

MEMORANDUM OF UNDERSTANDING

BETWEEN

ESB Generation & Trading

AND

Technological University Dublin

For

Development of a Hydrogen Facility and Living Lab at TU Dublin Blanchardstown Campus

29th June 2022

THIS MEMORANDUM OF UNDERSTANDING is dated the 29th June 2022 (“The Effective Date”) and made between:

(1) ELECTRICITY SUPPLY BOARD, a statutory corporation having its principal place of business at Two Gateway, East Wall Road, Dublin 3, D03 A995, Ireland (hereinafter referred to as “**ESB**” which expression shall include its subsidiaries) of the One Part; and

(2) Technological University Dublin, with an address at Park House, Grangegorman, 191 North Circular Road, D07 EWW4 (hereinafter referred to as “**TU Dublin**” which expression shall include its subsidiaries) of the Other Part.

each a “**Party**” together the “**Parties**”.

Whereas:

The Parties now wish to enter into this Memorandum of Understanding (“**MOU**”) in order to create a firm basis of understanding for the future discussions with a view to the development of a Green Hydrogen Facility at TU Dublin Blanchardstown Campus and entering into a formal agreement on an ESB/TU Dublin Joint Venture Agreement for the development of same.

NOW THEREFORE and in consideration of the mutual covenants, representations, terms and conditions herein contained, it is hereby agreed by and between the Parties hereto as follows:

1 GENERAL

- A This MOU only provides a framework for future discussions between the Parties, it reflects the Parties’ current intentions, however it is not intended to be and shall not be legally binding on either of them by way of contract or otherwise, and it does not contain any legally enforceable representation of future intent or other obligation.
- B The Parties wish to negotiate, agree and execute the necessary Agreements to allow for the exploration and development of a Hydrogen Facility and Living Lab at TU Dublin Blanchardstown campus. Both parties agree to exclusivity for all Hydrogen Facility related activities at TU Dublin Blanchardstown Campus for the duration specified in Clause 7.
- C Both Parties agree to act in good faith throughout the negotiations and discussions with a view to achieve the objectives set out hereinbefore.

2. SCOPE

2.1 Background

The objective of this collaborative initiative between ESB and TU Dublin is to build a sustainable green hydrogen plant for the purposes of commercial research, teaching and academic-industrial engagement. The hydrogen plant captures renewable electrical energy and stores this energy as hydrogen. The hydrogen can be used as a transport fuel, as a green energy in buildings and for attracting industries seeking to reduce their carbon emissions.

ESB want to use the hydrogen plant to assess the commercial aspects of hydrogen as a transport fuel in the Irish transport sector, with a specific focus on bus transport, and propose to seek commercial contract(s) with transport companies(s). TU Dublin Blanchardstown

currently has two commercial bus operators using the campus grounds as their terminus, so there is an opportunity to access the commercial viability of hydrogen for busses.

TU Dublin want to use the plant as the core of Hydrogen Living Lab. The production, storage and end use of hydrogen from both a commercial and engineering stance can be used to enhance undergraduate and postgraduate education and research. In addition to the use of hydrogen in transport, the Hydrogen Living Lab will examine the TU Dublin Blanchardstown campus buildings to assess the techno-economic challenges of converting the buildings to hydrogen energy with a long term view of a nett zero carbon campus.

TU Dublin Blanchardstown campus has been identified as a suitable location for the development of this Hydrogen facility and Living Lab that would comprise of;

- Hydrogen Production (range 500-1,500 kg per day)
- Hydrogen Storage (range 1,000 – 2,000 kg)
- Hydrogen Dispensing (at low, medium and high pressure – up to 700 bar)

A significant portion (60-80%) of the output would be made available on a commercial basis for transportation and industrial uses through a Hydrogen Refuelling Station (HRS) close to the perimeter of TU Dublin Blanchardstown campus. The exact location of a potential site will be identified during Phase 1 activities. The remaining Hydrogen (20%-40%) will be made available for TU Dublin research in building, industrial applications, and educational endeavours. Arrangements with 3rd Parties may also be put in place for use of any surplus Hydrogen produced if supply and demand are mismatched.

The collaborative work envisaged between ESB and TU Dublin has been broken into three phases of work:

Phase 1 - Project scoping covered under this MoU as set out under 2.2

Phase 2 – Definition of Project

This Phase will look to bring the project to Final Investment Decision, and will include activities such as, but not limited to,

- Commercial Agreements between the Parties
- Front End Engineering and Design (“FEED”)
- Securing of Planning Permission
- Securing of any required Environmental Licences
- Securing of any required Safety permissions
- Procurement of equipment, services and construction services
- Securing a long-term Hydrogen offtake agreement
- Securing of Grant Funding

Phase 3 – Execution

- Construction
- Commissioning
- Commercial Operation

2.2 Collaborative Project Planning

Under this MoU, the Parties agree to jointly explore the challenges involved in developing the above Hydrogen Facility as follows:

Phase 1 – Assessment of Opportunity

- High level sizing of the Hydrogen Plant
- High level Engineering Design of the Hydrogen Plant
- Identification of a suitable location for the Hydrogen Living Lab and Plant Equipment
- Assessment of Planning & Environment requirements
- Assessment of Safety issues relating the Hydrogen Plant
- Assessment of Access logistics to the TU Dublin Blanchardstown campus
- Assessment of all grant funding sources
- Assessment Business Development / Research grant funding
- Assessment of commercial opportunities with transportation & industrial users
- Assessment of initial capital costs and ongoing costs of operations
- Assessment of appropriate commercial arrangements between ESB and TU Dublin to enable this project
- Identification of suitable funding sources from educational research grant funding, commercialisation funding, infrastructure funding and commercial business development grant funding, necessary to deliver any final project.
- Sample generic grant application
- Review and update of Phase 2 and Phase 3 activities in light of Phase 1 outcomes

Phase 1 of this project will involve the development of a Joint Business Proposal to be presented to ESB and TU Dublin for agreement and approval. This agreed and approved document can be used in Stakeholder communications. Only following a successful joint business proposal agreement and approval will phases 2 and 3 progress.

It is anticipated that this Phase will be completed by 1st September 2022.

It is recognised the project will require appropriate Commercial Agreements between the parties, prior to any significant investment being incurred. These will be explored and assessed as part of Phase 1 and will be put in place as part of Phase 2. Equity/funding percentages will be agreed as part of the Commercial negotiations. Parties agree to negotiate the terms of required Agreements in good faith.

3. TERMS OF AGREEMENTS

The terms of any agreements following from this MOU shall be negotiated in good faith and shall at all times be subject to the Parties obtaining the necessary internal approvals.

4. COSTS

Each Party shall cover its own costs in Phase 1 of this Project, unless shared by an agreed ratio agreed formally in advance.

Unless explicitly agreed, no fees shall be payable from one party to the other.

If the arrangements shall not be consummated for any reason, neither of the Parties will be responsible for any of the other's costs or expenses. In no event, shall either Party be liable to

the other for any indirect, speculative, special or consequential damages, including but not limited to loss of profits in connection with performance under this proposed MOU. Neither Party shall have any liability to the other based on failure to ultimately consummate the arrangements envisaged herein except those sections which are legally binding on the Parties.

5. ASSIGNMENT

Neither Party shall assign, delegate, sub contract or otherwise transfer the benefit and/or burden of this MOU.

6. AUTHORITY TO EXECUTE AGREEMENT

Each of the Parties hereby represents, warrants and covenants with the other Party that it is duly authorised to enter into, deliver and perform this MOU and further that the officers executing this MOU on its behalf are duly authorised to execute and enter this MOU and therefore this MOU is valid, enforceable and binding upon it.

7. TERMINATION

This MOU shall expire on the earliest to happen of the following events:

- unanimous consent of the Parties to terminate this Agreement; or by any Party giving six (6) months written notice to the other Party.
- the 9th Nov 2023 (being 18 months from Effective Date)

This MOU term may be extended by written agreement between the Parties.

8. EFFECT OF TERMINATION

In the event that this MOU is terminated for any of the reasons set out in Clause 7 above, none of the Parties shall have any liability whatsoever to the other in respect of any costs, liabilities or expenses incurred in the course of negotiations and discussions or resulting from such termination.

9. ENTIRE AGREEMENT

This MOU shall take effect in substitution and supersedes all previous agreements and arrangements relating to the contents hereof whether written, oral or implied between the Parties and any terms proposed by any of the Parties.

10. CONFIDENTIALITY

The activities covered by this MOU are covered by the Confidentiality Agreement between the Parties dated 9th December 2021

11. ANNOUNCEMENTS

ESB and TU Dublin agree that neither party will make or send a public announcement, communication or public circular concerning this MOU unless it is first agreed with the other party.

12. GOVERNING LAW, JURISDICTION, RESOLUTION OF DISPUTES, AND GENERAL

- 12.1 This MOU is governed by, and shall be construed in accordance with Irish law.
- 12.2 Any disputes in connection with this MOU or the implementation of any particular initiative resulting from this MOU which cannot be resolved by amicable discussions between the Parties shall be referred to the Presidents/CEO of the Parties or their nominees for resolution, or may be submitted to such alternative dispute resolution mechanism as may be agreed in writing between the Parties.
- 12.3 The Irish Courts shall have exclusive jurisdiction to hear and decide any suit, action or proceedings, and to settle any disputes, which may arise out of or in connection with this MOU and associated transactions and, for these purposes, each party irrevocably submits to the jurisdiction of the Courts of Ireland.
- 12.4 A party must not assign or otherwise deal with a right under this MOU without the prior written consent of the other Party.
- 12.5 This MOU can be executed in counterparts. All counterparts when taken together are to be taken to constitute the one instrument.
- 12.6 This MOU is for the purposes of furthering collaboration between the Parties and nothing contained in this MOU shall be construed to create or imply a joint venture, partnership, principal-agent or employment relationship between the Parties.
- 12.6 Nothing in this MOU shall create or shall be construed to create any tenancy or to confer or be construed to confer upon one Party any interest in any, all or part of the grounds, building or premises of the other Party.
- 12.7 Should any collaborative research activities under this MOU result in the creation of any intellectual property rights, the Parties shall enter into a separate legal agreement in relation to the ownership and/or commercialisation of such rights.

13. CONTACT PERSONS

ESB: Aodhán McAleer, Hydrogen & Gas Storage Manager, ESB Generation and Trading.

TU Dublin: Dr. Mick Mc Keever, Senior Lecturer 1, TU Dublin Blanchardstown.

SIGNED for and on behalf of
ESB

SIGNED for and on behalf of
TU Dublin



in the presence of:

in the presence of:



Date:

Date: 4/7/22