



## LATROBE VALLEY PROJECT EXPLORATION LICENCE GRANTS REPLACEMENT ANNOUNCEMENT

ASX ANNOUNCEMENT

23 JUNE 2015

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On 19 June 2015, **Mantle Mining Corporation Limited (ASX: MNM)** released an ASX announcement regarding confirming the grant of Exploration Licence Applications EL5336, EL5338, EL5428 and EL5429 within its Latrobe Valley Coal Project.

Attached is a replacement announcement in which Mantle has sought to clarify the specific location of the recently granted exploration licence areas as part of its Latrobe Valley Coal Project in relation to the main Latrobe Valley depression.

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## LATROBE VALLEY PROJECT EXPLORATION LICENCE GRANTS REFOCUS MANTLE'S PLANS FOR SOLAR PUMPED HYDRO PROJECT

ASX ANNOUNCEMENT

19 JUNE 2015

**Mantle Mining Corporation Limited (ASX: MNM)** is pleased to advise that long-standing Exploration Licence Applications EL5336, EL5338, EL5428 and EL5429, as part of its Latrobe Valley Coal Project, have all been granted recently. This extra ground allows for a continuation into Mantle's study of the continuity and prospectivity of deeper metallurgical black coal under the Latrobe Valley with a long term view to establishing a solar pumped, hydro-electric generation project utilising disused brown coal open cuts connected to underground storage created by black coal mining.

### Highlights:

- The Department of Economic Development, Jobs, Transport and Resources (DEDJTR) have recently granted Exploration Licence applications: EL5336, EL5338, EL5428 and EL5429. The four tenements will complement the existing Exploration Licences held, those being EL5337 and EL5210 (Figure 1).

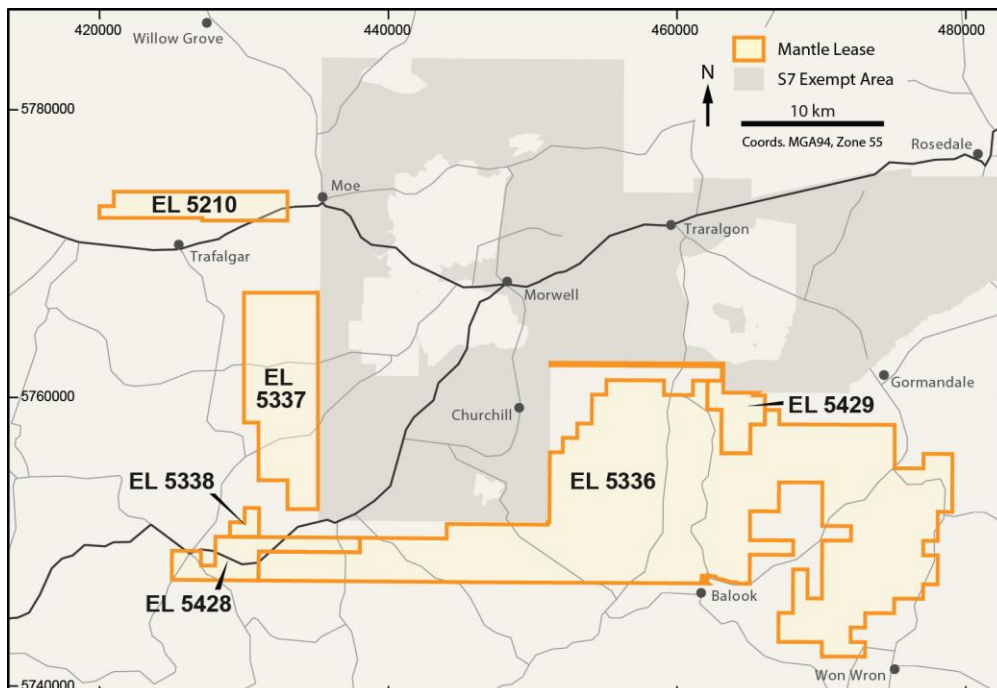


Figure 1: Mantle's Latrobe Valley Coal Project tenements

- Mantle intends to seek an allocation and determine the extent of deeper black coal resources under the Latrobe Valley (S7 area in Figure 1) with a view to establish underground mining of metallurgical (coking and PCI) and higher grade thermal coal.
- Black coal is thought to become shallower towards the southern and western margins of the basin, possibly providing an economic entry point to underground workings. The new EL's will allow extra Low Impact Exploration techniques (geophysical methods and minimal isolated drill holes) to better determine the extent and depth of the black coal at the margins of the Latrobe Valley proper.
- As per Mantle's submission (2012, unpublished) to the previous Victorian State Government, Mantle's long term plan for the next few decades is to enable a transition from unenhanced (raw) brown coal utilisation for power generation in the Latrobe Valley into sustainable renewable energy production via the development of combined solar pumped - hydro generation systems. This would allow for a stepwise move from carbon intensive generation, with low socio economic impact, to renewable energy generation by 2050.
- The mined higher grade, higher valued black coal could be exported for steelmaking, combined into a more efficient, less polluting power station fuel while still utilising the latest technology to convert the abundant and more volatile existing brown coal resources into less polluting fuel products, synthesized industrial products and fertilizers for agriculture (e.g. hydrogen from coal process – refer to ASX announcement on the 9 August 2010 page 2).
- Mantle has demonstrated its company's well established 'Triple Bottom Line' ethics of Social Responsibility (Community), Environmental Responsibility (Land) and Economic Sustainability (Prosperity) with past projects and will apply the same ethos to its new project.
- Infrastructure costs for the renewable energy systems will be paid for by the sale and export of the metallurgical coal mined via the latest advanced deep underground mining techniques. These new techniques allow sustainable and cost effective mining of these deep resources previously thought to be uneconomic.

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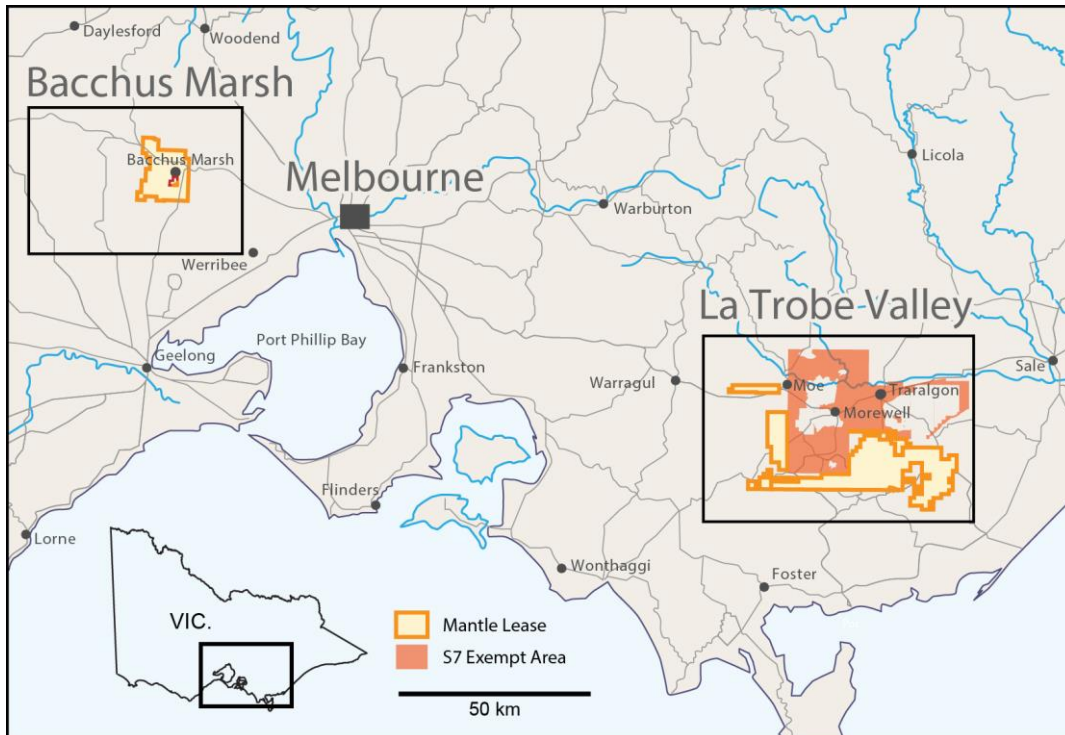
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### **About Mantle Mining Corporation Limited**

Mantle Mining (ASX: MNM) is an Australian based minerals exploration and mine development company. Mantle's principal activities are to acquire exploration tenements and locate economically developable deposits of coal and gold. It is Mantle's intention to progress mineral deposits through feasibility and into mining operations, to the benefit of all stakeholders.

## Background:

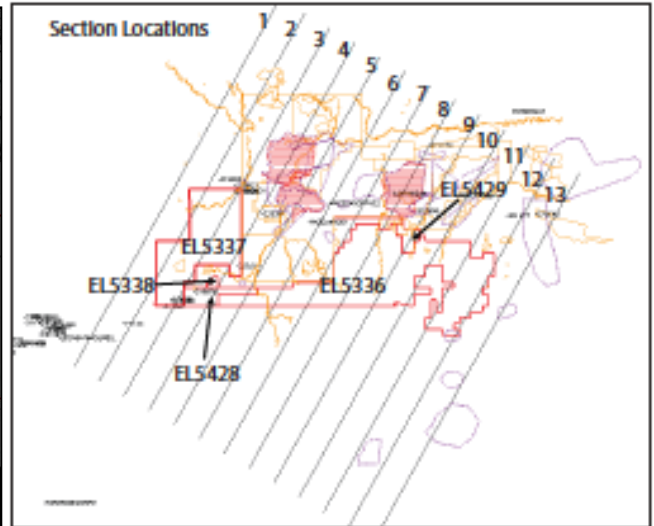
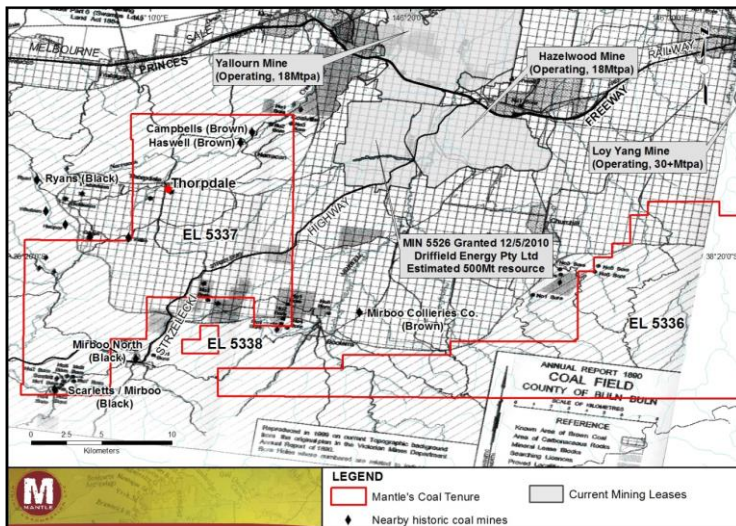
The highly prospective Latrobe Valley lies approximately 150km east of Melbourne (Figure 2). Mantle's exploration licences are located immediately adjacent to the main Latrobe Valley coal basin.



**Figure 2: Mantle's Victorian Coal Project Locations**

## Historical Mining

- Black coal was first extracted from the Thorpdale region in 1875 at Ryan's Coal Mine. By 1889 black coal mining in the Thorpdale region had extended as far as Scarlett's in the south. This area was mined intermittently until 1959. By 1876, a large number of brown coal mines were operating in the Thorpdale region. The first was at Mirboo Collieries Company Mine with a shaft in to a 50m thick seam at 40m depth. Smaller operations got underway at Haswell and Campbell's Mines (Figure 3).
- The Company is exploring for extensions of these historic coal mines and is seeking to define new black coal deposits, to develop new export opportunities and to apply brown coal upgrade technology to enhance the existing brown coal resources within the Latrobe Valley. Mantle has modelled a large portion of the onshore Gippsland Coal Basin by developing a detailed database of all historic, publically available drill holes.
- Long sections have been modelled by others, extending from Wonthaggi in the south-west, through the Latrobe Valley, all the way to Gelliondale in the far eastern section. The brown and black coal deposits within and immediately surrounding the main Latrobe Valley depression have been modelled by Mantle to provide detailed cross sections along several NE to SW trending strike lines (Figure 4).



**Figure 3:** Historic coal regions and mines  
(N.B. EL 5337 is now smaller and EL5428 & 9 not shown).

**Figure 4:** Latrobe Valley model cross sections plan.

### Mining Today:

- Mantle is committed to its 'Triple Bottom Line' code of ethics and recognises that resource development must not take place without the social licence to operate, a strict adherence to environmental protection and to company and community prosperity. Mantle also recognises the global move to alternative energy sources, but it will take decades to phase out inefficient coal burning, electricity generating power stations.
- Over the past recent decades, highly mechanised mining methods, cleaner coal utilisation and enhancement technologies, alternative fuels derived from coal, carbon capture and CO<sub>2</sub> sequestration all promise to reduce greenhouse gas emissions due to coal utilisation during the changeover to renewable energy sources. These developments have enhanced the prospects for Victoria's coal deposits, in the short term, to find their place in the emerging era of the lower greenhouse gas emission energy mix.
- Mantle remains committed to seeking Joint Ventures with enhanced coal technology companies to reduce greenhouse gas emissions caused by coal utilisation while the world transitions to alternative energy sources. Mantle also remains committed to utilising best practice in alternative energy utilisation during any exploration or mining processes. Past submissions to the Victorian Government for S7 area allocation have demonstrated a responsible social, environmental and sustainable economic ethos within Mantle in their desire to combine solar electrical generation and hydro-electrical generation, as well as other energy saving systems, into their proposed coal mining activities.
- Mantle also requested the Department to remove Coal Seam Gas (CSG) as a target for exploration on all of the 4 leases recently granted and requested the excision of the area of Mirboo North township from the EL5428 application as a result of community concerns.
- Initially (1<sup>st</sup> Year of grants), Mantle will carry out the following activities:
  - Conduct community consultation meetings to explain Mantle's plans for Low Impact Exploration on the tenements, to answer questions from the community and to listen to the concerns of the community;

- Carry out desktop studies – review literature, company and Government Reports, geological and geophysical data sets relevant to the new tenements;
- Determine the most prospective areas within the tenements and to voluntarily relinquish non - prospective areas where incompatible competing use is evident.

### Community Consultation

- Mantle has already commenced community consultation processes (as early as 26 July 2012 at Callignee, attended by the community, Mantle and DPI representatives) and has been quite open to community questioning and comment since the applications were submitted.
- Major community meetings involving the community, the Department and Clean Coal Victoria for Deans Marsh Coal Project considered the community and environmental issues facing the Project. The low potential of the coal deposits being economic, combined with those issues, led to Mantle withdrawing the applications (refer to ASX announcement 28 July 2011).
- At community meetings at Bacchus Marsh and during the drilling activities on EL5294, Mantle demonstrated a high potential for economic development via its joint venture partner - developed (Exergen Pty Ltd) low emission coal enhancement technology. In that case, under Mantle's triple bottom line process, we remain committed to the responsible development of those resources while still satisfying shareholder, landholder and sustainable environmental development criteria.
- As already stated Mantle remains committed to working with the community, preserving and protecting the environment, while adding value to Victoria's abundant mineral resources and creating prosperity for its community.

### Long Term Plan

- This plan initially involves applying for an allocation of, and if successful, mining the thick, deep (500 to 1000 metre deep) underground black coal seams (coking and PCI coal for steel-making) and once mined out, then concrete seal lining the underground reservoir walls to prevent leakage and hydraulically linking them to surface dams (old brown coal open cuts in the S7 area) via high efficiency, reversible hydro-generators and pumps.
- Solar generation, during the day, would be used to pump water from the underground reservoirs to the surface dams while that same water is used to generate hydro-electric power at night or during short high-demand peak periods when very profitable.
- Unlike similar pumped hydro-electrical generation project proposals to date (using off-peak grid supplied power), the pumping of water from the deeper reservoirs will be carried out using energy supplied by solar panel arrays.
- Mantle will seek Joint Venture partners for the technical innovation, underground mining and hydro-electric construction aspects of the long term project.