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Cenagen's Proposed Advanced Methanol Production and Greenhouse Facility

Community Consultation Meeting, Rylstone Club
10 February 2026

Dr Mark Jackson, Director, JEP Environment & Planning

https://www.jacksonenvironment.com.au/

About the Proponent and the Team

- Cenagen is an Australian-owned company focused on developing sustainable, net-zero emission solutions for the manufacturing of alternative fuels in support of decarbonising the economy. Cenagen uses world's best practice technology working with waste and recycling businesses to produce Processed Engineered Feedstock (PEF) as an alternative to landfill for Municipal Solid Waste (MSW) and Commercial & Industrial (C&I) waste.

- JEP Environment & Planning is a specialist town planning and infrastructure approvals firm. Our staff have decades of experience working in planning, EPA, industry and council roles across NSW. We specialise in design, planning, approvals and licensing of best practice industrial developments.

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Presentation Agenda

- Proposal Overview
- What is Green Methanol
- More About Methanol and Safe Handling
- What is Gasification and Synthesis Gas (or Syngas)
- Types of Inputs and Transport to the Facility
- Why Kandos?
- Key Issues from Consultation to Date
- Planning and Approvals Needed
- Q&A Session

Proposal Overview - Summary

- Proposal to develop the Cement Australia site in Kandos.
- Advanced gasification technology to manufacture green methanol for the shipping industry with surplus carbon dioxide used to support a 10ha greenhouse complex for food and flower production.
- Gasification of engineered feedstock (Processed Engineered Feedstock, PEF) used for the methanol production process.
- PEF to be railed to the Site in shipping containers or manufactured on site from solid waste from regional councils and businesses (delivered by truck).
- Advanced environmental design with the objective of net zero Greenhouse Gas Emissions and minimal emissions to air – clean high-tech industry.

Artist's representation of the Advanced Methanol Production and Greenhouse Facility. The silo in the foreground will be retained as a lasting connection to the history of the site

Proposal Overview – Supporting Infrastructure

The proposal will also include supporting infrastructure:

- Rail head and shipping container unloading facilities for PEF transported to the Site via rail in shipping containers
- Fully enclosed waste receival, storage and processing building(s) with advanced odour controls, negative pressure and fast acting roller doors to prevent fugitive odour emissions from incoming materials from regional Councils.
- Fire safety controls for the storage of PEF ready for use in the gasification process.
- Storage and distribution infrastructure for methanol, liquified CO_2 and sulfur cake.
- Greenhouse finished goods storage and distribution area.
- Maintenance workshop.

Example of a CO_2 liquefaction plant to be used

Proposal Overview – Supporting Infrastructure

The proposal will also include supporting infrastructure:

- Grid electricity connection (approximately 30MW) including two (2) x 65 MegaVolt-Amperes (MVA) transformers, mains switchboard, 1000m of underground 66kV cable supply.
- Firefighting systems including water storage, pumps, hydrants and sprinklers.
- Installation of weighbridges.
- Stormwater capture, treatment and reuse systems to avoid impacts on water quality and reduce reliance on potable supplies.
- Mobile material handling machines and equipment.
- Staff and heavy vehicle parking areas.

Example of a mobile container handler which can unload shipping containers from trains

Proposal Overview – Sustainability Features

Advanced sustainability measures to be included in the proposal:

- Process design to minimise emissions to air, helping to protect local air quality at all times.
- Objective of net-zero greenhouse gas emissions.
- Greenhouse to assist in absorbing excess CO_2 from the process and supporting sustainable food and flower crop production.
- Minimal solid waste generated, with majority of residues manufactured into saleable products, therefore avoiding landfill disposal.
- Advanced heat recovery and reuse, to minimise the energy requirements for the plant.

Solar thin film integrated into the roofline of the 10ha greenhouse

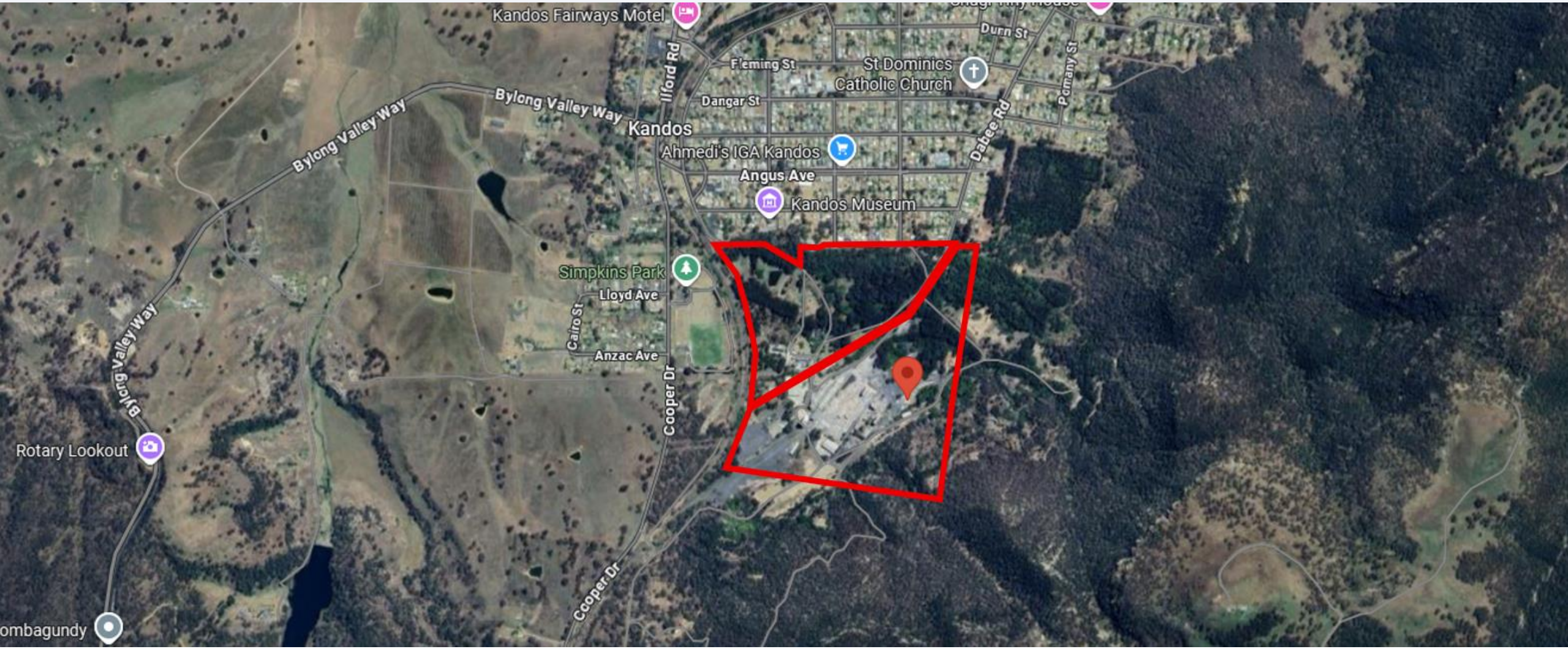
Proposal Overview – Sustainability Features

Advanced sustainability measures to be included in the proposal:

- Full rainwater and stormwater harvesting and reuse, to reduce net water requirements.
- Wastewater recovery and recycling, to avoid any off-site discharges.
- Solar electricity generation to reduce the power requirements of the Site.
- Battery storage of surplus electricity to reduce the need for imported grid electricity.

Reverse osmosis plant to enable full water recycling on site

Proposal Location – 1 Jamison St, Kandos



What is Green Methanol?

Green methanol is a form of sustainable transport fuel that can be used as an alternate to fossil-based fuels to reduce the greenhouse gas emissions of transportation fuels. Green methanol is in high demand by the world's shipping industry, which is heavily reliant on diesel. Use of green methanol is seen as a key strategy to help decarbonise the international shipping industry.

Methanol is a colourless organic liquid at normal temperature and pressure and burns with a non-luminescent flame, which may be invisible in bright sunlight. The safe storage of methanol is done in a similar way to normal petroleum fuel storage. Methanol is typically stored in tank farms consisting of above-ground tanks with all safety and spill protection systems provided to protect the local environment.

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Goods and Services Consumed

Wastes from households and businesses are separated for recycling

Waste and Recycling Collection

Recyclables are collected for recycling and residual waste is sent for Processed Engineered Feedstock (PEF) production

PEF Production

Residual waste from households and businesses is sorted through an advanced plant to remove hazardous and unsuitable items

Recycling and Re-manufacturing

Recovered materials are processed into new products for sale

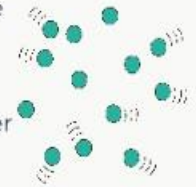
Gasification

Converts residual waste to synthesis gas without combustion. A closed circuit system captures and scrubs the syngas to prepare it for further processing

How Is Green Methanol Produced?

Synthesis Gas

Chemical gases are captured, cleaned and purified to produce green methanol and other useful chemicals



Liquid CO_2

Can be used in the food & beverage, health care, manufacturing and other industries

CO_2 Gas to Greenhouses

CO_2 is supplied to the greenhouse complex to assist in the production of flower and food crops

Green Methanol

A high value fuel and chemical with many uses. Green methanol is in high demand by the international shipping industry to help reduce greenhouse gas emissions from diesel use

Sulfur Redox

Sulfur is produced as a by-product and will be used as a fertiliser

More About Methanol

Risks and hazards associated with methanol

- Hazardous chemical with toxic, flammable, and reactive properties – must be properly handled to avoid human health / environment impacts.
- Typically stored in tank farms - above-ground, floating roof tanks and smaller, internally baffled floating baffle tanks.
- Tanks must be grounded and stored in bunded, well-ventilated areas designed in accordance with Australian Standards and international best practice (Min. 110% bund capacity).
- Methanol is colourless at normal temperature and pressure and burns with a non-luminescent flame, invisible in bright sunlight.
- Infrared devices that allow remote heat and relative temperature detection are needed for safety and emergency response.
- Methanol is a volatile organic compound (VOC) - half-life of 17 to 18 days. Five days estimated removal from the environment is 75-82% - increases to 95% in 20 days.

How will Methanol be Managed at the Facility?

Precautions are similar to petroleum and diesel storage

Advanced safety and best practice systems will be used for production and storage of methanol involving:

- Storage layout for PEF, methanol, syngas and other chemicals extracted from or used in the methanol production process.
- Fire / leak detections and alarms, spill prevention/response and advanced fire protection systems.
- Ensure appropriate separation distances between the methanol production/storage areas and other onsite storages/operations or offsite occupants (e.g. neighbouring properties).

The Environmental Impact Statement will include:

- Fire Safety Study - Fire and Rescue and NSW Fire Safety Guidelines.
- Hazard and Operability Study (HAZOPs).
- Hazard Analysis and Assessment.

Example methanol storage tank infrastructure to be used at the site

What is Gasification?

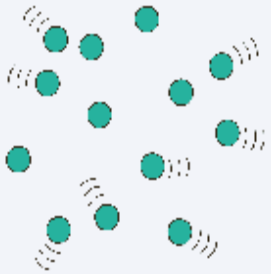
- Advanced system for converting PEF into Synthesis Gas (Syngas) at high temperatures (~500°C to 1,000°C) in a low oxygen environment within a completely sealed reaction system.
- Syngas (e.g. carbon monoxide, carbon dioxide, hydrogen and other gases) is fully captured and used as building blocks to produce useful chemicals, including methanol.
- Gasification is NOT incineration. Chemical conversion is the aim – NOT combustion / burning.
- The gasification process proposed is a net importer of power – the process requires external power to function.
- Gasification will not produce methanol in itself – it requires other plant/equipment to process the syngas to do this.
- Gasification itself also requires electricity, PEF, steam, chilled water, cooling water and water.

Gasification

Converts residual waste to synthesis gas without combustion. A closed-circuit system captures and scrubs the syngas to prepare it for further processing

Synthesis Gas

Chemical gases are captured, cleaned and purified to produce green methanol and other useful chemicals



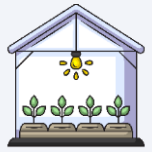
What is Synthesis Gas?

- Comprised mostly of Carbon Monoxide (CO) and Carbon Dioxide (CO_2), along with Nitrogen (N_2), Argon (Ar), Hydrogen (H_2), Water Vapour (H_2O), Methane (CH_4) and trace amounts of other gases.
- Syngas is purified through a series of processes.
- Cyclones, stripping tower, electrostatic precipitator, and a polishing column are all employed to remove unwanted contaminates, including chlorine and sulphur, and submicron particulates.
- A portion of the syngas may used to support the solid residue melter (combustion for heat). Slag is recovered as an aggregate product in construction.
- Wastewater is generated from the scrubbing process. A wastewater treatment plant is needed and reuse of this water is being considered.
- “Sweet” Syngas (with a ratio of H_2 to CO ratio of 2:1) is sent to the Methanol Production and Purification plant. Under high temperature and pressure, in the presence of a catalyst, to generate methanol.

Liquid CO_2

Can be used in the food & beverage, health care, manufacturing and other industries

CO_2 Gas to Greenhouses



CO_2 is supplied to the greenhouse complex to assist in the production of flower and food crops

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Sulfur Redox

Sulfur is produced as a by-product and will be used as a fertiliser

What Types of Inputs Used for the Facility?

Process Engineered Feedstock (PEF)

- PEF is pre-manufactured from metro centres in NSW.
- PEF is residual waste POST recycling that would normally go to landfill.
- PEF is already processed and does not need further processing prior to gasification.

Regionally collected waste (rural feedstock only)

- Municipal Solid Waste (MSW) and Commercial and Industrial (C&I) waste from regional areas.
- Advanced sorting and processing facility to be provided for PEF production on site in fully enclosed buildings with odour controls.

How Will Inputs and Outputs be Transported to/from the Facility?

Inputs: PEF – Rail

- PEF will be transported via rail to the Site using existing rail siding.
- Facilities for the receival and unloading of specially designed shipping containers (air and liquid tight) for PEF by rail.

Inputs: Regionally collected waste – Road

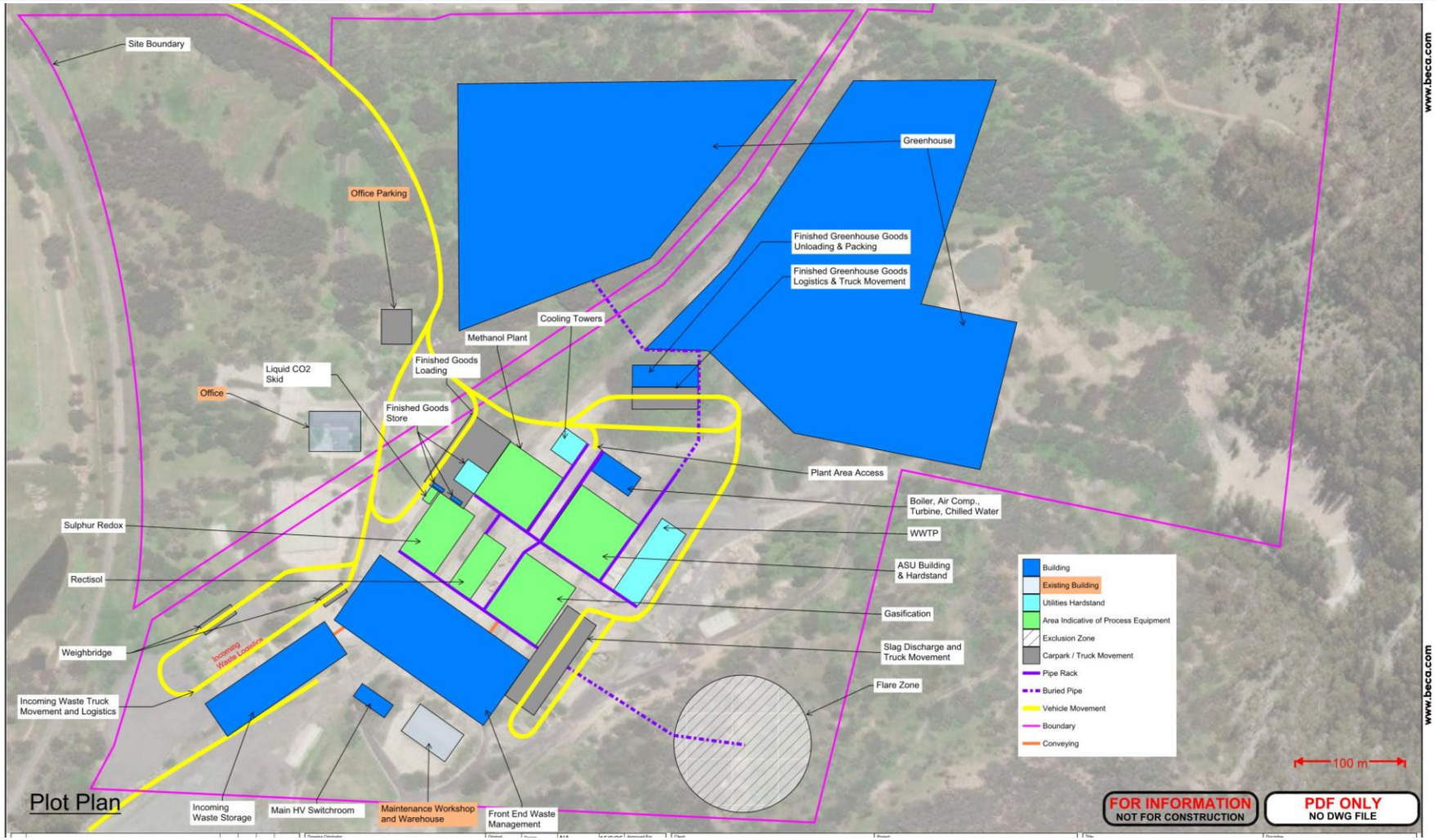
- Heavy vehicles will be used for regionally collected waste, these will likely be limited to 19m semi-trailers (or less).
- There will be consideration whether access to the Site via a separate entrance on the southern side of the Site is viable.
- A detailed Traffic Impact Assessment will be required for the Proposal to minimise impacts on roads and the community.

Outputs: Products from the Facility – Rail and Road

- Methanol via rail in bulk liquid tankers.
- Food and flower products, slag aggregate and compresses gases via road.

Majority of the input to the facility will be transported by rail. Methanol will be transported via bulk rail liquid tankers to Sydney for supply to markets

Proposal – Concept Layout Plan on the Site



Why Kandos?

- 3 potential sites considered for the proposal, including Western Sydney, Port of Newcastle and Kandos.

- The suitability of each site was assessed based on a variety of planning constraints and considerations including:
  - Land Use Zoning under the LEP
  - Permissibility and approval pathway
  - Ecology
  - Bushfire
  - Flooding
  - Heritage
  - Contamination

- The Site in Kandos was chosen due to the existing industrial setting, historical heavy industry use, access to road and rail, existing infrastructure, permissibility and social and economic benefits that could be provided to the region.

- An analysis of the sites and their suitability will be done in the EIS.

Key Issues: Air Quality

Odour and Dust Systems:

- Fully enclosed waste receival, storage and processing building(s) with advanced odour controls, negative pressure and fast acting roller doors to prevent fugitive odour emissions.

Plant Emissions are Minimal

- Flare – emergency events would be a large flame – otherwise a small pilot light.
- Gas boiler stacks, both LPG/natural gas and waste syngas from the process which is combusted. No visual emissions - typical in all medium and larger industrial and commercial facilities including small ones on some commercial buildings.
- CO_2 vent stack, which would emit surplus CO_2 gas (not visual and no odour).
- Emissions will be monitored (sampled and tested) continuously, with data made available to the NSW EPA and the community in accordance with the agreed license conditions and regulatory approvals (among the world's strictest air pollutant limits we have in NSW).

Example of an advanced activated carbon air filtration system

Key Issues: Community Health

- The aim is NOT combustion of the syngas to produce electricity – it is gasification and capture of syngas for chemical manufacturing.
- The syngas requires extensive cleaning to remove contaminants – either will be captured in products or sent to wastewater plant.

A detailed Air Quality Impact Assessment will be required and include:

- A quantitative assessment of potential emission, dust and odour impacts, including cumulative impacts, in accordance with strict Environment Protection Authority (EPA) guidelines.
- Demonstrate how the development will operate in accordance with best practice measures to manage air emissions.
- Consider and meet air pollutant standards in the National Environment Protection (Ambient Air Quality) Measure (NEPC, 1998).
- Describe and appraise air quality and odour impact mitigation and monitoring measures, in line with international best practice.
- A Human Health Impact Assessment and Greenhouse Gas Assessment will also be prepared for the EIS.

Key Issues: Social and Economic Aspects

Key issues and concerns heard so far (not exclusive):

- Economic and job opportunities.
- Noise Air quality and odour.
- Human health.
- Environmental pollution controls and monitoring.
- Traffic and road safety.
- Noise.
- Hazards and risks.
- Accommodation.
- Biodiversity and biosecurity.
- Sustainability.

Additional matters we will assess in the EIS:

- A detailed Social Impact Assessment (SIA)
- An Estimated Development Cost (capital costs)
- An Economic Impact Assessment

- ✓ Ongoing engagement with the community
- ✓ Maintain local employment opportunities as a priority – many types of roles will be available*
- ✓ Worker accommodation (for both construction and operation) is being considered

Operational jobs expected
300 - 350

Construction jobs expected
400

* **Note:** Cengan has a 'local first' policy – jobs will be advertised locally first, and subject to experience, wherever possible, preference will be given to local candidates and suppliers. Training and development of young people is also a priority.

Key Issues: Existing Contamination

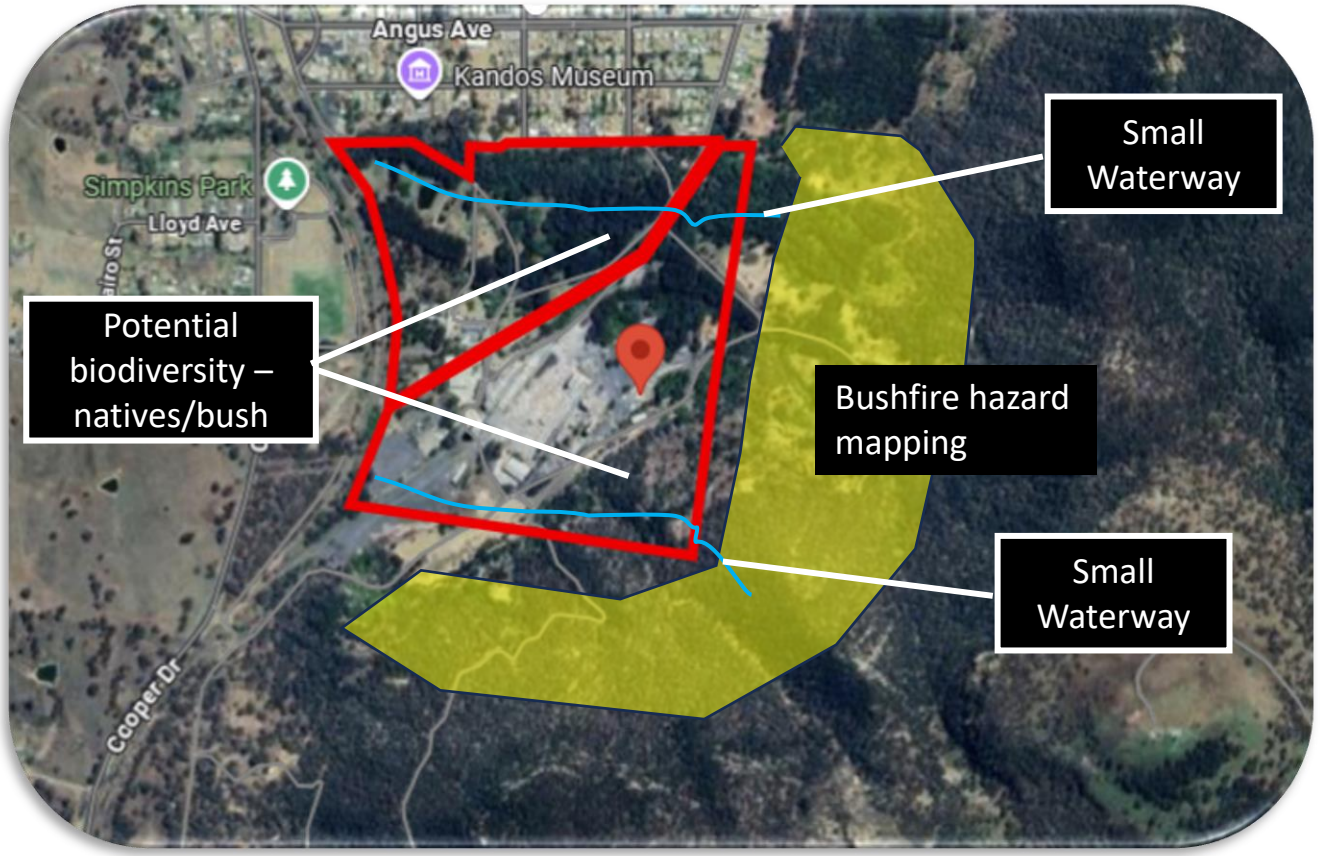
- Site is on the EPA list of notified sites
- EPA completed an assessment of the contamination and decided that regulation under the Contaminated Land Management Act 1997 (CLM Act) is not required.
- While regulation under the CLM Act is not required, there may still be the need for remediation on the Site.
- Old buildings contain unknown amounts of asbestos and unknown hazardous materials including the potential for underground storage or fuels and chemicals – needs investigation and appropriate management.
- Existing underground structures and confined spaces pose risks to work health and safety, human health and groundwater quality.
- Preliminary Site Investigation (PSI) and Detailed Site Investigation (DSI) to confirm any potential contamination risks, and a strategy for remediation.

Key Issues: Noise and Lighting

- The Village of Kandos is directly north of the Site.
- Residential properties located just over the local ridge and across a residential street to the north.
- Design development consideration internal site access, noise walls and infrastructure to provide noise attenuation and reduced noise impacts from plant, equipment and transportation vehicles.
- Detailed Noise and Vibration Impact Assessment (NVIA) will be prepared.
- Consideration of a southern entry for trucks.
- Lighting Impact Assessment – lighting must be designed to meet Dark Sky requirements (regional observatory review).

Key Issues: Bushfire, Biodiversity and Biosecurity

- Portions of the Site mapped as terrestrial biodiversity.
- Two (2) second order waterways – through northern and southern ends of the Site.
- The Site contains land mapped as bushfire prone – primarily along the eastern and southern edges.
- Bushfire Assessment Report will be prepared per NSW Rural Fire Service's: Planning For Bush Fire Protection.
- A Biodiversity Development Assessment Report (BDAR) will be prepared to identify and map native vegetation on the Site and assess potential impacts of the Proposal to biodiversity values.
- A Biosecurity Risk and Management Plan detailing risks and measures to prevent the spread of National Priority Plant Pests (including grape phylloxera).



Key Issues: Aboriginal Cultural Heritage

- Kandos is in the traditional Country of the Dabee people, who are part of the Wiradjuri Nation.
- Consultation with the Bathurst Local Aboriginal Land Council (formerly known as the Windradyne Local Aboriginal Land Council) and the wider Aboriginal community .
- The Wiradjuri people have significant heritage in the area with many Aboriginal sites and features being identified in the region.
- An Aboriginal Cultural Heritage Assessment will be prepared for the Proposal.

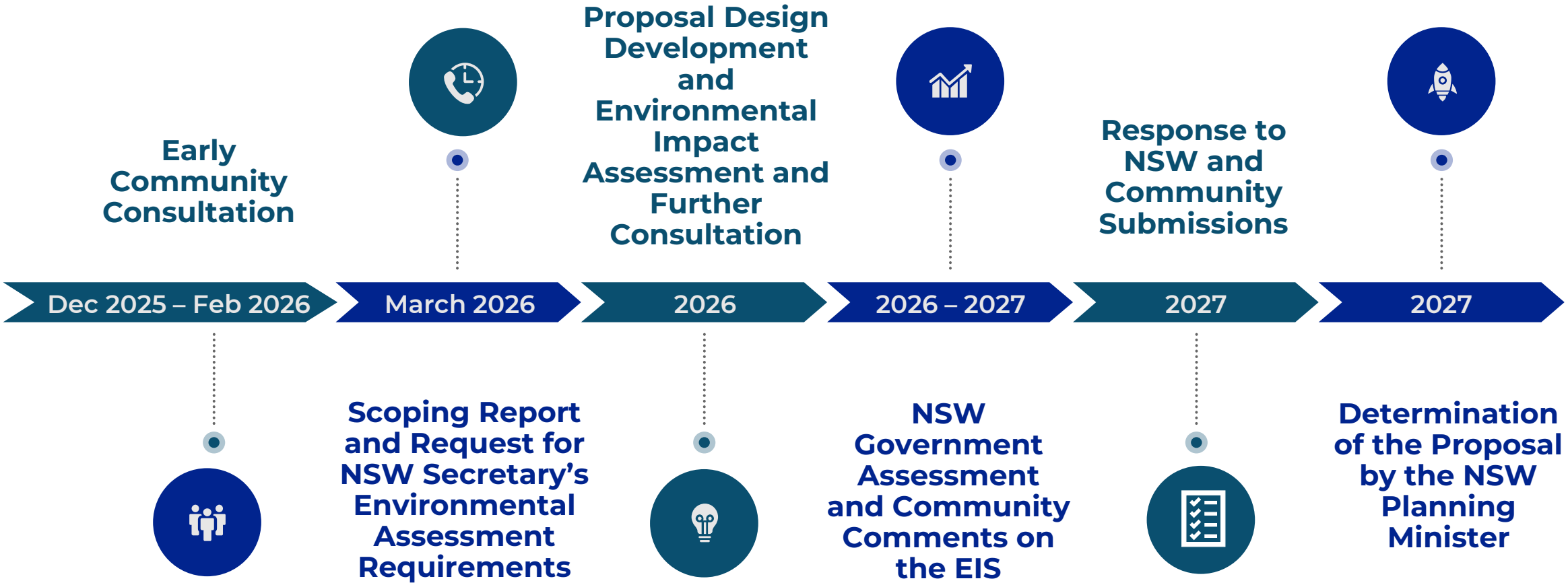
Key Issues: European Heritage

- Kandos Railway Station, opened in 1914 and is directly adjacent to the west side of the Site.
- The Kandos Museum at 24 Buchanan Street is about 80m from the Site to the north.
- The old concrete works site is part of the historical makeup of Kandos and the wider community for over one hundred years.
- A heritage assessment will need to be prepared for the Proposal to document any heritage on the Site and recommend measures to conserve what may be remaining.

Planning Matters

- Proposal is characterised as a form of Heavy Industry under the *Mid-Western Regional Local Environmental Plan* 2012.
- Site is zoned E4 General Industrial – Heavy industry is permitted with consent.
- Proposal is a form of ‘Chemical, manufacturing and related industry’ and is considered State Significant Development under Clause 10(1)(f) of Schedule 1 of the *State Environmental Planning Policy (Planning Systems)* 2021.
- Comprehensive Environmental Impact Statement and full community consultation required.
- Application will be assessed by the Department of Planning, Housing and Infrastructure and determined by the Minister for Planning.

Timing of Project Planning Approvals



Environmental Impact Assessment Process

01

Scoping Report

Scoping Report will identify key priorities for assessment and form an important part of additional community engagement during the next phase of planning and assessment.

02

Environmental Assessment

Detailed assessments of issues: human health, noise, air quality, traffic and access, hazards, fire safety, hydrology, soil, water, waste management, biodiversity, Aboriginal cultural heritage, European heritage, visual impacts, landscaping, social and economic matters. Further community consultation

03

EIS Review and Response

EIS will be published and receive comments and feedback from the community, government agencies, community and other stakeholders. These will be considered by Cenagen in their Response to Submissions.

Question and Answer Session

- Please be concise with your question.
- Limit to 1 question per person so there is time for the next one.

Thank you.

Ongoing Community Consultation a Priority

- Further consultation will occur once the EIS process formally commences. Many more opportunities for engagement.
- Please leave your feedback form in the feedback box on your departure this evening.
- Want more information and to stay up to date? Go to the Cenagen web site: https://cenagen.com
- For any additional feedback, please submit via the Cenagen web site OR contact JEP Environment & Planning at:
  E: admin@jacksonenvironment.com.au
  T: 02 8056 1849
- Thank you kindly for your valued participation this evening.