundwater.

Regulation and Environment

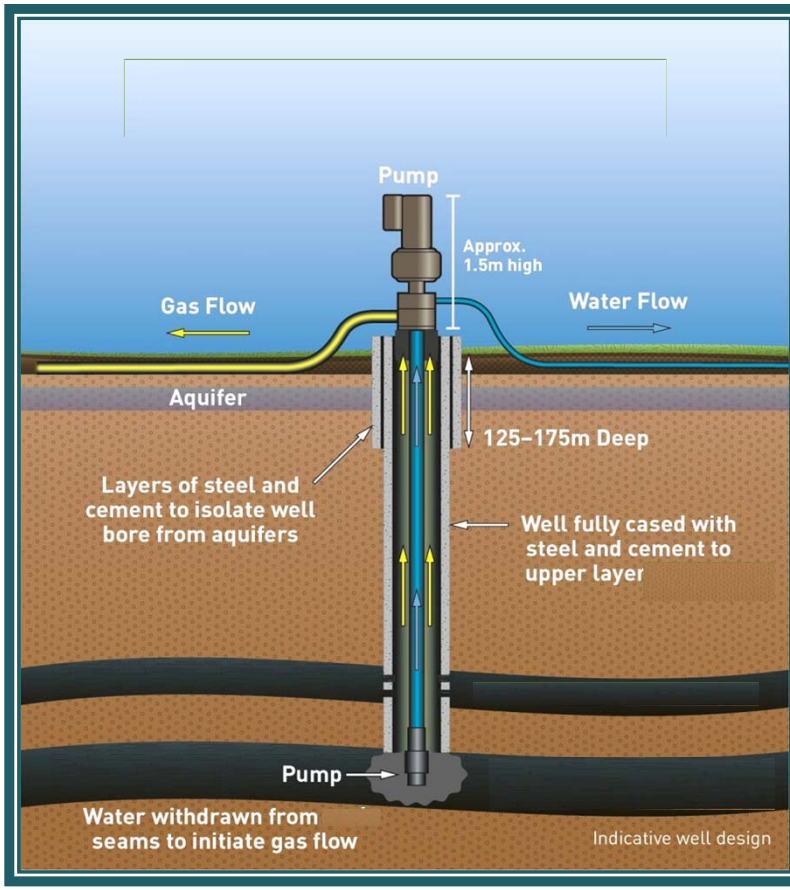
Groundwater protected during all activities

Exploration

- Exploration wells comparable to the over 20,000 drill holes previously drilled across Gippsland
- Baseline groundwater study commenced
- Negligible impacts, target lignite seams are hundreds of metres below licensed aquifers

Operations

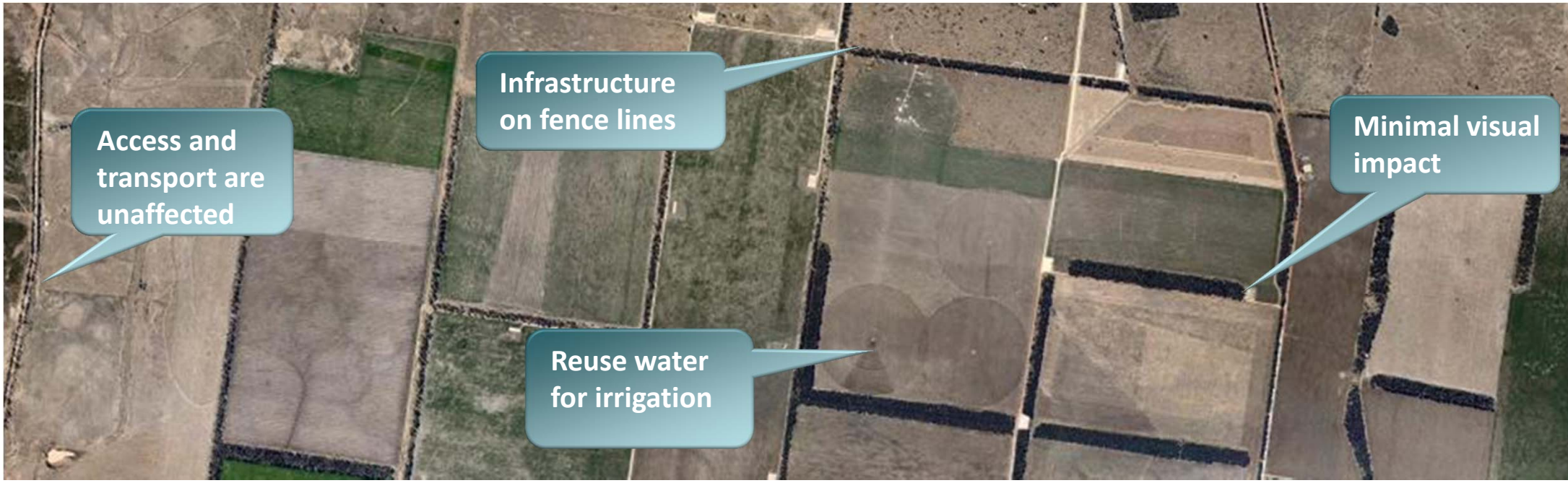
- Aquifer isolation and minimal environmental impacts are imperative for operational, technical and economic targets to be met
- Industry best practice adopted for all development and operations



A robust regulatory framework governs the environmental management and approval of exploration activities in Victoria

- Mineral Resources Sustainable Development Act
- National Groundwater Harmonisation Strategy
- Environmental Protection and Biodiversity Conserv Act

Coexistence



Surat Basin (QLD) operation by air photo

- Agriculture and gas extraction are not competing/exclusive land use
- Gippsland landholders have been receptive, 6 agreements signed
- Compensation/benefits for landholders, local employment, irrigation water, on-farm infrastructure

Questions

- Further information to be provided in written submission
- Project web site (http://www.igniteer.com/gippsland-gas/)
- Questions from panel

LIGNITE BASED BIOLOGIC FERTILISER

CO_2 SEQUESTRATION –

REPLACING CHEMICAL FERTILISER

- **Conversion of lignite to high-grade BioLogic fertiliser**
  - proven technology
  - Biological Farming/fertilisation System (BFS) improves farm profits
  - BFS already deployed on 300 farms over 300,000 hectares

- Roll-out BioLogic fertiliser plants on EL 4416
  - IER's lignite uniquely suitable due to high humic/fulvic content
  - close to port for national distribution and export
  - existing high-value market for BioLogic fertiliser

- BioLogic fertiliser, blended from lignite with proprietary biology, catalyses crops & grasses to rebuild soil carbon & biological diversity

- Measured **soil carbon increase** – min 0.15% pa (~15 tonnes CO2 per ha from ~50kg lignite application) – **300 x carbon multiplier**

High carbon content soils are rich, brown, fertile,
drought resistant, healthy soils

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GREENING BROWN COAL
IER'S ZERO NET EMISSION STRATEGY

- Australia's agricultural lands (~500m ha) have been degraded of soil carbon (average 3-4% down to ~1% – being 150 to 200 Bt CO2e) equivalent to ~300 years of Australia's annual GHG output
- 1 M ha BFS farmlands – min 15 Mt CO2 sequestered pa
- 0.2% increase in soil carbon on 5% of Australia's agricultural land equates to 500 million tonnes of CO2 sequestered

BFS can offset Australia's fossil fuel emissions for many decades, at very low (arguably negative) cost of CO_{2e}

CARBON BRIDGE