Jemena Gas Networks (NSW) Ltd

Western Sydney Green Gas (WSGG) Project - SSD 10313
Modification Two

Schedule 3, Part B, Condition 9 - Construction and Operating Hours

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Western Sydney Green Gas (WSGG) Project - SSD 10313
Modification Two

Authorisation

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Owning Functional Area

Business Function Owner:	Asset Management

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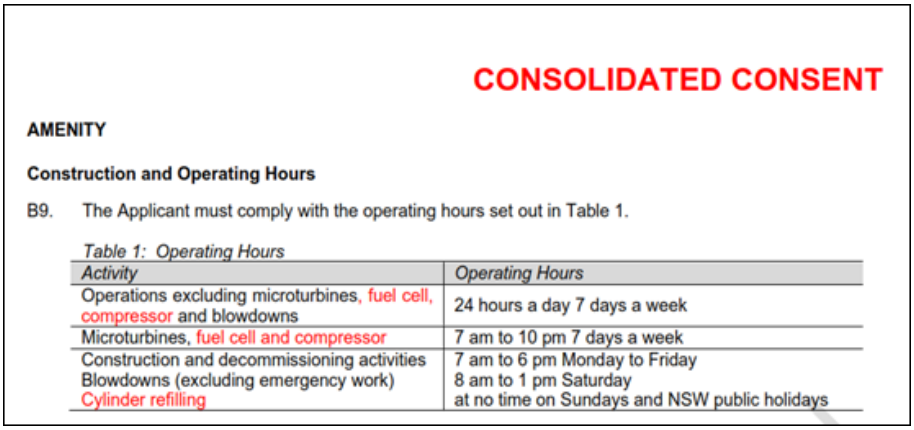
1. Background

This report refers to the *Consolidated Instrument of Consent*, Approval number SSD 10313, received by Jemena Gas Networks (NSW) Limited (**Jemena**) from the NSW Department of Planning and Environment (**DPE**) dated 10 August 2020, with red type representing the December 2021 Modification (**MOD-1**). The instrument details the modified development consent conditions approved by the Minister for Planning (or their delegate) in relation to MOD-1 submitted by Jemena and approved by DPE in December 2021 for the WSGG Project.

Pursuant to condition B9, the Instrument requires that the Applicant must comply with the operating hours set out in *Table 1* (Figure 1-1).



CONSOLIDATED CONSENT

AMENITY

Construction and Operating Hours

B9. The Applicant must comply with the operating hours set out in Table 1.

Table 1: Operating Hours

Activity	*Operating Hours*
Operations excluding microturbines, fuel cell, compressor and blowdowns	24 hours a day 7 days a week
Microturbines, fuel cell and compressor	7 am to 10 pm 7 days a week
Construction and decommissioning activities Blowdowns (excluding emergency work) Cylinder refilling	7 am to 6 pm Monday to Friday 8 am to 1 pm Saturday at no time on Sundays and NSW public holidays

Figure 1-1: Screenshot of Table 1, condition B9 of *Consolidated Instrument of Consent* for SSD 10313 modified December 2021

Following closer inspection and interpretation of the requirements expressed in *Table 1*, Jemena has identified some inconsistencies and irregularities that were not captured during the review and finalisation of the MOD-1 conditions, and are seeking amendments to align with EIS Modification Report dated 30 June 2021, submitted to DPE to support MOD-1, and the intended operational philosophy of the project.

2. Introduction

This modification report has been prepared by Jemena Gas Networks (NSW) Limited (Jemena) to support the modification of a State Significant Development application (SSD-10313-Mod-2), which was approved to build and operate a trial Power to Gas (P2G) project to transform renewable electrical energy into a combustible gas (hydrogen), within Horsley Park, New South Wales. The proposal is referred to as the Western Sydney Green Gas Project (WSGG Project). The WSGG Project is located at 194 - 202 Chandos Road, Horsley Park, within the Fairfield City Council (FCC) Local Government Area (LGA).

The WSGG Project has been approved as a State Significant Development (SSD) in accordance with Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act). Approval for the WSGG Project (SSD-10313) was issued on 10 August 2020 (Development Consent), permitting a 5-year trial involving the production and storage of hydrogen gas, injection of hydrogen gas into the gas distribution network; and supplying hydrogen gas for bus refuelling and power generation back into the electricity grid.

Jemena Gas Networks (NSW) Limited has prepared this project modification to the Development Consent under section 4.55(1A) of the EP&A Act (the Modification).

2.1 Overview of Approved Project

The approved WSGG Project involves the construction, commissioning and operation of a Power to Gas (P2G) facility. The approved WSGG Project comprises of the following:

- Electrolyser (including final water treatment, electrolyser stack, purification & cooling systems)
- Hydrogen buffer store (buried carbon steel pipeline)
- Hydrogen gas control panel (regulates and distributes hydrogen from the electrolyser and buffer store to the various uses on site)
- Hydrogen gas grid injection panel (controls the injection of hydrogen into the natural gas network)
- Hydrogen microturbine (generates electricity for grid export from compressed natural gas and hydrogen.)
- Hydrogen Fuel Cell (generates electricity for grid export from hydrogen.)
- Cylinder filling station
- Site control hut
- Power grid connection, including transformer.

The construction works for the approved project commenced in January 2021 with a staged commissioning process at the facility beginning in May 2021.

2.2 The Proposed Modification

The purpose of this modification is:

- Make the following amendments to operating hours set out in *Table 1: Operating Hours* of Condition B9 of the *Consolidated Instrument of Consent*, Approval number SSD 10313, received by Jemena Gas Networks (NSW) Limited (**Jemena**) from the NSW Department of Planning and Environment (**DPE**) dated 10 August 2020, with red type representing the December 2021 Modification (**MOD-1**). The instrument details the modified development consent conditions approved by the Minister for Planning (or their delegate) in relation to MOD-1 submitted by Jemena and approved by DPE in December 2021 for the WSGG Project.

Table 2-1: Summary of proposed amendments

Row	Activity Description - Approved	Recommended Amendment	Justification
1	Operations excluding microturbines, fuel cell, compressor and blowdowns	Operations excluding microturbines and blowdowns.	(1) (2) (3) (4)
2	Microturbines, fuel cell, compressor	Microturbines	(1)
3	Construction and decommissioning activities, Blowdowns (excluding emergency work), Cylinder refilling	Construction and decommissioning activities, Blowdowns (excluding emergency work)	(5)

2.3 Justification

In accordance with section 6.6.2 of the EIS Modification Report dated 30 June 2021:

(1) it is recommended the microturbine be limited to only operate between 7am and 10pm as noise levels are within the trigger levels during these hours. Therefore maintain existing exclusion for microturbine operation from *"24 hours a day 7 days a week".* Jemena also notes this limitation is specific to the microturbine only and does not apply to the fuel cell or cylinder filling compressor.

(2) the fuel cell and the cylinder filling compressor will operate separately to the microturbine, and that operating hours for the fuel cell and cylinder filling compressor can occur 24 hours per day. Therefore Jemena recommends the operation of the fuel cell and cylinder filling compressor be considered as *"Operations"* and permitted to operate *"24 hours a day 7 days a week".*

(3) it is explicitly noted that the cylinder filling compressor must be allowed to operate 24hrs per day (overnight) to allow for filling. Jemena notes this process can take 2-3 days due to the small scale nature of the equipment. This presents further justification supporting Jemena's recommendation that the operation of the cylinder filling compressor be considered as *"Operations"* and permitted to operate *"24 hours a day 7 days a week"*.

(4) it is explicitly noted that the cylinder filling compressor will not exceed the night (10pm – 7am) project trigger levels at any sensitive receivers. This presents further justification supporting Jemena's recommendation that the operation of the cylinder filling compressor be considered as *"Operations"* and permitted to operate *"24 hours a day 7 days a week"*.

In accordance with section 2.2.9 of EIS Modification Report Appendix A: Final Hazard Analysis, dated 2 July 2021:

(5) the nature of cylinder filling is described as being enabled via a metered off-take at the main gas panel to a compressor. Compressed gas will be delivered to a dispensing facility for the purposes of loading compressed hydrogen onto cylinder trucks or trailers. Jemena notes that compressor operation and cylinder refilling are not mutually exclusive, and because there is no high pressure storage, the compressor must be operating at all times during the cylinder refilling process. Therefore Jemena request the reference to cylinder refilling connected to the activity related to construction and decommissioning activities be removed.

The Department's Hazards team were consulted in regards to the justifications outlined above and responded via email dated 24 June 2022, with the following advice:

> *"Jemena must clarify whether 24-7 cylinder filling may result in the overnight storage of filled cylinders. During MOD 1 assessment, it is understood from Jemena that cylinder refilling would occur only during the daytime and filled cylinders will be transported away from site before night time resulting in no overnight storage. As such, the hazard analysis (pre-approval PHA and post-approval FHA) did not*

assess overnight storage of filled cylinders. If overnight storage of filled cylinders may occur, the upcoming MOD must include an updated PHA to assess this activity.

Notwithstanding, we expect the Emergency Plan and Safety Management System to be updated if the amended operating hours are approved but do not require resubmission of these documents."

Jemena understands pursuant to condition A7, of the *Consolidated Instrument of Consent*, Approval number SSD 10313, issued on 10 August 2020, with red type representing the December 2021 Modification (MOD-1), that *"On-site storage of full hydrogen cylinders, compressed natural gas vehicles when not in use and high-pressure hydrogen storage facility are not permitted"*.

For the avoidance of doubt, Jemena would like to take the opportunity to clarify its position by describing the following:

- During the process of cylinder filling, the cylinder trailer will be connected to the hydrogen dispenser via a flexible hose, and is considered "in use" for the purposes of cylinder filling for the duration this connection is maintained.
- Cylinder filling will be initiated such that the filling process will be completed to the specified quantity aligning with daytime collection when practical and safe to do so (during standard working hours as defined in the traffic management plan).
- In accordance with section 6.8.1.2 of the EIS Modification Report dated 30 June 2021, *"the cylinder vehicles, once full, will be collected and removed from site, no full tube trailer or dog trailer will be stored at full capacity at the site".*
- Due to the commercial value and small quantity of green hydrogen nominated for offtake, the cylinder trailer will be scheduled for collection at the first opportunity available when practical and safe to do so (during standard working hours as defined in the traffic management plan).
- Cylinder trailer collection (considered a vehicle movement) will only occur during daylight hours using standard construction hours as a guideline for the purpose of improved safety and to mitigate impacts on nearby sensitive receptors (as detailed in the traffic management plan).

3. Conclusion

The WSGG Project proposes a P2G facility to transform renewable electrical energy into a combustible gas, hydrogen, which is either injected at up to 2% by volume into the Sydney secondary gas distribution network, used for electricity production or to enable mobility through cylinder refilling for offsite use in fuel cell electric vehicles. The objective of the WSGG Project is to test and demonstrate P2G technology in the gas distribution network to aid in the transition to a low or zero carbon gas network and facilitate the development of commercially viable systems. Australia's acceptance for large-scale hydrogen production depends on a better understanding of P2G.

Commercially this technology is currently considered non-viable, as typical natural gas prices per unit of energy are an order of magnitude lower than renewably generated hydrogen prices. However, building both skills and experience within the domestic hydrogen industry will help decrease costs over the long term, allowing Australia and in particular NSW develop a competitive local and international hydrogen industry. The WSGG Project will specifically enable learnings across a wide range of hydrogen applications, allowing Jemena and its project partners to build the knowledge, capabilities and understanding of the viability and application of hydrogen as a decarbonisation pathway into the future.

Based on the clarifications described above, cylinder filling can be undertaken on a 24 hours a day 7 days per week basis without breaching the conditions of consent. Jemena will not be storing cylinders filled to capacity at any time day or night when not in use, and as soon as cylinders are disconnected from the dispenser, they will be removed from site.

4. References

Department of Planning and Environment (2021). Consolidated Instrument of Consent, Approval number SSD 10313

Eco Logical Australia (2021). Western Sydney Green Gas Project Modification One – Environmental Impact Statement