



FOR RELEASE : 1 OCTOBER 2019

Townsville Battery Manufacturing Plant Feasibility Study Submitted to Queensland Government

- Feasibility Study investigates the viability of developing an 18 GWh lithium-ion battery manufacturing plant in Townsville over 3 stages
- Demonstrated sound financial viability on a project basis with an NPV of A\$2.55 Billion and 21% IRR
- Project capital cost for all 3 stages estimated at A\$3 Billion with 1150 direct jobs when operating at full capacity
- Contributors to the Feasibility Study include GHD, Ausenco, Siemens, NAB and leading vendors of battery manufacturing equipment

Magnis Energy Technologies Limited (“Magnis” or the “Company”) [ASX:MNS] is pleased to announce that Imperium3 Townsville (“iM3TSV”) has finalised the feasibility study (the “Study”) for an 18 GWh lithium-ion battery cell manufacturing facility in Townsville, Queensland. Magnis owns one third of iM3TSV.

As announced on 5 June 2018, formal agreements to fast track the Townsville battery plant project were signed with the feasibility study to commence shortly after [ASX Release, 5 June 2018]. The project also received a \$3.1 million grant from the Queensland Government [ASX Release, 27 August 2018].

Feasibility Study Outcomes

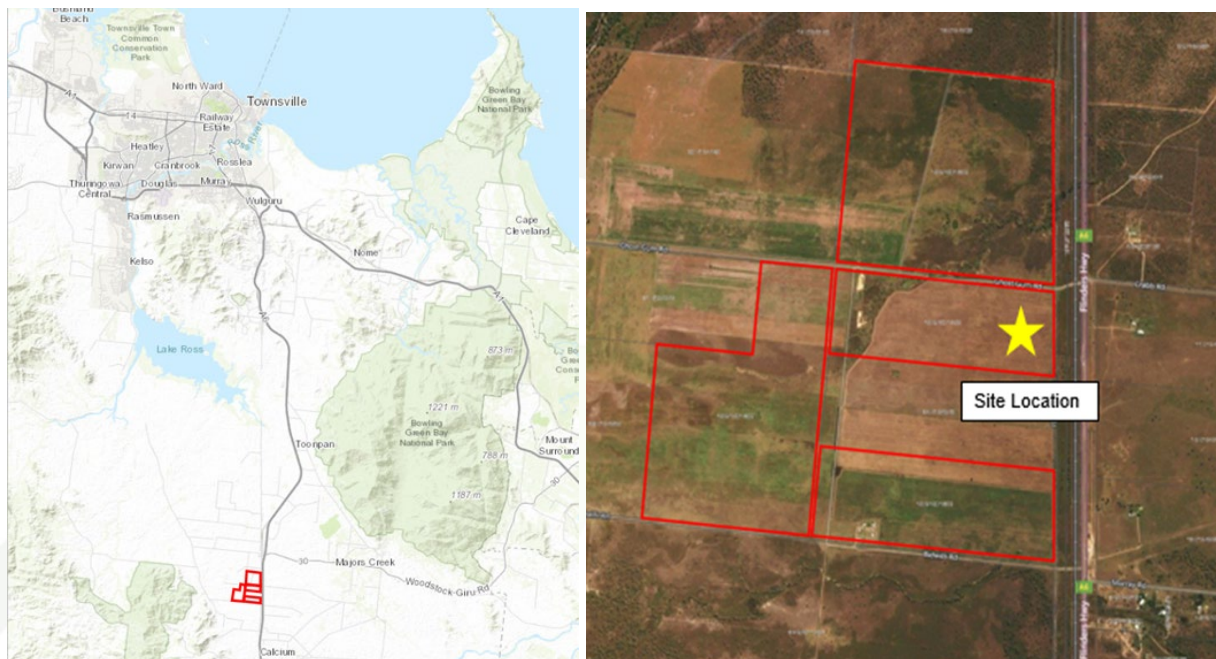
The feasibility study was primarily performed to develop the detailed engineering plan for the project and to establish financial viability to support subsequent investment decision and project funding.

A significant outcome of the study was to phase the project over 3 stages of 6 GWhs each, for a total nominal capacity of 18 GWh. This not only reduces the upfront capital expenditure to a more

manageable A\$1.12B for the first stage, but also allows for project expansion to occur in line with developments in technology and the market.

Site

The site is part of Lansdown Station approximately 40km south of the Townsville CBD with a total property area of 357 hectares [Figures 1 and 2]. It offers flat terrain and is predominantly vacant land with limited natural vegetation. Situated on the western side of the Flinders Highway, bounded to the north by Ghost Gum Road and south by Bidwilli Road, forming part of a new industrial estate planned by Townsville City Council which has a total area of approximately 2,070 hectares. Environmental assessments of the site including flora and fauna, stormwater, hydrology and flooding, geotechnical and cultural heritage found no major impediments to develop the plant at this site. Major infrastructure and utilities such as roads, electricity and gas are in close proximity to the site.



Figures 1 and 2: Site Location

Battery

iM3TSV has selected a cylindrical 32700 form factor for our battery cells as it is better suited to high volume manufacture and offers improvements in performance and cost whilst still maintaining flexibility in the range of applications for its use.

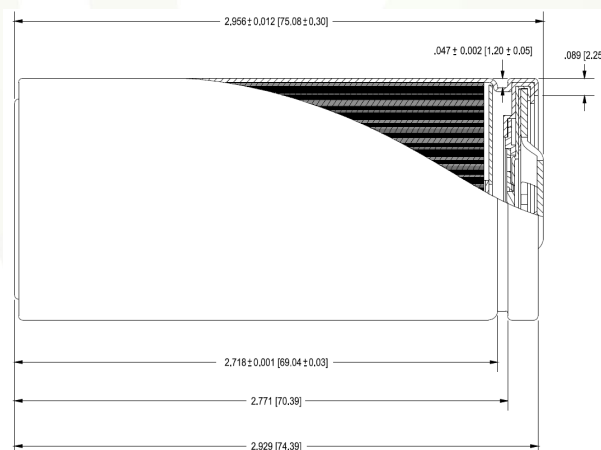


Figure 3 : Battery dimensions of a 32700 form factor

Manufacturing Process

iM3TSV's manufacturing process was developed with our strategic partners and leading vendors of manufacturing equipment including Durr Megtec and Siemens. Incorporating the latest advancements in battery cell production to increase overall efficiencies and production yields. Ausenco was responsible for combining the individual vendor packages into a fully integrated production process.





Figures 4, 5 and 6: LIB Manufacturing Plant Views of equipment and buildings

Labour

There will be approximately 1150 jobs at full operation [3 stages of 6GWhs] including 90 office staff, detailed below.

Shift Personnel	No. of Personnel	Day Personnel Stage 1	No. of Personnel
Materials Handling and Storage	2	Office - Management	1
Slurry Making	4	Office - Administration	2
Coating Lines	11	Office - Product Development	3
NMP Services	1	Office - Technical Department	4
Calendering and Slitting	12	Office - Procurement	4
Drying & J/R Winding [Cell Assembly Part 1]	12	Office - Marketing	1
Cell Assembly Part 2	18	Office - Finance	2
Cell Assembly Part 3	9	Office - Accounting	2
Formation and Ageing	2	Office - Human Resources	2
Testing and Grading	2	Office - Sales Department	3
Interfacing	2	Office - IT	3
Product Storage and Shipping	4	Office - HSE and Waste Management	3
Warehouse and Utilities	8	Maintenance and Warehousing	10

Execution Schedule

The implementation schedule for the first stage 6 GWh production is shown below.

Imperium3 Townsville Pty Ltd		Potential Funding Source(s)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Project Milestones	Budget		1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
SCOPING STUDY AND TECHNOLOGY FEASIBILITY STUDY	Circa A\$5m Circa A\$8m	Project Sponsors Project Sponsors & Government															
Planning & Development																	
Process Work Packages																	
Project Viability & Investment Decision																	
PILOT MANUFACTURING AND VERIFICATION	Circa A\$38m	Project Sponsor, Strategic Equity Partners & Government															
Value Engineering & Testing																	
Early Works Engineering																	
Detail Engineering																	
PLANNING AND DEVELOPMENT	Circa A\$2m	Project Sponsor, Strategic Equity Partners & Government															
Rezoning																	
Development Approval																	
Pre-Construction Documentation and Planning																	
CONSTRUCTION	Circa A\$3bn	Institutional Debt & Equity & Government															
Stage 1																	
Stage 2																	
Stage 3																	
OPERATIONS - MANUFACTURING	Circa \$0-3bn (refinance)	Institutional Debt & Equity & Government															
Stage 1																	
Stage 2																	
Stage 3																	

Capital Cost

iM3TSV's staged approach to developing the project has significant benefits for funding and product development. Townsville based quantity surveyors Rider Levett Bucknall [RLB] completed an independent review of capital expenditures for each stage as shown below.

STAGE 1:	▪ Building Works	\$ 944,360,173
	▪ Road Works	\$ 14,386,572
	▪ External Works and Services	\$ 163,594,322
TOTAL – STAGE 1:		\$ 1,122,341,067
STAGE 2:	▪ Building Works	\$ 920,763,055
	▪ External Works and Services	\$ 23,891,010
TOTAL – STAGE 2:		\$ 944,654,065
STAGE 3:	▪ Building Works	\$ 933,003,847
	▪ External Works and Services	\$ 30,424,890
TOTAL – STAGE 3:		\$ 963,428,737
CONSTRUCTION CONTINGENCY:		\$ 23,415,449
TOTAL CONSTRUCTION COST (excl. GST):		\$ 3,053,839,318

The cost for stage 1 is slightly higher than stages 2 and 3, due to the need for iM3TSV to contribute to the cost of extending some trunk infrastructure services to the site.

Financial Analysis

Project revenues and operating costs were compiled using conservative inputs which were used to create a robust financial model for the project. This model enables detailed analysis and scenario testing including product chemistries, production parameters and financing options. The table below shows the key financial metrics of a conservative base case assuming no financial incentives from government and iM3TSV achieving an 80% production yield with standard production configuration.

Project Returns [no terminal value]:	NPV @ 30-Nov-18 ['000,000]	IRR
Project	2,542	21.5%
Project after Debt	2,723	28%
Project after Debt & Tax	1,569	21%

iM3TSV has recently appointed National Australia Bank ['NAB'] as its financial advisor to assist in developing a project funding strategy.

Next Steps

The next phase of the project is now underway with the key milestones being::

- **Development Approvals.** Over the coming months a development application will be completed and submitted to Townsville City Council for formal consideration;
- **Project Funding.** iM3TSV's project funding strategy will be executed with advice from NAB who are the exclusive financial advisor to the project; and
- **Testing and Market Development.** iM3TSV will commence battery cell production testing in a commercial setting at equipment vendor facilities. iM3 battery cells will be provided to customers for independent evaluation and qualification as a precursor to procuring offtake contracts.

iM3TSV has consulted with local businesses, community groups and State and local government including:

- Townsville City Council in pre-development application meetings;
- Edify Energy towards supply of low-cost, renewable power to our facility;
- Port of Townsville to develop our transport and logistics solutions;
- James Cook University for collaboration on future education and training, innovation and research facilitation; and
- RLB quantity surveyors to ensure rigorous cost controls and maximising the amount of local procurement in the project.

For further information, please contact:

Marc Vogts
Managing Director
 Ph: +61 2 8397 9888
www.magnis.com.au