19.2 REDLANDS COAST HYDROGEN ECONOMY

Objective Reference:

Authorising Officer: **Louise Rusan, General Manager Community & Customer Services**

Responsible Officer: **Kim Kerwin, Group Manager Community & Economic Development**

Report Author: **Simon Shaw, Senior Adviser Strategic Partnerships**

Attachments: **Nil**

The Council is satisfied that, pursuant to Section 275(1) of the *Local Government Regulation 2012*, the information to be received, discussed or considered in relation to this agenda item is:

(e) contracts proposed to be made by it.

PURPOSE

The purpose of this report is to seek Redland City Council (Council) endorsement to undertake a Redlands Coast Green Hydrogen feasibility study. This feasibility study represents the first step in informing future decisions regarding the potential for a Council Wastewater Treatment Plant (WWTP) to contribute to future economic impacts of a localised Hydrogen economy. Specifically, the study will investigate the co-location of a hydrogen production facility at a WWTP in Redlands Coast and the efficiencies this may create.

BACKGROUND

On 18 June 2019, Council was briefed on the potential of developing a localised green Hydrogen economy. Councillors were provided with an overview of the green Hydrogen process, the formation of an informal technical working group and some of the potential benefits of a Green Hydrogen economy to Redlands Coast.

To inform Council's potential role in this process, a feasibility study was recommended.

The scope of this feasibility study is to address the following:

1. The feasibility of producing Green Hydrogen
2. Analyse and report on:
   a. the most efficient inputs to the process.
   b. the operational efficiencies and applications that could be realised by identifying the most feasible uses of the outputs produced.
   c.
3. Broadly analyse Council's identify up to three most appropriate candidate and develop a detailed analysis of the most feasible site.

Council has previously submitted projects under similar EOI processes with DSDMIP which has ensured that regardless of the stage of project development, that we have done everything possible to support the potential delivery of the project via specific State funding rounds as they are made available. It also ensures that we have not retrospectively missed any viable external funding opportunities. This is a low risk approach to ensuring that the project is considered by the State and then through their assessment may be offered the opportunity to provide a detailed application. Only at the detailed application stage is Council then required to confirm or guarantee delivery, partnerships and funding. This provides a critical window of opportunity between the EOI submission and any invitation to provide a detailed application for Council to complete the feasibility study. At that point a decision can then be made about whether to proceed with any investment, and Council has the flexibility to then continue the detailed application process or opt out based on that internal decision.

Discussions with relevant officers at DSDMIP regarding this process and the EOI requirements confirm that process timeframes should allow a minimum of 8 weeks from point of submission to (if successful) the provision of a detailed application which would be sufficient for Council to complete the feasibility work required.

ISSUES

Potential of the Hydrogen Economy

The Green Hydrogen economy presents an alternative renewable energy source for cities and economies including the capacity to power public transport and industrial processes. Momentum in the Green Hydrogen industry is building at a significant and dynamic pace because of the projected growth in global demand. Many local councils and state governments are in competition to acquire the 'first to market' economic impact of this emerging industry. The ability to make dynamic decisions within the context of best practice governance is required to secure this opportunity.

Highlighting the link between the broader, long term economic impact and the immediate operational nature of this opportunity has been one of the key discussion points. The economic, environmental and community benefits identified are significant, but will be unachievable without initial operational commitments requiring the identification of the efficiencies that can be realised through co-location.

Local production and co-location option

The informal technical working group identified the based on the following key criteria:

- already operate similar infrastructure and processes to the production of Green Hydrogen.
- as an input to the process of producing Green Hydrogen.
- The Hydrogen, Oxygen and heat (outputs of a Green Hydrogen plant) can be used to create cost savings and perhaps revenue opportunities.
- The introduction of co-location may increase efficiencies in the treatment process as well as reducing operational costs related to managing these assets.
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was presented to a group of over sixty engineers, experts and government agency representatives in the green hydrogen and renewable energy industry at the Australian Renewable Energy Agency (ARENA) A-Lab workshop on 22 and 23 July 2019. Since the workshop, ARENA and several other investment groups have contacted Council to learn more about the concept.

To inform and guide future decisions, and attract public and/or private investment, a feasibility study is recommended to measure efficiencies and value . The findings and recommendations from this study will inform the next steps in identifying further opportunities

STRATEGIC IMPLICATIONS

Legislative Requirements

There are no legislative requirements which might direct Council in its consideration of this matter. The recommended feasibility study would identify any future legislative considerations as part of the risk analysis report.

Risk Management

Opportunity

The opportunity for Council is to identify how to produce Green Hydrogen at scale and in a manner which may increase operational efficiencies while delivering broader benefits to our local community.

Some of these future benefits are:

- Attract new businesses to the local area that create new jobs, increase local skill levels, attract investment through new and expanding businesses.
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- Stand-alone power supply to island communities, residential and commercial developments.
- Cheaper, greener energy and mobility solutions.

Risks

Council will utilise its risk management framework for the delivery of the feasibility study.

The recommended feasibility study will incorporate a full risk and opportunity assessment of potential future

Financial

The final amount required will be informed by the procurement process.

The proposed funding release is from the operating cost budget within a Council approved capital project in the 2019-2020 financial year This is not a new budget request.

People

The feasibility study will be project managed by the Economic Development team to ensure the focus is on the strategic benefits that can be realised through the development of an emerging economy.

Independent consultants will lead and conduct the feasibility study.

As required input from the Council Redland Water officers will be needed and technical and process information for the consultant.

The Economic Development team has engaged with a number of internal and external stakeholders in the development of this project, which ensures a one team approach and maximum benefit for Council and the community.

The feasibility study outcomes will provide the information required for project staging and potential Council and external party involvement.

Environmental

The Green Hydrogen process uses renewable energy (solar and/or wind) to electrolyse water and produce Hydrogen and Oxygen. This is a 100% emission free energy production process.

From an environmental perspective, hydrogen is unique among liquid and gaseous fuels in that it emits absolutely no CO^2 emissions when burned.

Hydrogen has been discussed widely for mobility applications in order to minimise local emissions, reduce overall greenhouse gas (GHG) emissions and decrease dependency on fossil fuel resources.

At a global level, replacing fossil fuel use with carbon-free hydrogen will potentially reduce greenhouse gas emissions, with estimated potential annual abatement of up to 6 billion tonnes of CO^2 by 2050 (for comparison, the quantity of CO^2 emitted in 2017 was 32 billion tonnes.)

Introducing Green Hydrogen into the local economy will have obvious environmental benefits. The assessment of these benefits would be the focus of a future study.

Social

As this is a feasibility study, there are no social implications. Public education and awareness campaigns will be required should future projects be approved.

Alignment with Council's Policy and Plans

The projects align with:

Redland City Corporate Plan 2018-2023

- Green Living
  - Take a leadership role in the community and actively reduce Council's emissions and carbon footprint
  - Reduce the environmental impacts of Council's waste collection and resource recovery operations
  - Partner with community in diverting and minimising waste
- Wise Planning and Design
  - Regional collaboration and targeted advocacy drives external funding for key infrastructure upgrades and enhanced community outcomes
- Supportive and Vibrant Economy
  - Identify opportunities to partner with the private sector to develop and commercialise sites and provide community infrastructure
  - Support infrastructure that encourages business and tourism growth
  - Support growth in key sectors identified in Council's Economic Development Framework

Redland City Economic Development Framework 2014-2041

- Ensures that Redlands will be a vibrant inclusive economy and be the destination of choice for businesses, workers, residents and tourists because of its proactive, innovative and creative approach to business development and expansion.

POL 2884 Economic Sustainability Policy

- Support a sustainable local economy and encourage local employment growth by providing support to local businesses, ensuring sufficient land and enabling infrastructure for future economic and employment growth and reducing barriers to business investment.

POL 3130 Green Living Policy

- Focus on resource conservation followed by efficiency and renewable energy, to reduce Council's corporate greenhouse gas emissions consistent with targets adopted and publish annual reports tracking Council's performance of energy and fuel use and associated greenhouse gas emissions.
- Support green living opportunities in the community, business and schools, through the procurement of local goods and services consistent with delivering sustainable economic growth identified in the Economic Sustainability Policy (POL 2884) and through engagement activities with the community.

CONSULTATION

Consulted	Consultation Date	Comments/Actions
Office of Mayor	Multiple Dates	Briefings.
Office of the CEO	29 July 2019	Briefing.
Councillors	18 June 2019	Councillor Workshop.
Executive Leadership Team	17 June 2019	Briefing.
General Manager Infrastructure and Operations	Multiple dates	Briefing.
Water and Waste Infrastructure	Multiple dates	Briefing.
Legal Services	Multiple Dates	Briefing.
Financial Planning	15 August 2019	Briefing.
Planning Assessment	Multiple Dates	Briefing.
External Funding Manager	Multiple Dates	Briefing.
Transport Planning		Briefing.
Environment	9 May 2019	Briefing.
Risk and Liability	15 August 2019	Briefing.

OPTIONS

Option One

That Council resolves as follows:

1. To approve the undertaking of a Redlands Coast Green Hydrogen feasibility study.
2. To approve the transfer of funds from the from the Infrastructure and Operations Department financial year 2019-2020 project budget to the Economic Development budget, for the purpose of undertaking a feasibility study into the potential co-location of a Green Hydrogen production facility at a Redland City Council Wastewater Treatment Plant.
3. That this report remains confidential until the contract has been signed and awarded to the potential supplier, subject to maintaining any private, commercial in confidence and legally privileged information.

Option Two

That Council resolves as follows:

1. To not undertake a Redlands Coast Green Hydrogen feasibility study.
2. That this report remains confidential, subject to maintaining any private, commercial in confidence and legally privileged information.

OFFICER'S RECOMMENDATION

That Council resolves as follows:

1. **To approve the undertaking of a Redlands Coast Green Hydrogen feasibility study.**
2. **To approve the transfer of funds from the from the Infrastructure and Operations Department financial year 2019-2020 project budget to the Economic Development budget, for the purpose of undertaking a feasibility study into the potential co-location of a Green Hydrogen production facility at a Redland City Council Wastewater Treatment Plant.**
3. **That this report remains confidential until the contract has been signed and awarded to the potential supplier, subject to maintaining any private, commercial in confidence and legally privileged information.**