

19 August 2021

Orbost Gas Processing Plant: Phase 2B works

Cooper Energy (ASX: COE) provides the following presentation in relation to upcoming Phase 2B works to be undertaken at the Orbost Gas Processing Plant.

The Orbost Gas Processing Plant is owned and operated by APA Group (ASX: APA). The information set out in the presentation regarding the Orbost Gas Processing Plant has been prepared by Cooper Energy.

A webcast will be held tomorrow morning to discuss the presentation.

- **Date:** Friday, 20 August 2021
- **Time:** 8.00am ACST (Adelaide) / 8.30am AEST (Sydney, Melbourne)
- **Webcast link** (listen only): [Webcast link](#)
- **Registration link** (for Q&A participation): [Registration link](#)

A recording of the webcast will be available via the webcast link and the Cooper Energy website later tomorrow afternoon.

Authorised by:

David Maxwell
Managing Director
+61 8 8100 4900

Investors:

Derek Piper
Head of Investor Relations
+61 8 8100 4908

Media:

Bindi Gove
Head of External Affairs
+61 406 644 913

Cooper Energy Limited (ASX: COE) is an exploration and production company which generates revenue from gas supply to south-east Australia and low-cost Cooper Basin oil production. The company is an emerging player in the south-east Australian energy sector holding a portfolio of gas supply contracts and one of the most extensive portfolios of gas-focused acreage and assets, including well located reserves and resources in the Otway and Gippsland basins. These include the Sole gas field in the Gippsland Basin which recently became the first new offshore gas development in south-east Australia to commence production in several years, the Casino Henry operations in the offshore Otway Basin and undeveloped resources such as Manta and Annie.

Disclaimer: This announcement may contain forward looking statements that are subject to risk factors related to oil, gas and associated businesses. The expectations reflected in these statements are believed to be reasonable. However, they may be affected by a variety of variables and changes in underlying assumptions which could cause actual results or trends to diverge materially, including in respect of: price fluctuations and currency fluctuations, drilling and production results, actual demand, reserve estimates, loss of market, competition in the industry, risks (environmental, physical, political etc.), developments (regulatory and fiscal etc.), economic and financial market conditions in Australia and elsewhere, changes in project timings, approvals and cost estimates.



Orboast Gas Processing Plant

Phase 2B works presentation¹

19 August 2021



1. The information set out in this presentation regarding the Orboast Gas Processing Plant has been prepared by Cooper Energy

Key messages

Extensive testing provides confidence in Phase 2B works to significantly improve plant performance

- Understanding of the Orbost Gas Processing Plant (OGPP) has greatly improved throughout 2021
- Recent performance and average gas processing rates have improved:
 - H1 FY21: 23 TJ/day
 - H2 FY21: 35 TJ/day
 - Since 1 July 2021: 40 TJ/day
- Absorbers proven to operate at 34 TJ/day (each) when clean
- Key to improving stability and rates is reducing foaming and solids accumulation (fouling)
- Phase 2B works primarily targeting a reduction in fouling
- Numerous trials conducted to define most suitable technology application
- Independently, the root cause analysis is continuing

Snapshot of Phase 2B works

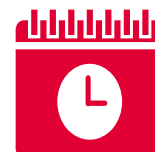
Phase 2B approved by Cooper Energy will complete works agreed under the Transition Agreement

- Phase 2 works were agreed in accordance with the Transition Agreement signed with APA in 2020¹
 - Phase 2A involved reconfiguration of absorbers to enable parallel and / or independent operations²
 - Phase 2B activities will complete the scope of works as per the Transition Agreement



PHASE 2B SCOPE

1. Installation of **solids removal** technology to prevent fouling within the absorbers
2. Installation of **spray nozzles** in absorbers to suppress foaming and reduce fouling



TIMING

- End Q1 FY22: Spray nozzle installation
- Q3 FY22: Solids removal installation



COST

- Estimated to cost \$20 million (100%); to be shared equally with APA
- Cooper Energy share expected to be largely funded from escrow account (minimal impact on cash reserves)



OBJECTIVES

- Improve plant stability and performance
- Extend absorber clean cycles

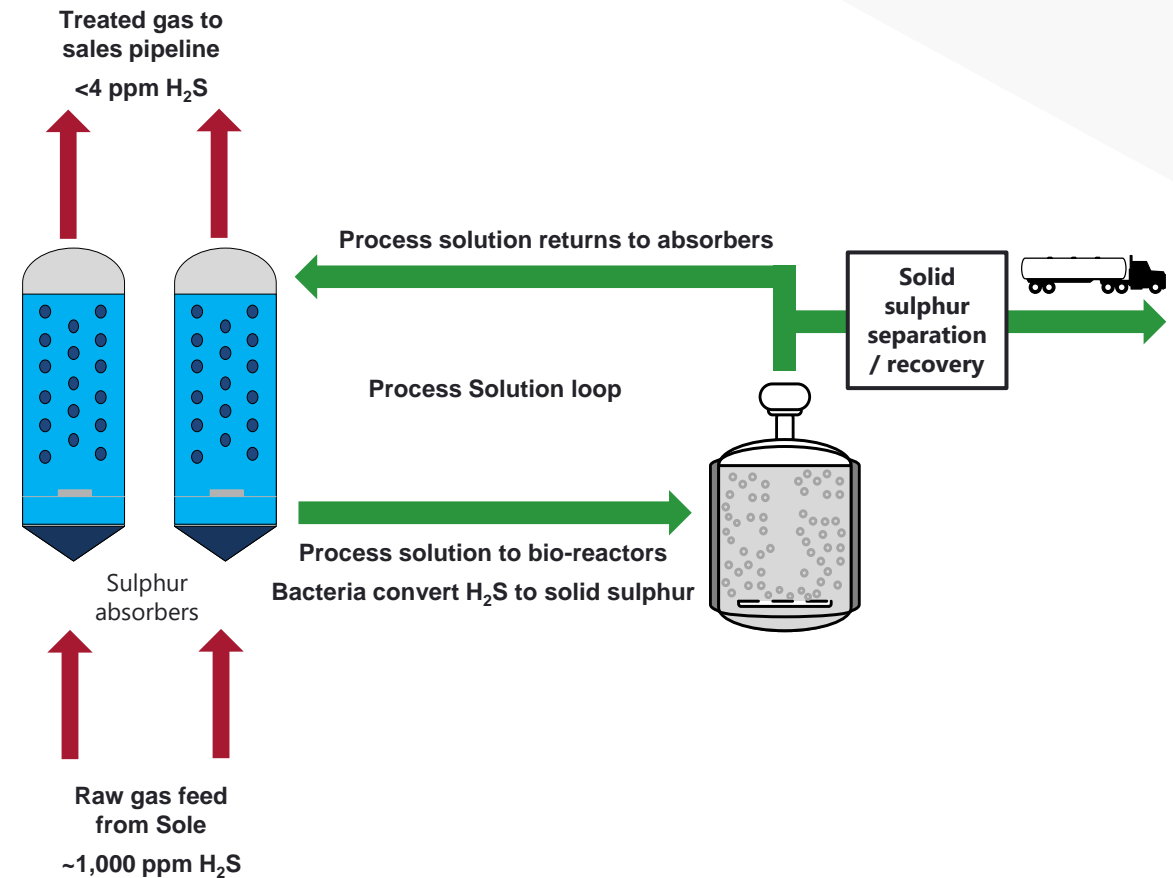
1. For further information, refer to ASX presentation of 15 February 2021

2. For further information, refer to ASX announcement of 9 December 2020

A recap: extracting H₂S from Sole raw gas

Process utilises technology under licence from Shell

- Sole gas contains H₂S (~1,000 ppm¹) which requires extraction
- Technology uses naturally occurring bacteria to convert H₂S into solid sulphur
- Bacteria lives in the process solution which circulates in a closed loop between the absorbers and bio-reactors
- The absorbers operate at high pressure to absorb H₂S from the raw gas into the solution
- The solution then passes into the bio-reactors where the bacteria converts the absorbed sulphur into solid sulphur
- A slip stream is taken off the loop to remove the solid sulphur from the solution
- The solution returns to the absorbers where the process is repeated

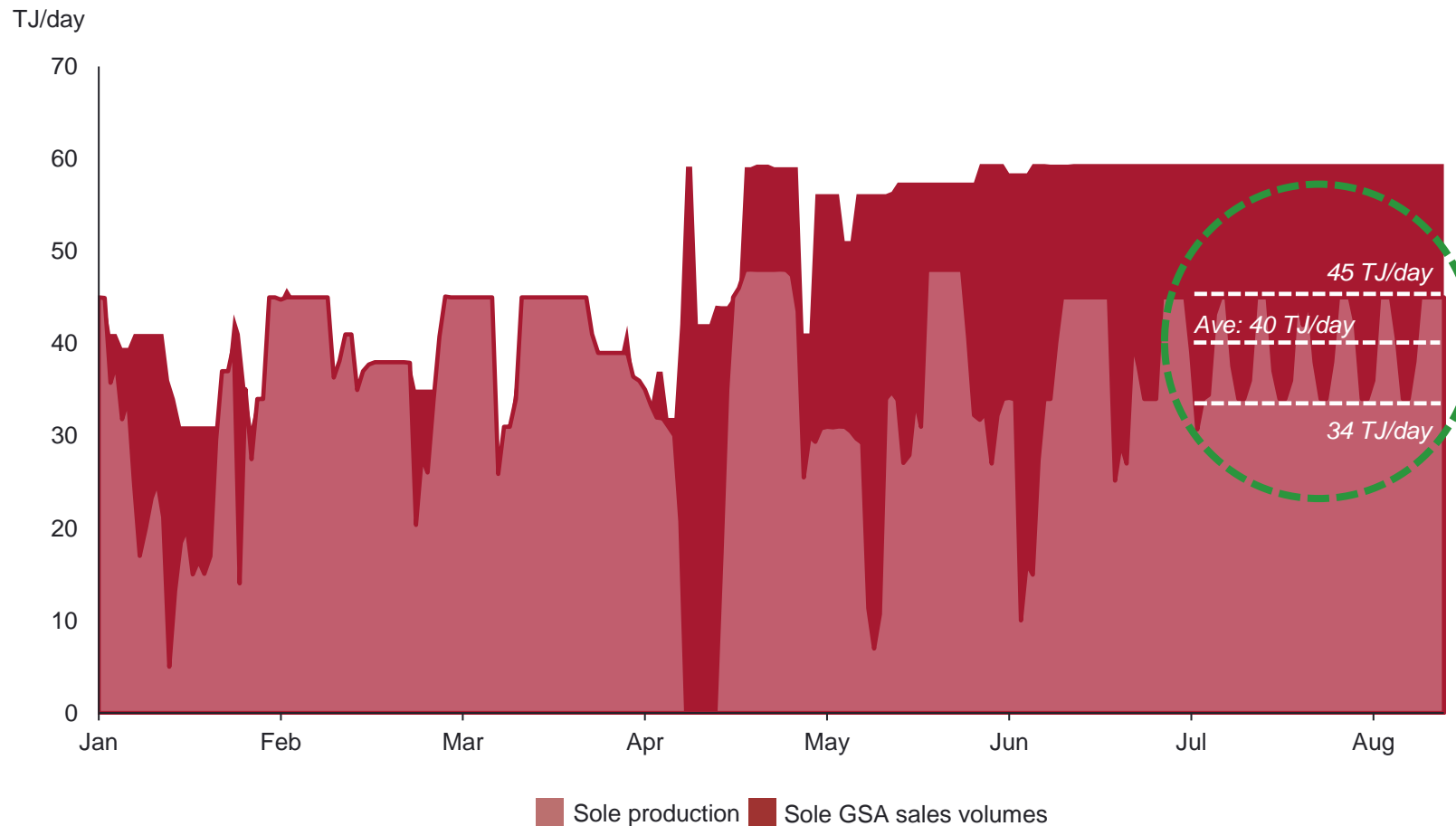


1. ppm = parts per million

The objective: keep absorbers clean to optimise performance

Each absorber proven to operate at 34 TJ/day when clean

OGPP processing rates and Sole GSA volumes: 1 January 2021 to 18 August 2021

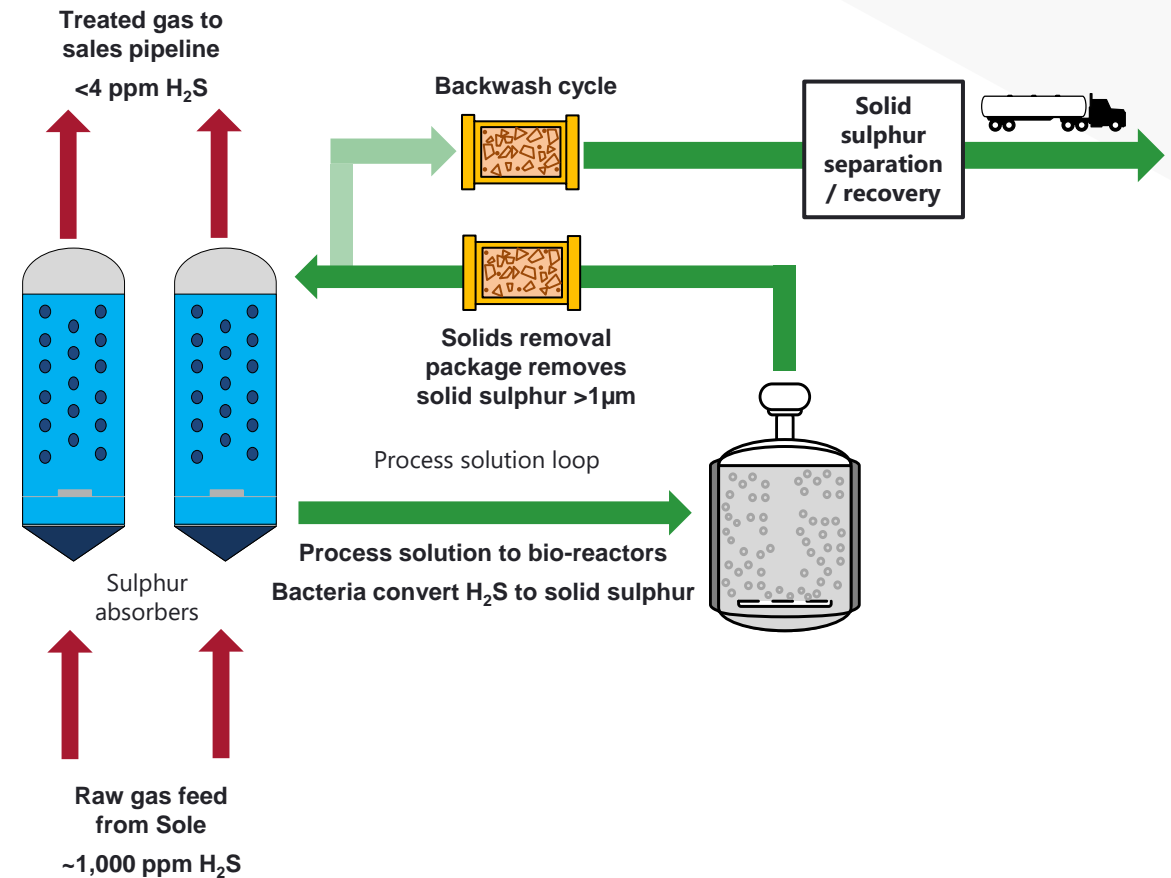


Cleaning of each absorber every two weeks
(i.e. one absorber cleaned every week)
Average processing rate of 40 TJ/day since
1 July 2021

Phase 2B filters: solids removal package

Designed to remove sulphur solids before solution re-enters the absorbers

- The package consists of multiple individual filter cartridges that cycle between filter mode and backwash mode
- Designed to remove solid sulphur of size $>1\mu\text{m}^1$ (based on testing)
- Solid sulphur is removed from the solution before it re-enters the absorbers
- Reverse flow backwashes the cartridges after each cycle with filtered process solution and diffused air
- Over 12,000 litres of OGPP solution filtered through a single cartridge on test with no performance loss witnessed
- Testing indicates solids removal package could significantly extend the time between absorber cleans and potentially eliminate cleans (outside of annual shutdowns)



1. $1\mu\text{m}$ = 1 thousandth of a millimetre

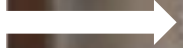
Phase 2B filters: successful trials at OGPP

Absorber simulations confirm ability to remove solids

Fouling of absorber packing with unfiltered solution



Solid sulphur build-up on packing



Absorber packing with filtered solution



Packing clear of solid sulphur



Foaming simulation using existing OGPP process solution¹

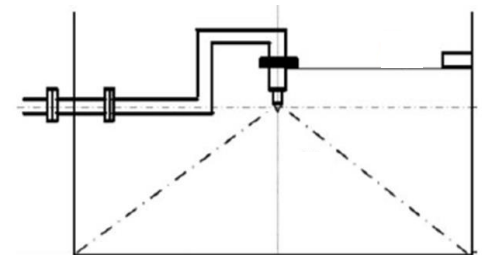


1. Simulation selected from many bubble tests performed to date; not all bubble tests produce foam as depicted

Phase 2B spray nozzles

Designed to reduce foaming within the absorbers which may reduce fouling

- Process solution sprayed through nozzles at the top of each absorber.
- Spray expected to suppress foaming within the absorbers and may also have a positive effect on fouling
- Sulphur particles have been found in the foam at OGPP
- Spray action may also break down sulphur aggregation which may reduce fouling
- Spray nozzle in the first absorber to be installed in August 2021



Key messages

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Disclaimer

This presentation may contain forward looking statements, including statements of current intention, statements of opinion and expectations regarding Cooper Energy's present and future operations, possible future events and future financial prospects. Such statements are not statements of fact and may be affected by a range of variables which could cause Cooper Energy's actual results, performance or trends to materially differ from the results or performance expressed or implied by such statements. There can be no certainty of outcome in relation to the matters to which the statements relate, and the outcomes are not all within the control of Cooper Energy.

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EBITDAX (earnings before interest, tax, depreciation, depletion, exploration, evaluation and impairment), EBITDA (earnings before interest, tax, depreciation, depletion and impairment), EBIT (earnings before interest and tax), underlying profit and free cash flow (operating cash flows less investing cash flows net of acquisitions and disposals and major growth capex less lease liability payments) are non-IFRS measures that are presented to provide an understanding of the performance of the Company's operations. Underlying profit excludes the impacts of asset acquisitions and disposals, impairments, hedging, as well as items that are subject to significant variability from one period to the next. The non-IFRS financial information is unaudited however the numbers have been extracted from the financial statements which have been subject to review by the auditor.

Qualified petroleum reserve and resources evaluator: This Presentation contains information on petroleum reserves and resources which is based on and fairly represents information and supporting documentation reviewed by Mr Andrew Thomas who is a full time employee of Cooper Energy holding the position of General Manager, Exploration & Subsurface, holds a Bachelor of Science (Hons), is a member of the American Association of Petroleum Geologists and the Society of Petroleum Engineers and is qualified in accordance with ASX Listing Rule 5.41 and has consented to the inclusion of this information in the form and context in which it appears. P50 as it relates to costs is best estimate; P90 as it relates to costs is high estimate. Information on the company's reserves and resources and their calculation are provided in the appendices to this Presentation.

Numbers in this report have been rounded. As a result, some figures may differ insignificantly due to rounding and totals reported may differ insignificantly from arithmetic addition of the rounded numbers.

Approved and authorised for release by David Maxwell, Managing Director, Cooper Energy Limited.

Level 8, 70 Franklin Street, Adelaide 5000