



EMPEROR ENERGY
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ASX Market Announcements
ASX Limited
20 Bridge Street
Sydney NSW 2000

17th February 2021

Completion of Pre-FEED for Judith Gas Field Project

Key Points

- **APA has completed the Pre-Front End Engineering Design ('Pre-FEED') for the provision of midstream infrastructure and services related to gas that is planned to be produced from the 100% Emperor Energy owned Judith Gas Field subject to successful appraisal drilling by Emperor Energy.**
- **The Pre-FEED is premised on Judith Gas Field Dynamic Modelling delivering simulated gas production of:**
 - **80 Million Standard Cubic Feet per day (MMscfd) sustained across 25 years.**
 - **4 vertical production wells being used at production commencement with an additional 5th well introduced in year 15.**
- **The Pre-FEED design nominates:**
 - **Subsea completion tying 4 x production wells to a 6-slot subsea gas collection manifold**
 - **A 40km x 300mm gas delivery pipeline and well control umbilical connecting the Judith Gas Field to the site of the APA owned Orbost Gas Plant.**
 - **A separate Judith field gas processing train, constructed on the site of the existing Orbost Gas Processing Plant.**
 - **An 11km x 250mm diameter gas export pipeline connecting to the Eastern Gas Pipeline at the existing Newmerella gas metering station.**
- **The base Capital Cost without contingency and excluding cost of production wells is estimated at approximately AUD \$500 Million.**
- **Project scheduling indicates:**
 - **Final Investment Decision (FID) could be achieved 14 months after commencement of Front End Engineering Design (FEED) otherwise referred to as Full Feasibility Study.**
 - **A further 38 months from FID to achieve Commercial Production.**
- **The budget estimate to complete the FEED is approximately AUD \$9 Million.**



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Completion of Pre-FEED

Emperor Energy is pleased to advise that APA Group (ASX:APA) has completed the Pre-Front End Engineering Design (Pre-FEED) for the provision of midstream infrastructure and services related to gas that will potentially be produced from the Judith Gas Field in the 100% Emperor Energy owned VIC/P47 Permit in the offshore Gippsland Basin, Victoria.

The Pre-FEED documents and Summary Report have been received by Emperor Energy and subsequently accepted by the Emperor Energy Board of Directors.

Scope of Pre-FEED:

The Scope of the Pre-FEED has included:

- The Pre-FEED design for a Gas Processing Plant, Subsea Pipeline and Export Pipeline to connect to the Eastern Gas Pipeline.
- Refinement of indicative project cost estimates and project scheduling.
- A Budget estimate for a Front End Engineering Design (FEED) or (Feasibility Study).

APA have carried out the Pre-FEED work using a balanced combination of both in house and external expertise.

Emperor Energy and APA established a Memorandum of Understanding (MOU) relating to the Judith Gas Project in October 2019. The Pre-FEED is the first stage of work to be progressed from the MOU.

Project Summary

The design basis for the Pre-FEED has been 80MMscfd (90TJ/day) of sales gas across a 25-year project life with gas processing to meet the AS4564 gas sales specification. This is based on 4 x initial production wells with a 5th well introduced in Year 15 to maintain delivery pressures.

Well delivery rates are based on Gas Reservoir Dynamic Modelling previously completed by Independent Reservoir Engineering Consultants engaged by Emperor Energy.

The subsea design allows for flexible jumper lines to transport raw gas from each well head to a six-slot manifold where all gas is collected and delivered in a single stream to the Pipeline End Termination.

The Pipeline End Termination provides the interface to a 40km x 300mm nominal bore pipeline delivering raw gas to the proposed Judith Processing Plant.

The 300mm pipeline selection provides a suitable balance between friction loss, economics, slugging and ramp up rates. A 40 km subsea control Umbilical from subsea wells to the proposed new Judith field gas processing train at the site of the existing Orbost Gas Processing Plant runs in parallel to the pipeline.



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Figure 1: Indicative Image of 4 x Well Subsea Completion Facilities

Image provided courtesy of APA

The design of the Judith processing plant is based on using available space adjacent to the existing Orbest Gas Processing Plant to construct a separate gas train tailored to the Judith gas composition. There will be operating synergies with the existing gas plant.

Sales gas would be delivered through an 11km x 250mm Nominal Bore export pipeline running in parallel with the existing Orbest export pipeline. This would then deliver gas to an upgraded Newmerella gas metering station connecting into the Eastern Gas Pipeline.

The Eastern Gas Pipeline is a key gas supply artery between the Gippsland Basin in Victoria and NSW. The Eastern Gas Pipeline transports natural gas to demand centres in Sydney, Canberra and Wollongong as well as a number of regional centres.



Figure 2: Aerial View of existing Orbest Gas Plant

Image provided courtesy of APA



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Capital Cost

The project delivery cost estimate has been assembled by APA with input provided from the Offshore Design Consultant (WOOD), the Onshore Design Consultant (Equinox) along with APA's internal project team.

The project capital cost base cost estimate excluding contingency provisions has been assessed as approximately AUD \$500 Million.

Further opportunities to optimise capital costs have been identified in the Pre-FEED study.

The capital costs included above do not include exploration / appraisal / production well costs which are to be dealt with separately by Emperor Energy.

Operating Costs have been excluded from the Capital Cost estimate and are to be dealt with through future tariff modelling.

Project Execution and Scheduling

The Pre-FEED study provides a Project Execution Plan laying out the basis for project delivery organization, procurement strategy, contracting strategy, fabrication methodology, logistics, construction methodology, commissioning and testing.

The key Regulatory approvals required for the project are identified and a detail project schedule has been analysed.

The Pre-FEED study indicates that a Final Investment Decision (FID) could be achieved 14 months after commencing the Project Front End Engineering Design (FEED) otherwise referred to as a Full Feasibility Study. Commercial operation could then be achieved within a further 38 months of the FID.

A budget estimate of the cost of the FEED has been forecast at AUD \$9 Million.

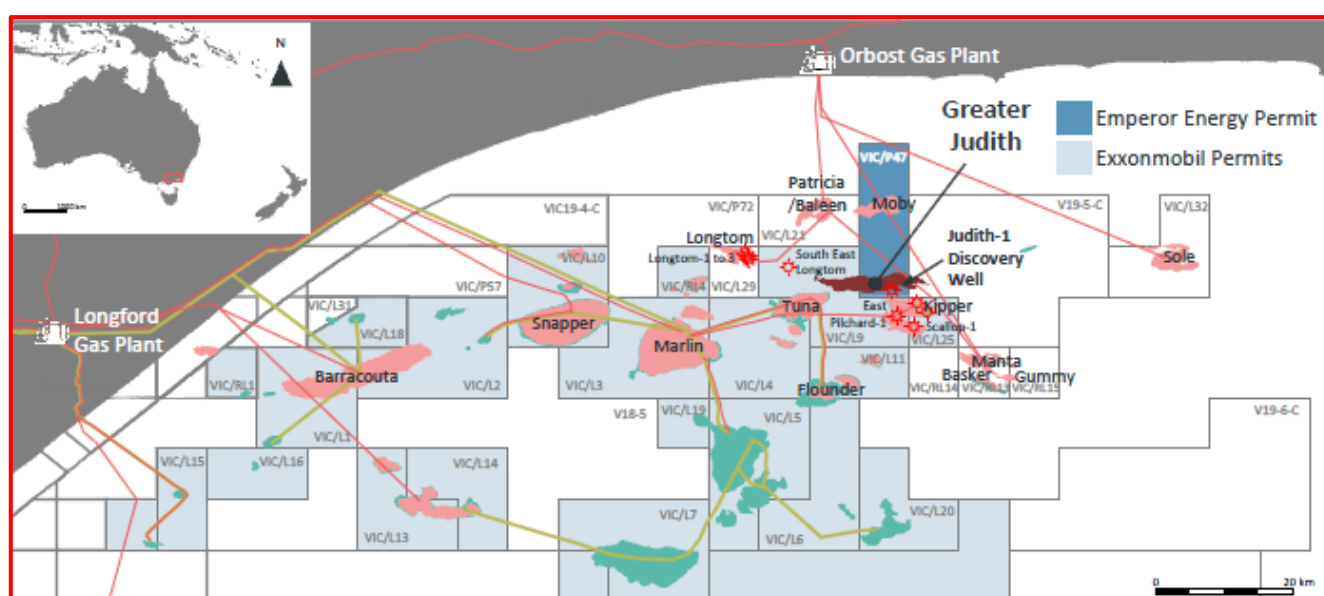
Management Comment

Emperor Energy Director Phil McNamara said: "The completed Pre-FEED now provides Emperor with a clear understanding of the project design, management, time frame and costs involved in bringing the Judith Gas Field into the lucrative East Coast gas market. Emperor's focus continues to be the establishment of a Farm In Partner for the critical Judith 2 Exploration / Appraisal Well. The opportunity now also exists to kick off the (FEED) or Feasibility Study early and commence the Project Approval process with the relevant Government Authorities to reduce the longer term risk of approval delays."



The 100% Emperor Energy owned Judith Gas Field is located within the VIC/P47 Permit in the offshore Gippsland Basin, Victoria.

- **2C Contingent Gas Resource of 150 Bcf**
- **P50 Unrisked Prospective Gas Resource of 1.226 Tcf**



Judith Gas Discovery		Contingent Resources		
		Low Estimate 1C	Best Estimate 2C	High Estimate 3C
GIIP	Bcf	180	278	386
Sales gas	Bcf	97	150	209
Condensate	MMbbl	1.4	2.2	3.2

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Greater Judith Area		Unrisked Prospective Resources		
		P90	P50	P10
Judith Deep	Bcf	38	62	92
West	Bcf	83	127	176
Central	Bcf	37	333	628
North	Bcf	29	166	315
North East	Bcf	49	279	494
North West	Bcf	15	102	226
South	Bcf	14	157	565
Total	Bcf	265	1226	2496

**Table 2: Summary of Prospective Resources for Judith within area of VIC/P47
(3D-GEO, July 2019)**

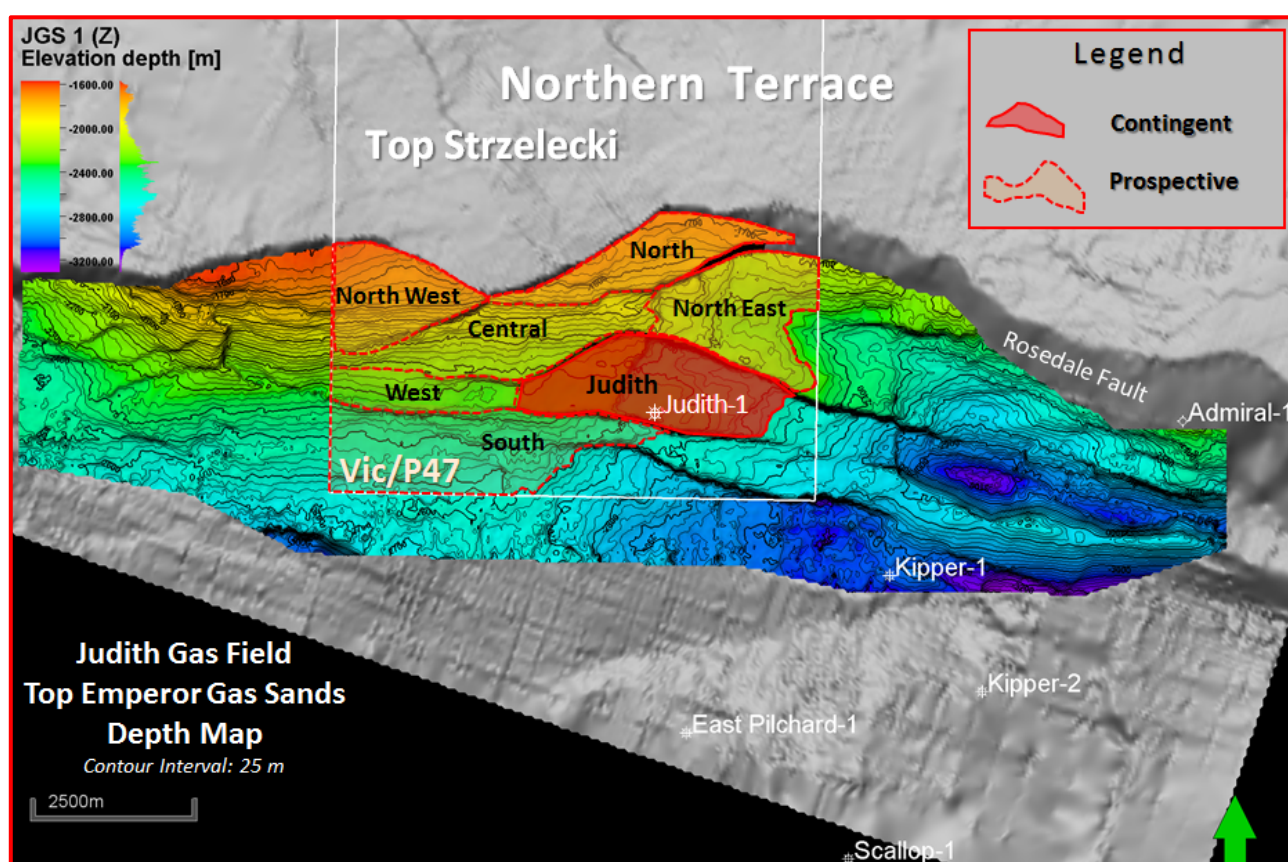


Figure 4: Judith Gas Field, and Greater Judith Compartments (3D-GEO, July 2019)



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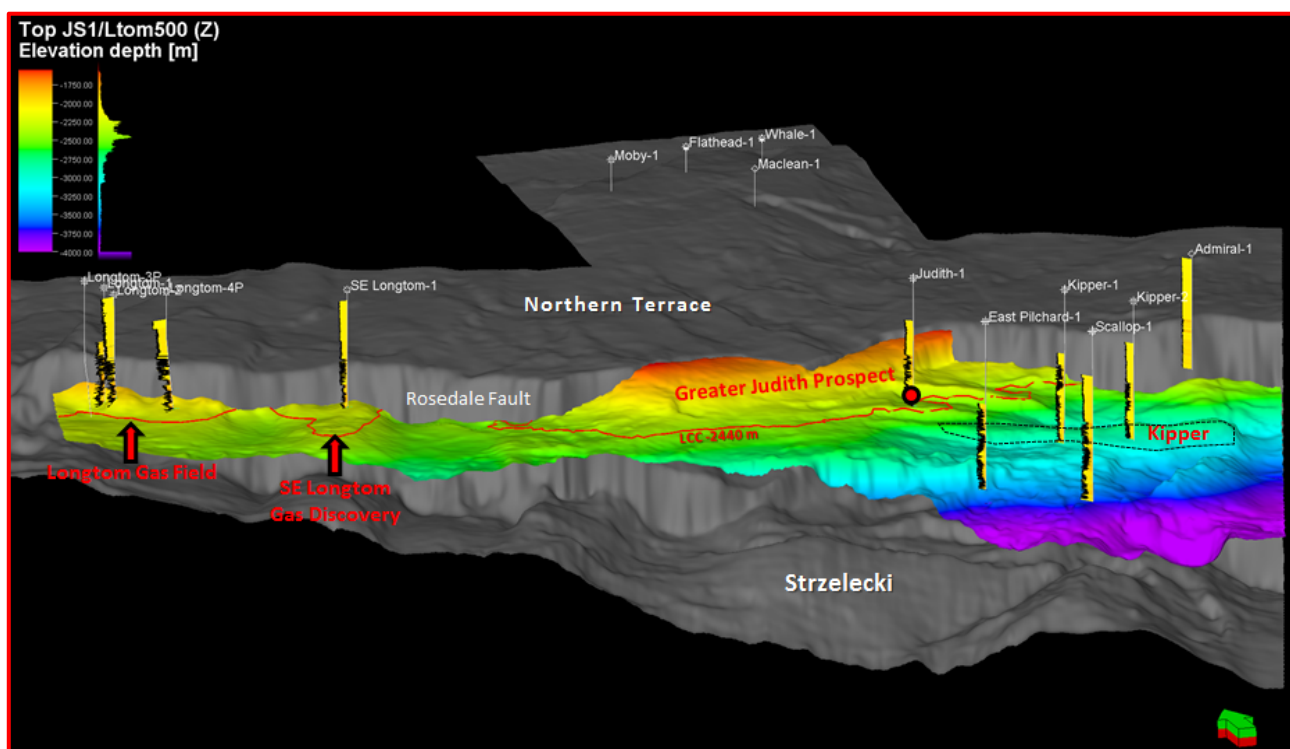


Figure 5: Judith Gas Sand 1 Depth Model from Longtom Gas Field to the Greater Judith Structure

Yours faithfully

Carl Dumbrell

Company Secretary

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Corporate Directory

Board of Directors

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Phil McNamara
Nigel Harvey

Company Secretary

Carl Dumbrell

Geological Consultant

Geoff Geary

Project & Business Development Consultant

Malcolm King

Registered office & Principle place of business

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Sydney NSW 2000

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Capital Structure

The company currently has issued capital (as of 16th February 2021) of:
Ordinary fully paid shares (ASX: EMP) 140,392,946