Hazer Process
Commercial Demonstration Plant

ARENA Lessons learnt report #2

Rev	Date	Details	Prepared	Checked	Approved
0	18/05/2020	Approved for submission	LK	GW	GW

HazerGroup

Table of Contents

PROJECT DETAILS

Recipient Name	Hazer Group Limited
Primary Contact Name	Geoff Ward
Contact Email	contact@hazergroup.com.au
Reporting Period	11 September 2020 – 30 April 2021

This Project received funding from ARENA as part of ARENA's Advancing Renewables Program.

PROJECT OVERVIEW

The Hazer Process is a novel method to produce low emissions hydrogen from a renewable form of methane. The process utilises methane as a feedstock to produce hydrogen – without producing CO_2 in the reaction process – instead capturing the carbon in the feedstock as solid graphite.

The Hazer Process Commercial Demonstration Plant (CDP) is the first scaled-up, fully integrated deployment of the Hazer Process. The CDP will use biogas from the Woodman Point Water Resource Recovery Facility as feedstock to create hydrogen and solid graphite.

The Project is situated within the boundaries of the Woodman Point Water Resource Recovery Facility, located in the suburb of Munster in the City of Cockburn, Western Australia. Woodman Point Water Resource Recovery Facility plant is owned and operated by the Water Corporation – Western Australia's public water utility responsible for potable water supply and the collection, treatment, and disposal of wastewater amongst other things. The treatment plant is the largest facility of its kind in Western Australia, it currently treats wastewater for a population of about 680,000 (approximately 135 Megalitre per day) living in the south metropolitan area of Perth.

KEY LEARNINGS

Lesson learnt No. 1: Approvals and Permitting

Category: Social / Regulatory / Risk

Objective:

Demonstrate the full integration of all required process operations on a continuous operational basis to produce commercial grade hydrogen and graphite products from biogas.

Detail:

During the contract development stage between the project host (Water Corporation) and project owner (Hazer) it was identified and mutually agreed that the most appropriate approach in terms of Regulatory Approvals and Permits would be to create a so-called licence within a licence. Under this arrangement Hazer is fully and solely responsible for obtaining all Approvals and Permits required to develop, construct and operate the Hazer Commercial Demonstration Plant. The CDP Project site location is shown in Figure 1.

Figure 1 Hazer CDP Project site location

In order to mitigate any potential future risk (such as schedule delay or budget increase), Hazer engaged an external specialist consultant to assist with the development of a strategic plan to obtain required regulatory approvals and permits, as well as the subsequent execution of the developed plan. The engagement of the consultant started in November 2019, as the project progressed from the Early Contracting Involvement (ECI) towards the Engineering, Construction and Procurement (EPC) stage. After the Project achieved the Final Investment Decision these activities were further matured.

The following Approvals / Permits were successfully obtained:

- Section 18 - Aboriginal Heritage, consent granted by Department of Planning, Lands and Heritage
- Development Application approved by City of Cockburn
- Works Approval granted by City of Cockburn
- Clearing Permit approved by Department of Water & Environmental Regulation

Having obtained these Approvals / Permits was a pre-requisite to commence site civil works (i.e. mobilisation of equipment, clearing of site and earthworks). Mobilisation to site occurred in the week of 15 March 2021.

The key learnings on this aspect for this phase of the project are as follows:

- The engagement of a specialist, external consultant to assist with this part of the activities was very useful and valuable to create clarity on requirements, removing ambiguity and ensuring the right processes were followed correctly;
- The early engagement with relevant authorities resulted in approvals being obtained well within the estimated time frame. This contributed to significant de-risking of the Project, in particular with regard to schedule;
- The COVID-19 pandemic impacted certain elements of the overall process to obtain required Approvals and Permitting. This has not impacted the critical path of the Project schedule;
- Due to the Hazer Process being a very novel processing method, compared to existing industrial processes, in the engagement with respective authorities on this topic it was not always very straightforward to appropriately and/or correctly classify the proposed facility. This was addressed by providing additional clarification and explanation.

Implications for future projects:

Early engagement with regulators on well-prepared, open and genuinely transparent approach can support securing approvals in a timely manner. The early progress of project definition also allowed Hazer to engage in a meaningful way early, so that we were always able to work within established approval methodologies, processes, and timeframes.

Lesson learnt No. 2: Community Engagement

Category: Social / Regulatory / Risk

Objective:

Establish and maintain an effective dialogue with the community, in order to ensure the Project is supported by the wider community.

Detail:

The Project's communication and engagement strategy has been set out in the overall Communications Strategy (rev1, dated 02 July 2021). This document was approved by ARENA as part of the of the Conditions Precedent under the Project Funding Agreement.

Water Corporation has an ongoing program for Community Engagement on active construction sites across its service area. A key component of the Community Engagement program is a so-called Customer Reference Group (CRG). A CRG has been established by Water Corporation for previous upgrade works conducted at Woodman

Point Water Resource Recovery Facility. This CRG serves as a forum for community concerns to be heard, discussed and for solutions to be considered. Water Corporation engages the CRG to provide advice and facilitate feedback on any issues relating to the Water Resource Recovery Facility site that the CRG determines to be relevant to the surrounding community, such as the Hazer CDP Project.

Given the long-standing reputation of the CRG in the community and the group's effectiveness to date, Water Corporation and Hazer agreed that the most effective form of community engagement for the Project would be to utilise the existing community consultation arrangements through the existing CRG.

The CRG is run by an independent chairperson and is made up of eight community members, and a number of Water Corporation representatives. CRG meetings are held twice a year.

Hazer's CDP project has been incorporated in this existing process of Community Engagement since April / May 2020, when Water Corporation first introduced the Hazer CDP project to the CRG.

During the reporting period, Hazer was invited to attend two regular CRG meetings in order to provide an update presentation to the CRG and to provide an opportunity for questions and/or concerns to be raised by the CRG. Meetings were held successfully on 21 October 2021 and 12 May 2021 at the Woodman Point Resource Recovery Facility. Both meetings were hosted and facilitated by Water Corporation, with Senior representatives from both Water Corporation and Hazer in attendance. Feedback from the CRG at both meetings was unanimously positive. Some questions were raised by the CRG, no major concerns were voiced. Overall, the CRG is pleased to see the Project taking place at the Woodman Point Water Resource Recovery Facility, in particular due to its innovate nature, positive impact on reducing local emissions and because the technology originated at the University of Western Australia and is currently being commercialised by an Australian company.

In addition to the CRG, both Water Corporation and Hazer have directly engaged with relevant Local Government Authorities and key regulatory bodies for the Project. In these interactions the feedback from stakeholders has been very positive. See also the item above regarding Approvals and Permitting.

In addition to the CRG instrument, Water Corporation provides ongoing updates on the Project via its website. The webpage dedicated to activities taking place at the Woodman Point Water Resource Recovery Facility, contains a section a specific section for the Project:
https://www.watercorporation.com.au/Outages-and-works/Ongoing-Works/Woodman-Point-Wastewater-Treatment-Plant-Upgrade

As part of its community engagement strategy, Water Corporation has a single focal point for all matters involving communication and coordination with community stakeholders. This includes, but is not limited to, activities such as the facilitation of the CRG meetings, liaison with key stakeholders, and being a first point of contact for any complaints or concerns raised bv members of the community. To date, no complaints have been received in relation to the Project.

Implications for future projects:

Early Community Engagement, facilitated by the Water Corporation as the Project site host and through a proven method, resulted in ongoing positive support from the community. Project updates provided around major milestones proved to be an effective way of engaging with the community, resulting in community that is appropriately informed and in support of the project.