

Committee	UHI North, West and Hebrides Finance and General Purposes Committee
Subject	Business Development - Creed Hydrogen Skills and Innovation Centre
Action requested	<input type="checkbox"/> For information only <input type="checkbox"/> For discussion <input checked="" type="checkbox"/> For recommendation <input type="checkbox"/> For endorsement <input type="checkbox"/> For approval
Summary of the paper	The purpose of this paper is to seek approval to be a delivery partner in the Creed Hydrogen Skills and Innovation Centre project.
Resource implications	Yes. Staff time to continue to engage in the partnership as well as support marketing effort. We will require a lecturer/trainer to deliver courses at the Creed centre and a small amount of travel costs will be claimed for the lecturer. Courses will only run subject to viable numbers being achieved. There are no other costs associated for NWH associated with the partnership proposed
Risk implications	There is a risk that course numbers are not realised which could impact both SFC targets and Commercial targets
Date paper prepared	August 2023
Date of Board / Committee meeting	23/08/23
Author	Joe MacPhee with support from Debbie Miller
Link with strategy Please highlight how the paper links to the Strategic Plan	The project links directly to the draft strategy for new areas of curriculum growth and new business development as well as partnership working.
Island communities	The rural and islands college merger may have an impact on the Western Isles and islands covered by West Highland College that is different to other communities. As part of the merger process, the University will undertake an Island Communities Impact Assessment.
Status (e.g., confidential, non-confidential)	Non confidential

Freedom of information	Yes
Consultation How has consultation with partners been conducted?	Consultation has been ongoing from project inception through to approval of the project with Comhairle nan Eilean Siar, PlusZero Ltd and Scottish Government

Recommendation

It is recommended that the North, West and Hebrides Finance and General Purposes Committee

a) note the success of the joint bid to the Emerging Energy Technologies Fund (EETF) under the Scottish Hydrogen Innovation Scheme 2022/23 for £1.135m;

b) agree to recommend to the Board that UHI North, West and Hebrides becomes a formal partner in the Creed Hydrogen Skills and Innovation Centre Project, subject to the development of a formal partnership agreement to the satisfaction of the Principal and Chief Executive in consultation with the Executive Leadership Team.

CREED HYDROGEN SKILLS AND INNOVATION CENTRE PROJECT

INTRODUCTION

- 1.1 The Outer Hebrides has the potential to become one of Scotland's largest green-hydrogen production hubs, building a major new clean energy industry that can drive economic growth and prosperity for the Island's communities and support the rapid decarbonisation of the Island's energy system. In the most ambitious scenario set out in the Scotland Hydrogen Assessment Project, establishing Scotland as an exporter of green hydrogen to Europe has the potential to be worth up to £25billion a year to the Scottish economy, with more than 300,000 jobs created by 2045.
- 1.2 The Creed Hydrogen Skills and Innovation Centre project will establish a unique Public, Private and Academic Hydrogen Skills & Innovation Centre at Creed Park, Stornoway, which will ensure that the Outer Hebrides has the supply chain and skilled workforce ready to capitalise on this opportunity. The partners in the project are Comhairle nan Eilean Siar, Plus Zero Ltd and formerly UHI Outer Hebrides.
- 1.3 This project will produce hydrogen from electrolysis, deploying a mix of existing Alkaline and new Proton Exchange Membrane (PEM) and Anode Exchange Membrane (AEM) electrolyser technology. The electricity supply for the electrolyzers comes from two existing renewable sources at Creed Park: a 300kW wind turbine and a 100kVA biogas fuelled generator. The biogas used in the generator is produced by Comhairle nan Eilean Siar's anaerobic digester which is used to process organic waste from households and business on the Island. A control system allows the operation of the electrolyser equipment to be managed according to the availability of wind power and biogas. The hydrogen produced under this project will therefore meet the definition of renewable carbon.
- 1.4 The project builds on existing hydrogen infrastructure, expertise and partnership arrangements across the three project partners and has the following key aims:
 - To deepen the existing hydrogen focussed partnership between Comhairle nan Eilean Siar (CnES), PlusZero Ltd and UHI NWH;
 - Expand and enhance the existing green-hydrogen production and refuelling infrastructure at Creed Park to support the deployment of a wider range of hydrogen-technology on the Island.
 - Create a weather protected "hands on" training and test environment at the Creed site to support UHI's hydrogen training programmes at apprentice, graduate and post-graduate level and provide a fully structured test environment for new hydrogen production and application innovations.
 - Create learning and experience that can be transferred to other Islands and areas of Scotland

- 1.5 A successful application to the Emerging Energy Technologies Fund (EETF) under the Scottish Hydrogen Innovation Scheme 2022/23 has secured 50% funding of £1.135m. A summary of Project Costs and Funding is shown below:

Project Costs	£
Design and construction of industrial building and covered area to house electrolyser equipment, training and test facility.	£659,000
Refurbishment of existing Comhairle and UHI electrolyser and refueller equipment	£130,000
New electrolyser, compression and storage equipment procurement and commissioning	£1,482,000
Total Project Costs	£2,271,000
Funding Sources	
Scottish Government EETF	£1,135,000
Comhairle nan Eilean Siar – ICNZ OH (£464k)	£602,000
PlusZero Ltd	£534,000
Total Project Funding	£2,271,000

- 2.6 Match funding of £464k is anticipated from the Islands Centre for Net Zero Outer Hebrides project with the balance being funded by Comhairle nan Eilean Siar and from PlusZero Ltd, the private sector partner. The total project cost is £2.271m.
- 2.7 It is anticipated that the build phase for the new building will commence by the end of 2023 with completion by summer 2024.

PROJECT DETAILS

- 3.1 Staff at Outer Hebrides have longstanding research and teaching interests in hydrogen and have an Alkaline electrolyser at the campus in Stornoway. The college was the first academic institution in Scotland to introduce an SQA certified PDA in Hydrogen for Technicians.
- 3.2 The project will create a unique green-hydrogen (and oxygen) production, learning, test and research centre which will play a critical role in:
- **Expanding Hydrogen Production:** New and prototype hydrogen equipment cannot be deployed or tested unless there is a source of hydrogen available, and this project will expand the existing electrolyser production capacity, storage and refuelling capability at Creed, to allow a wider range of hydrogen equipment to be tested and deployed. This will include equipment such as JCB's hydrogen combustion engine telehandler (diesel versions currently used at Creed), dual fuel HGV s and fuel cell cars.
 - **A Hydrogen Learning environment:** The quality of learning and skills training at Apprenticeship, Undergraduate and Post Graduate level is significantly enhanced by providing students with hands on access to the relevant technology. This project will create a new building at the Creed to house the existing and new electrolyser equipment and provide a safe, weather protected hands-on, real-world environment

for UHI staff/students to gain access to working hydrogen equipment in the TRL5-9 range. This will significantly complement the facilities at Outer Hebrides, including the Campus Redevelopment and enhance the attractiveness of the courses for students.

- **A research and test environment:** In addition to supporting learning and skills development, the proposed new building at the Creed will also allow for the testing and deployment of hydrogen technology innovations at the TRL 3-8 levels, in a structured test environment overseen by staff. PlusZero's integrated business model and highly collaborative approach has created a significant network of relationships with leading hydrogen technology innovators across the UK who are actively looking for environments where their equipment can be tested and deployed. This includes companies such as The Technology Partnership (TTP) who have already asked to test their prototype AEM electrolyser at the Creed facility when ready.
- **Disseminating knowledge:** UHI NWH is part of UHI's unique network of academic facilities across the Highlands and Islands of Scotland, providing a mechanism for the rapid sharing of learning from the Creed facility across the UHI family of institutions as well as the wider Scottish University network which UHI forms part of. UHI NWH will also be able to host students from the other UHI institutions who can undertake the specialist hydrogen training activity offered by the College, creating opportunities for young people throughout the Highlands and Islands to benefit from the Creed facility.

3.3 It is proposed that lecturing staff will manage the skills and training activities to be undertaken on site. Building on the PDA in Hydrogen for Technicians, the team will continue to develop specific course / curriculum activity to attract and recruit students as part of Curriculum Strategy priority areas of rural sustainability and net zero (renewables, wind energy, and green hydrogen).

3.4 The project will enable UHI North, West and Hebrides to take a strategic leadership role in hydrogen skills development. The project has many synergies with the proposed Energy Hub North Renewable Energy Academy in terms of benefits, such as:

- direct engagement with industry to fully understand demands across the growing hydrogen sector and the wider net zero economy
- investing in new industry pathways that will upskill and reskill people for the hydrogen (green energy) sector;
- use recent investment in STEM Co-ordinators to raise awareness of opportunities with Schools and parents
- work with Secondary Schools, SDS, DYW and Employability partners to create and develop new tertiary curriculum and pathways to employment / career opportunities

3.5 The project provides a further opportunity for UHI NWH to become the leading renewables training provider and to deliver actions identified in the new Business Development Strategy.

3.6 A formal project steering group will be established to oversee and manage the development of the project. A Memorandum of Understanding will be drafted to set out the formal roles and responsibilities of partners which will require to be approved by the North, West and Hebrides Board.

FINANCIAL IMPLICATIONS

4.1 There is no direct funding contribution required from UHI North, West and Hebrides.

4.2 The training and test environment centre will be housed in a new facility owned and managed by Comhairle nan Eilean Siar.

4.3 The project has the potential to contribute to the our core funded targets with fulltime and part time students and commercial income through engagement with employers.

4.4 Additional staff will only be engaged where there is a clear business case and a viable number of students engage.

4.5 There may be some mileage costs for staff to attend the facility which is located two miles from the College.