Presentation By Mecrus Resources to the Parliamentary Inquiry into Unconventional Gas in Victoria

23 September 2015

Mr. Barry Richards,
Managing Director

- Member – Victorian Farmers Federation
- Member – Meat & Livestock Association
- State Council member – Minerals Council of Australia
- Member – Protected Cropping Australia

Dr. Rodney Halyburton,
Senior Petroleum Consultant

- Extensive Petroleum E&P experience internationally and in Australia
- Former Vice President – Special Projects, Operations & Technology Group, BHP Petroleum Pty Ltd,
- Former Professor and Head of the Department of Petroleum Engineering, Curtin University of Technology, Perth, Western Australia

Victoria has an identified significant resource of Unconventional oil and gas in the Otway Basin

MECRUS Resources

Who is Mecrus Group?

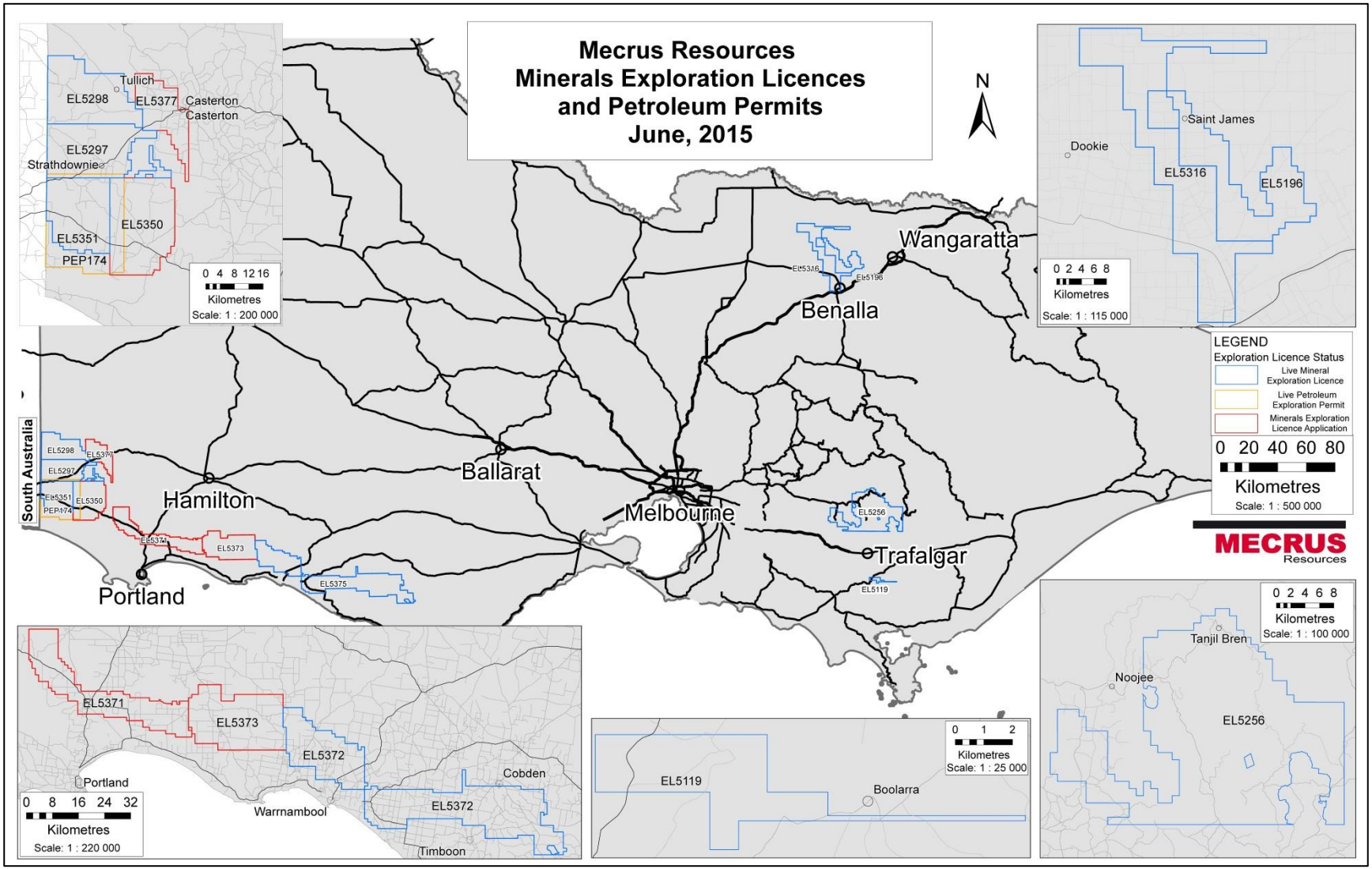
Mecrus is Diverse organisation by design

- Mining & Resources (Mecrus Resources)
- Agribusiness (Bacchus Marsh and Gippsland)
- Water (AGT and Desaln8)
- Energy (Gas Fired Steam Plants at Cobram and Leongatha)

www.mecrus.com.au

Who is Mecrus Resources?

- Our Activities are centred on Victoria.
- A mix of Hydrocarbons and Minerals.
- The selection of these locations.
- Why a big focus on “Unconventional” Hydrocarbons.
- The focus on long term development.


Mecrus Resources
Minerals Exploration Licences
and Petroleum Permits
June, 2015
N
Tullich
EL5298
EL5377
Casterton
Casterton
EL5297
Strathdownie
EL5350
EL5351
PEP174
0 4 8 12 16
Kilometres
Scale: 1 : 200 000
Saint James
Dookie
EL5316
EL5196
0 2 4 6 8
Kilometres
Scale: 1 : 115 000
Wangaratta
Benalla
Ballarat
Hamilton
Melbourne
Trafalgar
Portland
South Australia
EL5374
EL5373
EL5375
EL5256
EL5119
LEGEND
Exploration Licence Status
Live Mineral Exploration Licence
Live Petroleum Exploration Permit
Minerals Exploration Licence Application
0 20 40 60 80
Kilometres
Scale: 1 : 500 000
MECRUS
Resources
EL5371
EL5373
EL5372
Cobden
Portland
Warrnambool
EL5372
Timboon
0 8 16 24 32
Kilometres
Scale: 1 : 220 000
EL5119
Boolarra
0 1 2
Kilometres
Scale: 1 : 25 000
Tanjil Bren
Noojee
EL5256
0 2 4 6 8
Kilometres
Scale: 1 : 100 000

Stakeholder And Community Engagement

Mecrus Resource's aim is

- To offer new opportunities to bring economic benefit to Victorian regions and to the local Victorian communities, for the benefit of all.
- To build strong and trusting relationships with all stakeholder groups.
- To bring prosperity, security of food and energy to the State.
- To maintain a high level of consultation with local landholders and key stakeholders
- To ensure that local landholders and key stakeholders are aware of the company's activities and have a chance to discuss these activities with us.
- to protect all sites of Cultural or Heritage significance.
- to be a responsible and beneficial member of the local community.

Consultation and Community Engagement

- A dedicated Mecrus Resources page is established within the company's website, offering information regarding the exploration activities of Mecrus Resources.

- In addition to the information, the webpage also offers contact details from which interested parties can directly contact Mecrus Resources with all questions and concerns.

- Mecrus Resources has continued to utilise the services of Communications Strategists the Clifton Group to assist and oversee communications and community engagement for Mecrus Resources

Legislative Aspects

- *Definitions in the Minerals and Petroleum Acts state that:*
  - ***mineral*** means any substance which occurs naturally as part of the earth's crust—
    (a) including—
    (i) oil shale and coal; and
    (ii) **hydrocarbons and mineral oils contained in oil shale or coal or extracted from oil shale or coal by chemical or industrial processes;"**

  - "***petroleum*** means—
    (a) any naturally occurring hydrocarbon, whether in a gaseous, liquid or solid state; or
    (b) any naturally occurring mixture of hydrocarbons, whether in a gaseous, liquid or solid state; or
    (c) any naturally occurring mixture of one or more hydrocarbons, whether in a gaseous, liquid or solid state, and one or more of the following, that is to say, hydrocarbon sulphide, nitrogen, helium and carbon dioxide—and includes any petroleum as defined by paragraph (a), (b) or (c) or any prescribed petroleum product that has been returned to a natural reservoir in Victoria, **but excludes any naturally occurring hydrocarbon or mixture of hydrocarbons within a deposit of coal or oil shale;**"

Note that oil shale is another term for organic source rock. Technical details can be provided to the Inquiry if required.

Legislative Aspects

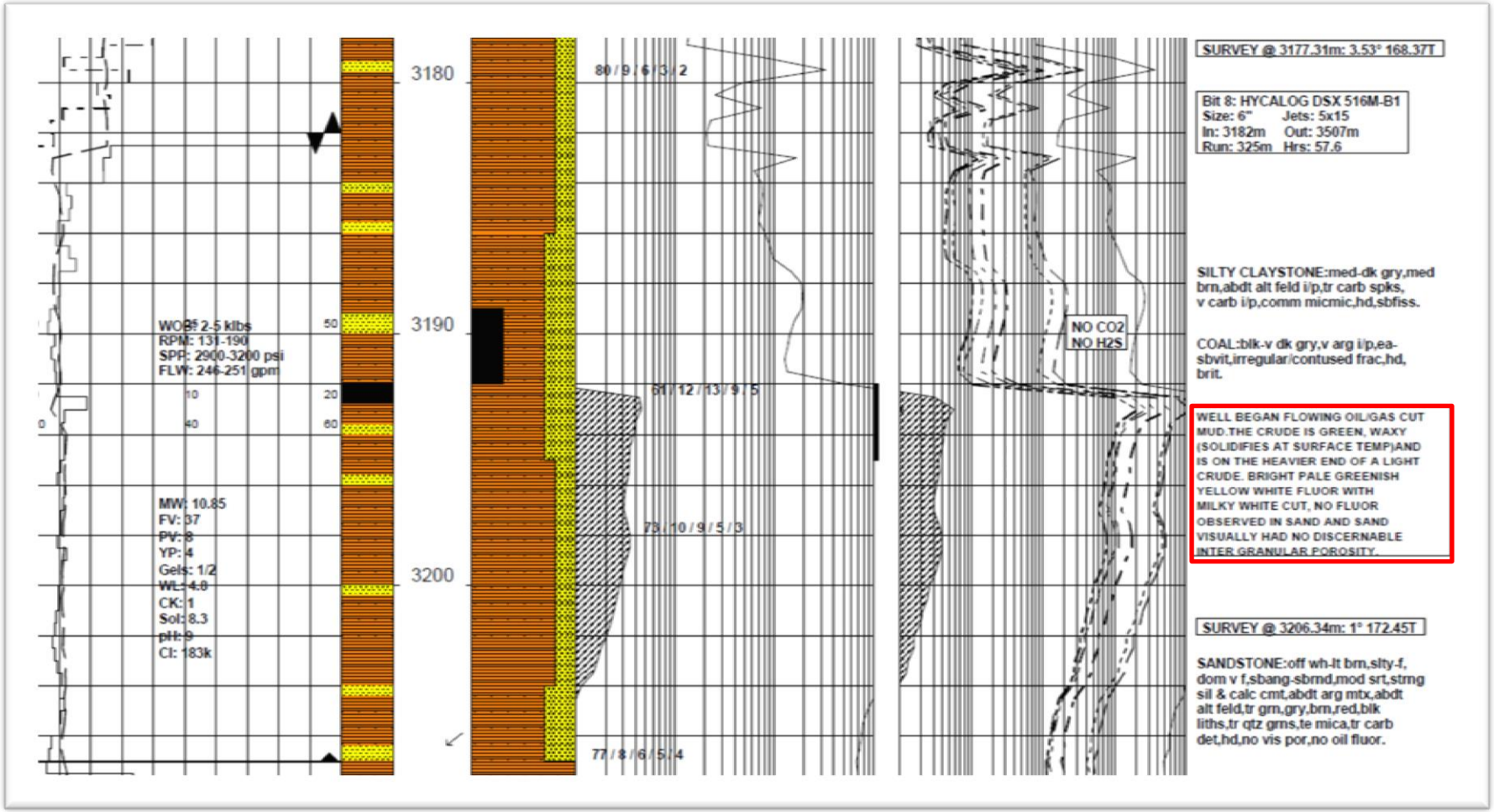
- *The Mineral Resources (Sustainable Development) Act is clear that hydrocarbon resources within oil shales and coals are treated as minerals. This has been independently confirmed by a QC opinion provided to Mecrus Resources.*

- ***Mecrus notes that there have been suggestions from some industry groups that the MRDSA and Petroleum Acts need to be changed and notes that any changes that affects rights under the Minerals Act to unconventional hydrocarbons in existing licences will raise the question of sovereign risk in Victoria.***

Do Unconventional Resources exist in Victoria?

- Mecrus carried out a detailed assessment of an area within the Victorian Otway basin and concluded that there is a significant oil shale hosted hydrocarbons resource, particularly in its licences EL 5297 and 5298.
- The study was focussed primarily on a petroleum well Glenaire 1 ST drilled earlier in the area.
- It is the only petroleum well in Australia from which oil has been produced from Oil Shale.
- This well contains oil and gas in open natural fractures in the Laira Oil Shale Formation that is over 1500 metres thick in the well.
- Mecrus is not interested in exploring for or producing Coal Seam Methane.

Do Unconventional Resources exist in Victoria?



MECRUS Resources

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Do Unconventional Resources exist in Victoria?

- ***Mecrus commissioned a study by RISC to provide independent verification of its findings as well as recommendations to evaluate and commercialise the opportunity.***

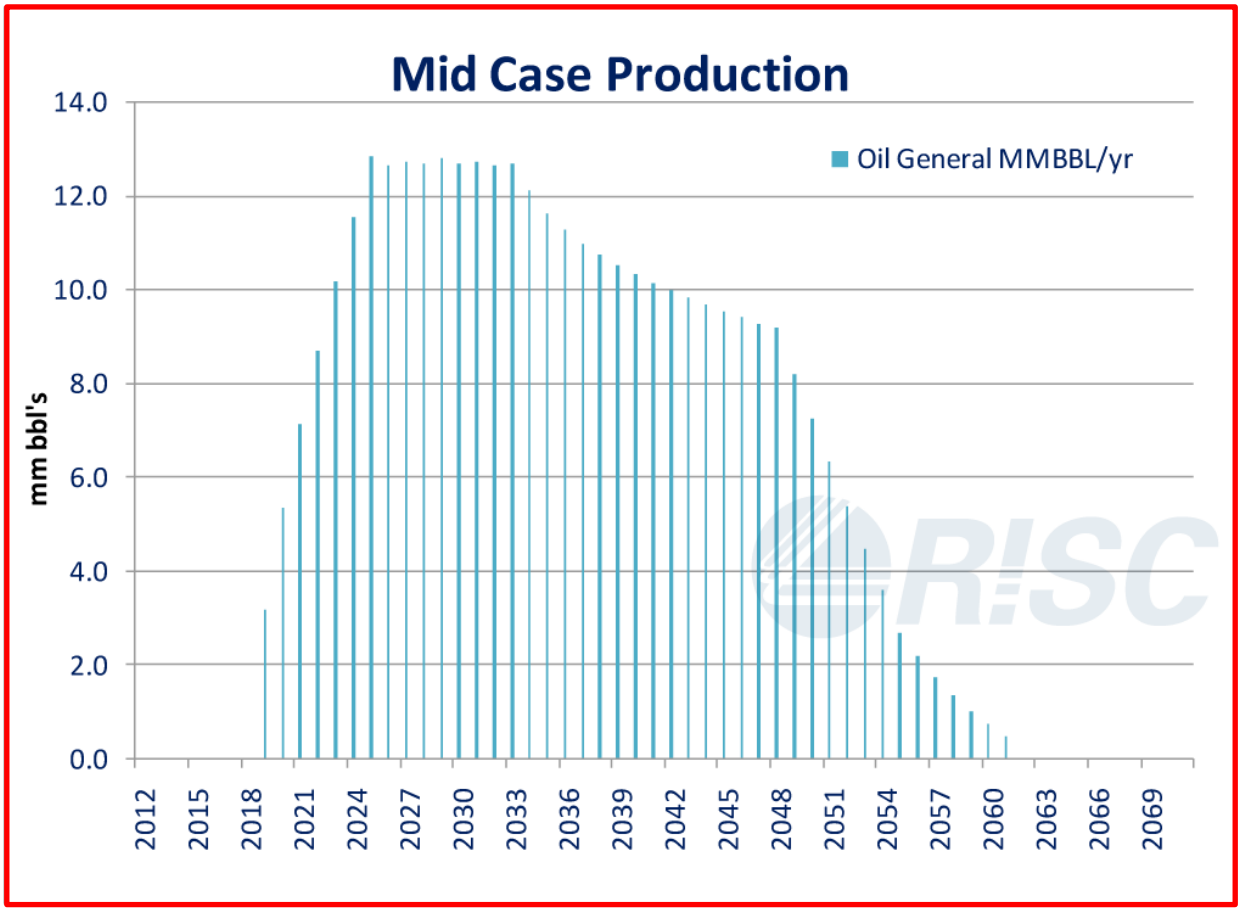
- ***Whilst intentionally very conservative, the RISC study has shown that there is significant potential value in the Resource in Mecrus' Licences. Note that the summary below pertains to the lower half of the Laira Formation only and that reservoir parameters and recovery factor estimates are low.***

Do Unconventional Resources exist in Victoria?

Model	Phase I				Phase II					
	Mecrus Initial			RISC single well model	EL 5298 (RISC)			EL 5297 (RISC)		
Parameter	P90	P50	P10		P90	P50	P10	P90	P50	P10
GRV (km2.m)	2,304	3,600	5,184		20,000	29,800	40,000	100,000	154,000	200,000
NTG %	70	90	100	50	10	40	70	10	40	70
Porosity %	6	9	12	5	3	5	7	3	5	7
Sw %	50	30	20	30	45	30	15	45	30	15
FVF/Bo	1.75	1.35	1.24		1.7	1.4	1.3	1.7	1.4	1.3
RF Oil %	1	5	10		2.5	4.5	7.0	2.5	4.5	7.0
★STOIIP mmbbls	392	735	1304		439	1568	3667	2200	7881	18440
UR mmbbls	10	38	93		14	64	179	71	322	901

★ STOIIP mmbbls: stock tank oil-initially-in-place (million barrels) , referring to Oil in place before the commencement of production

Do Unconventional Resources exist in Victoria?



Mid Case Production forecast could see the project produce 360 MMstb over a period of 40 years

MECRUS Resources

Regulatory Aspects

- *Mecrus has fulfilled all requirements to have an area work plan approved for the drilling and testing of a well in EL 5298 and have submitted the following:*

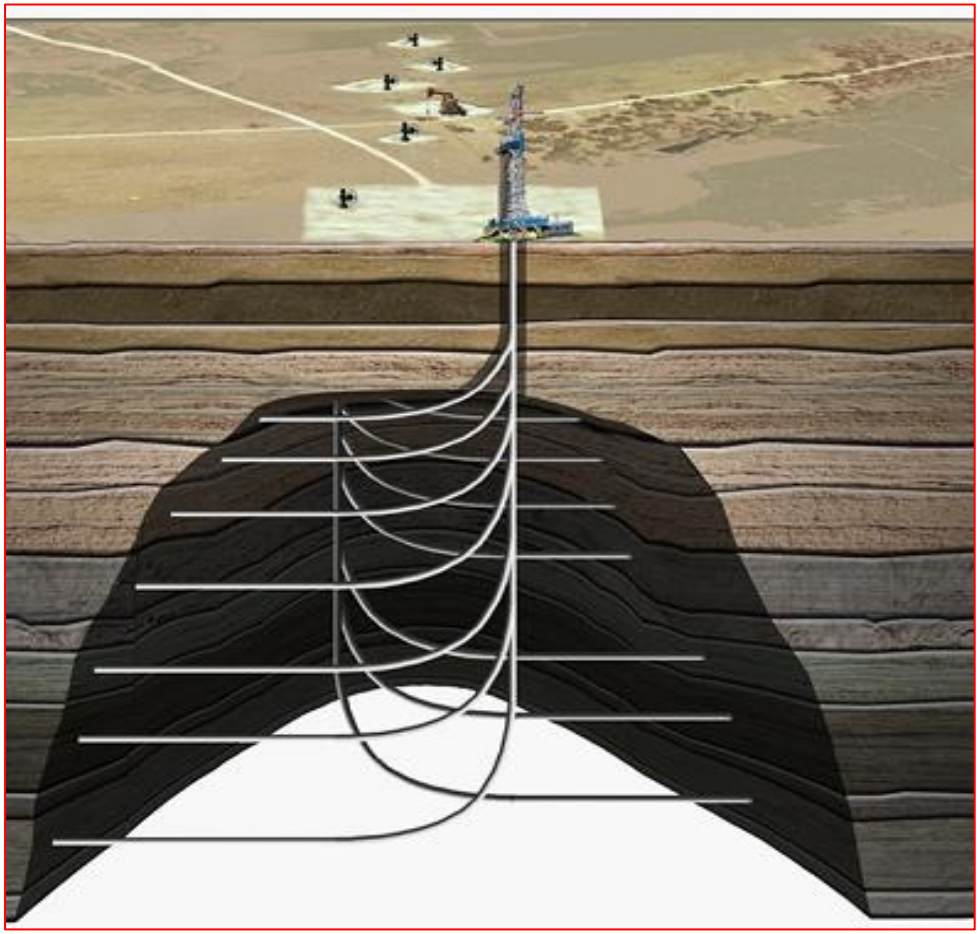
  - Area Work plan
  - Operations plan (*not a Legislative requirement*)
  - Environmental management plan (*not a Legislative requirement*)
  - Groundwater contingency plan (*not a Legislative requirement*)

- *Mecrus will brief the regulatory authorities on its operational plans and welcome witnesses from the DEDJTR to observe the way in which our operations are conducted. It is recommended that Petroleum experts from the DEDJTR be involved despite the fact that operations fall under the MRSDA.*

How can the Resource be Developed?

- Plans include the drilling of a well to collect data, evaluate the resource and conduct production testing across a vertical well and a 2 km horizontal offset in the Laira Formation. Note that open natural fractures exist in the well. Accordingly, fracture stimulation will not be an enabling technology, but a value adding technology.
- Given success in the first well and horizontal offset, the resource will be further evaluated with a single hub pilot plant from which 16 or more horizontal offset wells will be drilled to test the Laira Formation.
- Mecrus believes that an additional three vertical wells (each well with a 2 - 3 km horizontal offset) are required in EL 5298 to adequately evaluate the shale oil and gas potential in the Laira Formation as well as the Eumeralla, Sawpit and Casterton Formations in this area.
- The resource can be developed on a modular basis with multiple hubs, similar to, but improving on the design of, the initial pilot plant.
- **Surface operations to produce unconventional hydrocarbons are identical to that for conventional hydrocarbons. Accordingly, all operations to explore for and produce hydrocarbons will be in accordance with "world class good oilfield practice".**

How can the Resource be Developed?



Multi well pad drilling adopted from the link below:
https://www.sec.gov/Archives/edgar/data/1288403/000114420415018211/v405395_ex99-1.htm

Multiple Land Use

- The resource is hosted in sediments at least 1.5 kilometers thick at depths greater than 2500 metres. Accordingly, deviated and horizontal well technology can be applied to access the resource.
- It is estimated that a surface footprint of 1 hectare will be required to access the resources within an area of 800 to 900 hectares in the subsurface.
- This will ensure that valuable agricultural land will be preserved for undisturbed usage above the area of the resource.

Perceived Risks

- Ground water and surface contamination – There is at least 2.5 km vertical separation between the well and aquifers. Good oilfield practice, including proper well design will ensure that these risks are mitigated.
- Ground water usage – Mecrus through the use of its propriety Technology of Desaln8 can draw its process water from deeper saline aquifers not competing with other users.
- Seismicity caused by fraccing – The formation is naturally fractured and these fractures are open, so fracture stimulation will not be an enabling technology, but a value adding technology. The pre-existence of open fractures negates the probability of seismicity caused by fraccing.
- Surface contamination by spillage of drilling and production products - **All operations to explore for and produce hydrocarbons will be in accordance with "world class good oilfield practice".**

Hydraulic Fracturing in Victoria - the Future

Mecrus believes that there are compelling reasons why hydraulic fracturing in Victoria should be permitted in the future

- Victoria is out of step:
  - Based on Mecrus' review to date, hydraulic fracturing is permitted in many other parts of the world
- The public debate is uninformed:
  - The public debate in Victoria and, in general, announcements made by the Victorian Government, in relation to fracking and its concomitant environmental impacts, has not distinguished between fracking to extract coal seam gas, versus fracking in shales, despite the latter being in much deeper formations.
  - There is significant difference between CSG and Oil Shale.
- Victoria has major oil and gas provinces
  - Victoria has major oil and gas infrastructure in place
  - There is a strong, safe and long established tradition in Victoria of oil and gas exploration and production
- State workplace regulations require transparency of all Hazardous Substances or Dangerous Goods.

http://www.worksafe.vic.gov.au/safety-and-prevention/health-and-safety-topics/material-safety-data-sheets

Value to the Economy

- In the conservative Mid Case production forecast, the expected benefits from development of half of the Laira Formation have been estimated as follows:
  - Capital Expenditure $ 5.4 B
  - Operating Expenditure $ 2.4 B
  - Revenue $ 7.9 B
  - Income Tax Paid $ 6.3 b
  - Royalty to Victoria $ 520 Million

- Victoria's economy is slowly in decline and, without new business, companies will pull manufacturing interstate or overseas and the job losses will continue. Mecrus Resources have identified an opportunity for Victoria to invest in its economic development and job growth through Hydrocarbon production from oil shale.

Conclusions

- The existence of free oil in natural fractures has been incontrovertibly proven in the Laira Formation in the Glenaire 1 ST well.
- Production tests produced oil from the fractures, despite these fractures being plugged during drilling and cementation of the casing in the well.
- The most encouraging aspect of this play is that the target formation is over 1500 metres thick and is interpreted to extend over a significant area.
- By virtue of the large thickness of the target, a large resource can be accessed with a small surface footprint.
- This is a once-in-a-lifetime opportunity for Victoria to lead in a pioneering project in Australia.