

# Capture Program Report

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Capture Program Manager



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# Otway Capture Project

## Overview:

Project Manager: Dr Abdul Qader (CO2CRC)

Science Leaders: Science Leaders:

Prof Paul Webley (UOM)

Prof Greg Qiao (UOM)

Prof Vicky Chen (UNSW)

Finish: 2019

- This CO2CRC Project O6 (Otway Capture Project) is a state-of-the-art carbon capture test facility designed to conduct research to develop cost effective, compact technologies required by the natural gas industry to remove and capture CO<sub>2</sub> from high pressure and low to very high (5 to 79%) CO<sub>2</sub> content wells.
- To develop cost effective, compact technologies available to the natural gas industry to remove and capture CO<sub>2</sub> mainly from high CO<sub>2</sub> content wells.
- A stage-gated program of adsorbent and membrane testing and development will be conducted over three years to confirm the performance, robustness, and tolerance of the membranes and adsorbents (see project timeline next). Commercial membranes will also be tested alongside the new membrane materials to provide benchmark data.



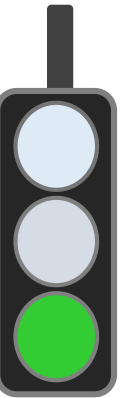
## Highlights & Latest Activities:

- Otway Capture Skid has moved to operation phase with the PSA section. After successful testing at a 30 bar pressure it was put in continuous operation for over 4 weeks with suitable cycle time setting by researchers. This allows to collect bench marking performance data at that condition.
- Initial trials with membranes were successful. Further activities are in place for the membrane streams due to the complexity of operating four streams (3 membrane and an adsorption) simultaneously.
- Regulatory approvals are in the process of being achieved for the use of the Buttress gas, which is now available after the well head replacement.
- This would follow to switch on to Buttress gas instead of cylinders of CO<sub>2</sub>.
- Use of H<sub>2</sub>S as an impurity component will be tested after materials testing attains maturity and the H<sub>2</sub>S analyser kit replaced.

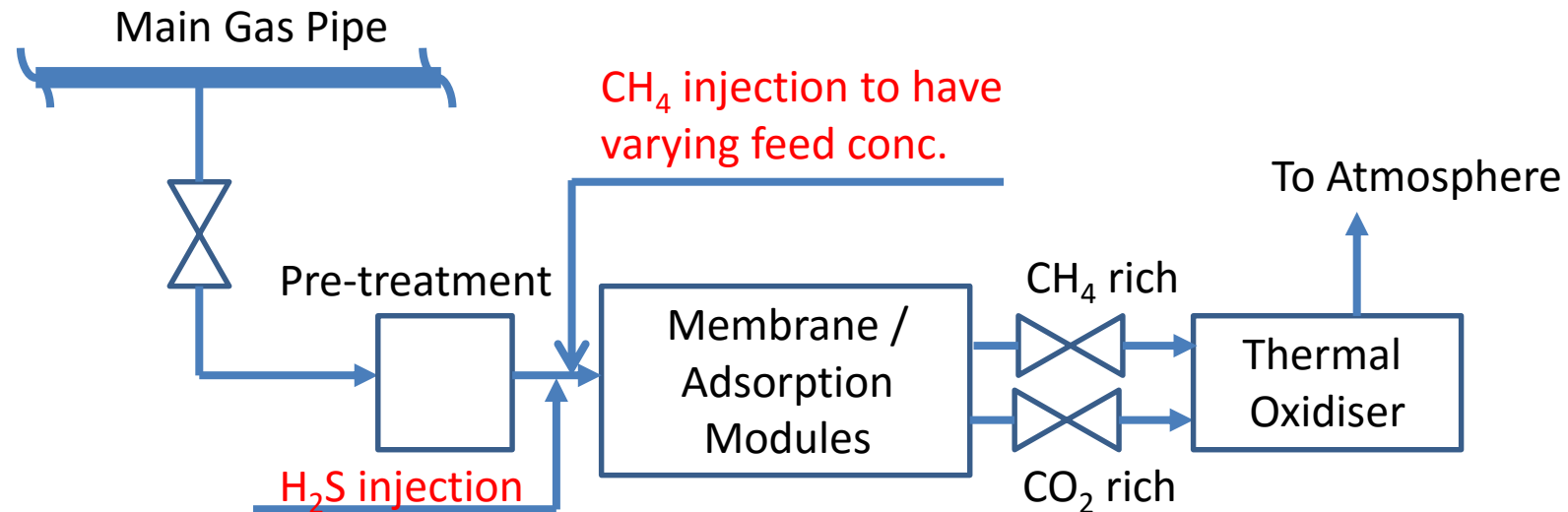
## Project Status:

Time/Budget/Scope

On Track

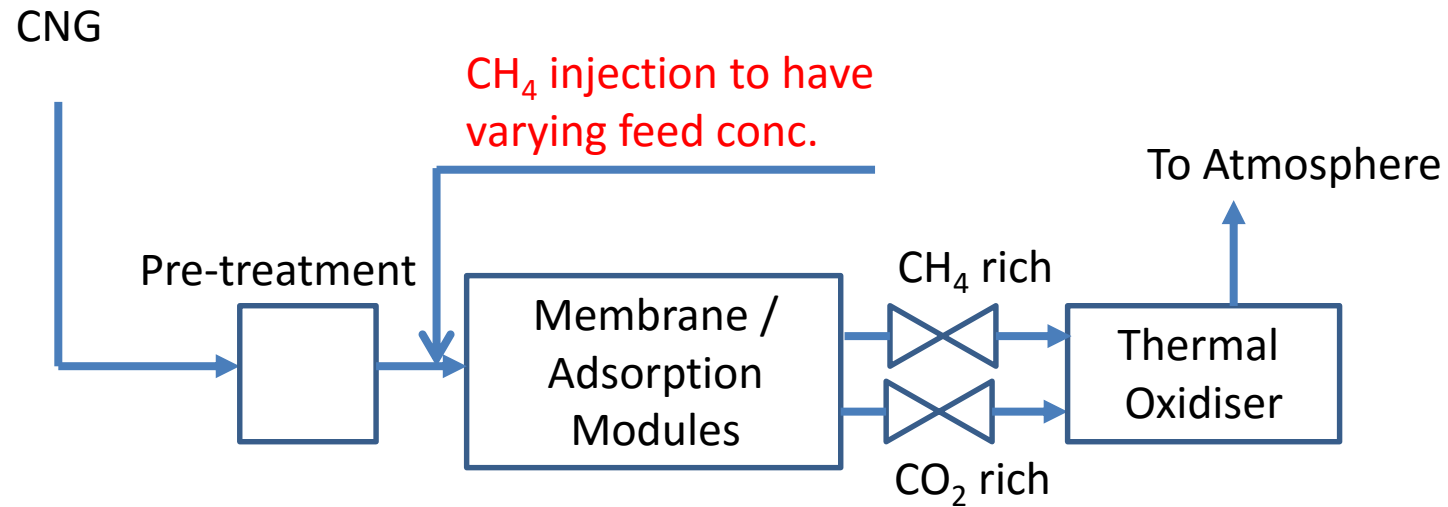


# CO2CRC's Otway Capture Rig's Schematic Diagram



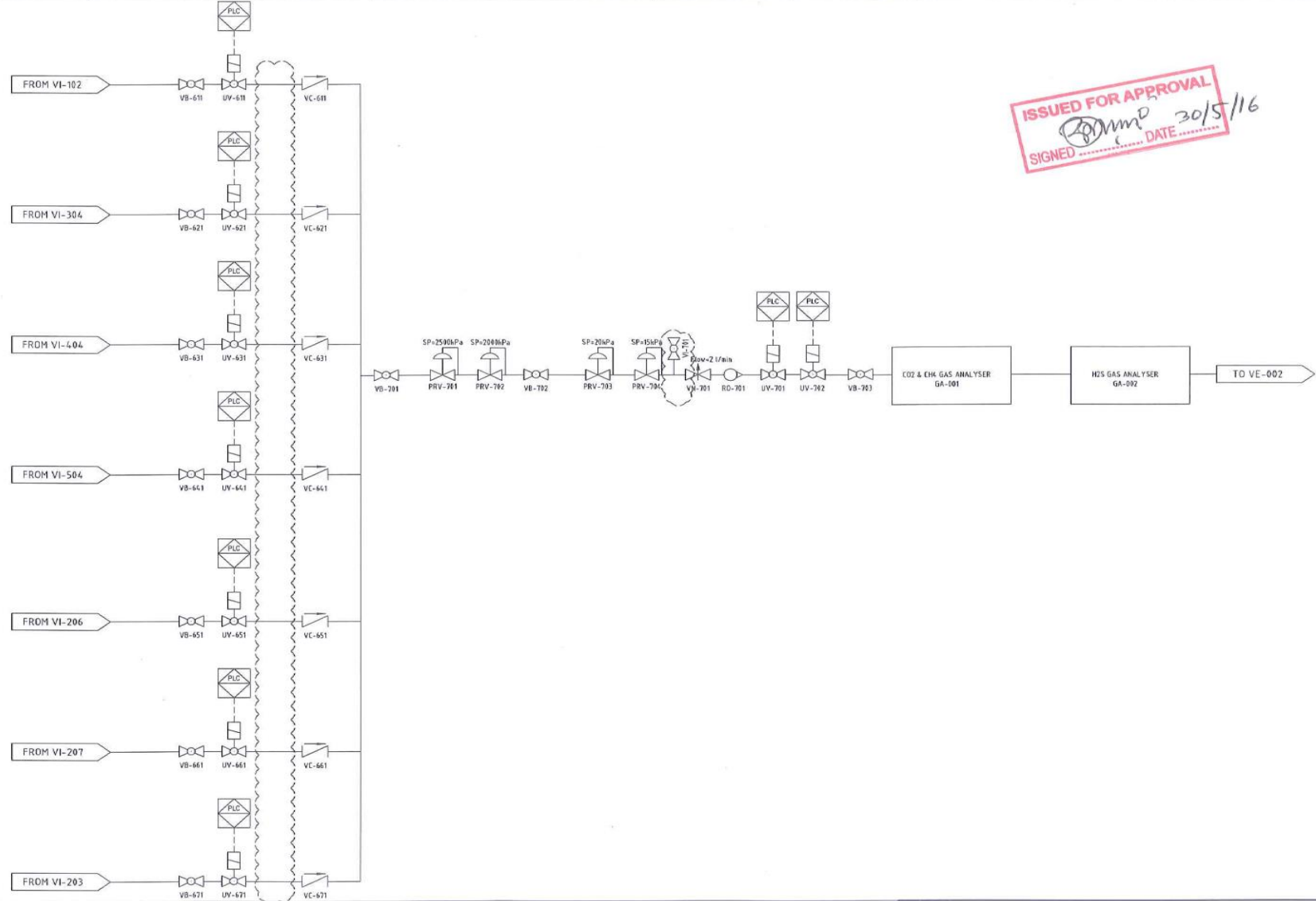
- Total flow remains the same as before – 10 L/min including injected amounts
- **H<sub>2</sub>S – injection** from a cylinder to have max 200 ppm
- **CNG injection** from a cylinder to have variable CO<sub>2</sub> conc. in the feed

# CO2CRC's Otway Capture Rig's Schematic Diagram



- Total flow remains the same as before – 10 L/min including injected amounts

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ISSUED FOR APPROVAL  
SIGNED *[Signature]* DATE 30/5/16

# CINSW Membrane-Solvent Contactor Project

## Overview:

Project Manager: Dr Abdul Qader (CO2CRC)

Science Leaders: Dr Colin Scholes (UOM)  
Prof Sandra Kentish (UOM)

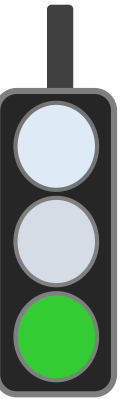
Finish: 2018

- Membrane-Solvent contactors (or simply membrane contactors) are a hybrid technology incorporating the advantages of both solvent absorption and membrane separation. The project is to trial such contactors for the capture of CO<sub>2</sub> from flue gas in a pilot plant at the Vales Point Power Station, owned by the Sunset Power International in NSW.
- The objective is to trial membrane contactors in a pilot plant environment for CO<sub>2</sub> capture, to enable evaluation of their performance and provide the necessary information to assist in future scaling of the technology



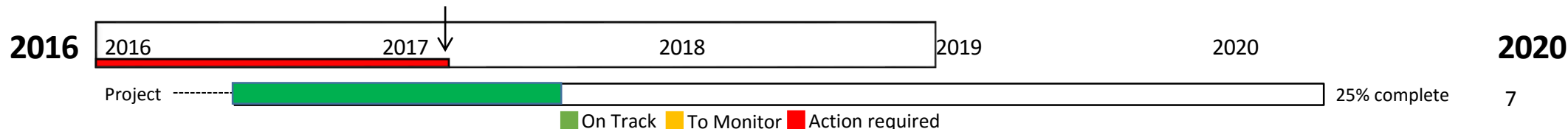
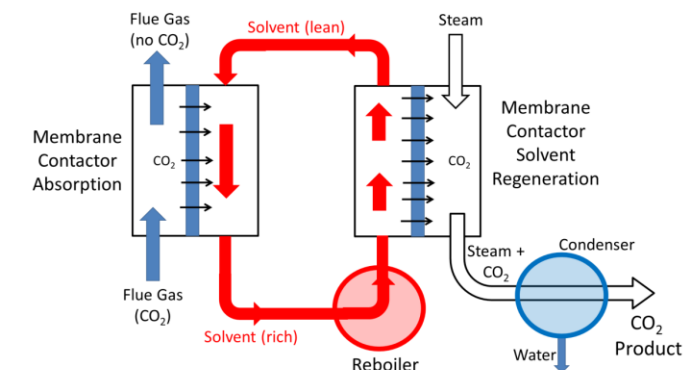
Project Status:  
Time/Budget/Scope

On Track



## Highlights & Latest Activities:

- The modification of the existing skid is underway in an engineering workshop in Melbourne under a signed contract.
- The skid will be fully factory tested in Melbourne and delivered to Vales Point Power Plant in NSW in Sept-Oct 2017 to be operated during the last quarter of 2017 in its first test campaign.
- The plant will be operated in two campaigns by the dedicated CSIRO operations manager. Although, the CO2CRC and Unimelb researchers will be in charge of the research plan implementation in field testing.





# H<sub>2</sub> Purification and CO<sub>2</sub> Capture as part of HESC

## Overview:

Project Leader: Dr Abdul Qader

Finish: August/September 2017

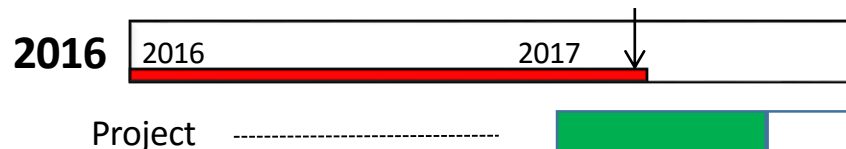
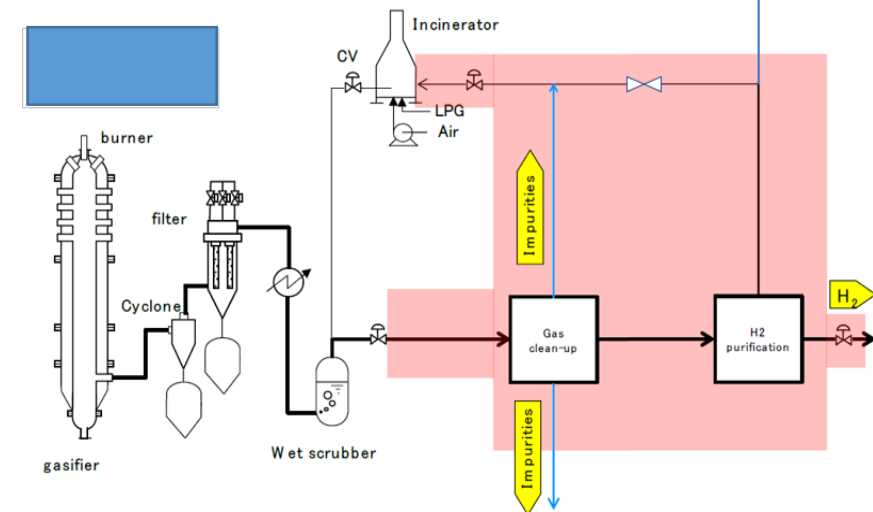
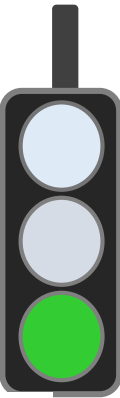
- Feasibility and Feed study for the design of a pilot plant to produce 99.999% purity hydrogen from syngas and subsequent food grade CO<sub>2</sub> capture from PSA tail gas are undergoing.
- The process design of the proposed pilot plant is based on gasification of Victorian brown coal to produce syngas. The pilot plant is to be located in Latrobe Valley, Victoria

## Highlights & Latest Activities:

- Work is progressing as per contract
- Design, P&IDs, H&MB and costing are progressing as per schedule
- Capture technology has been narrowed down to solvent and cryogenic, yet TBC.

**Project Status:**  
Time/Budget/Scope

On Track



2018

2019

2020

2020

80% Complete

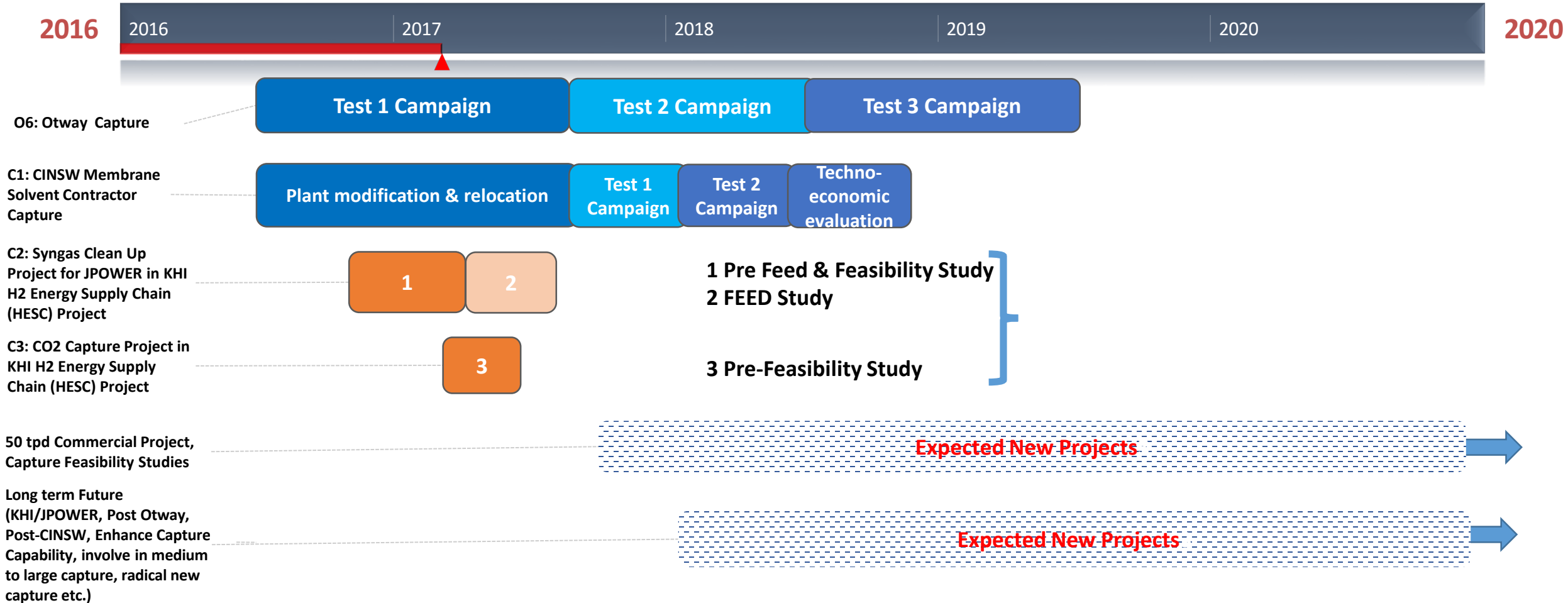
On Track To Monitor Action required



# New Capture Ventures and International Collaboration

- 50 TPD commercial venture activities are progressing.
- A couple of feasibility studies offers on carbon capture are on the horizon from organisations like Blue Scope, Australian Govt.
- With the help of ITCN – would like to see more international level of collaborations

# Capture Program Overview:



# Government, Industry and Research Partners





Thank you

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