



# Moray Council's Hydrogen Journey

3 October 2023

Non-confidential - Standard



# Agenda

1. Introducing a hydrogen economy
2. Hydrogen overview
3. Partnership working
4. Next steps and future plans for hydrogen in Moray

# Moray Hydrogen – The Vision



*“Hydrogen has a role to play across Scotland, in our islands and rural places, communities, cities and industrial clusters. Strategies for production and application are expected to vary across these geographic regions and we are committed to realising the growth opportunities of hydrogen for our regions and local communities. We will therefore support the establishment of strategically important regional hubs of hydrogen activity across Scotland, recognising the differing resources, strengths, and focuses of each location.”*

# Moray Hydrogen

## Introducing a Hydrogen Economy – The Vision

- Retain wealth locally and generate local community benefits – a “Just Transition”
- Identify Short, Medium, and Long Term Actions
- Propose pilot projects to stimulate a hydrogen economy in Moray



# Hydrogen Overview

1. What is Hydrogen?
2. Why Hydrogen?
3. The Hydrogen Value Chain

# What is Hydrogen?

## Hydrogen – the Element

Hydrogen is abundant, colourless, odourless and non-corrosive. It contains three times more energy per kilogram than petrol.

## It is not new

Hydrogen has been a common feature of industrial innovation through the ages. The first hydrogen engine was developed in 1806. It was used for heating & lighting until oil and natural gas took over.

## Why now?

Renewable sources are capable of producing unlimited amounts of electricity, but not always when or where we want it. Hydrogen is easy to store and can be converted back to electricity when required via turbine or fuel cell.

# Why Hydrogen?

## Scottish Government Strategy

*“Our vision is for Scotland to become a leading Hydrogen Nation in the production of reliable, competitive, sustainable hydrogen and secure Scotland’s future as a centre for international excellence as we establish the innovation skills and supply chain that will underpin our energy transition.*”

*Scotland’s unique selling points, are its natural resources, infrastructure and skilled energy workforce which enable us to become the producer of lowest cost hydrogen in Europe by 2045.”*

SG’s draft 'Energy Strategy and Just Transition Plan' includes an ambition for hydrogen to provide 5GW, or the equivalent of 15% of Scotland’s current energy needs, by 2030 and 25 GW of hydrogen production capacity by 2045

# Why Hydrogen?

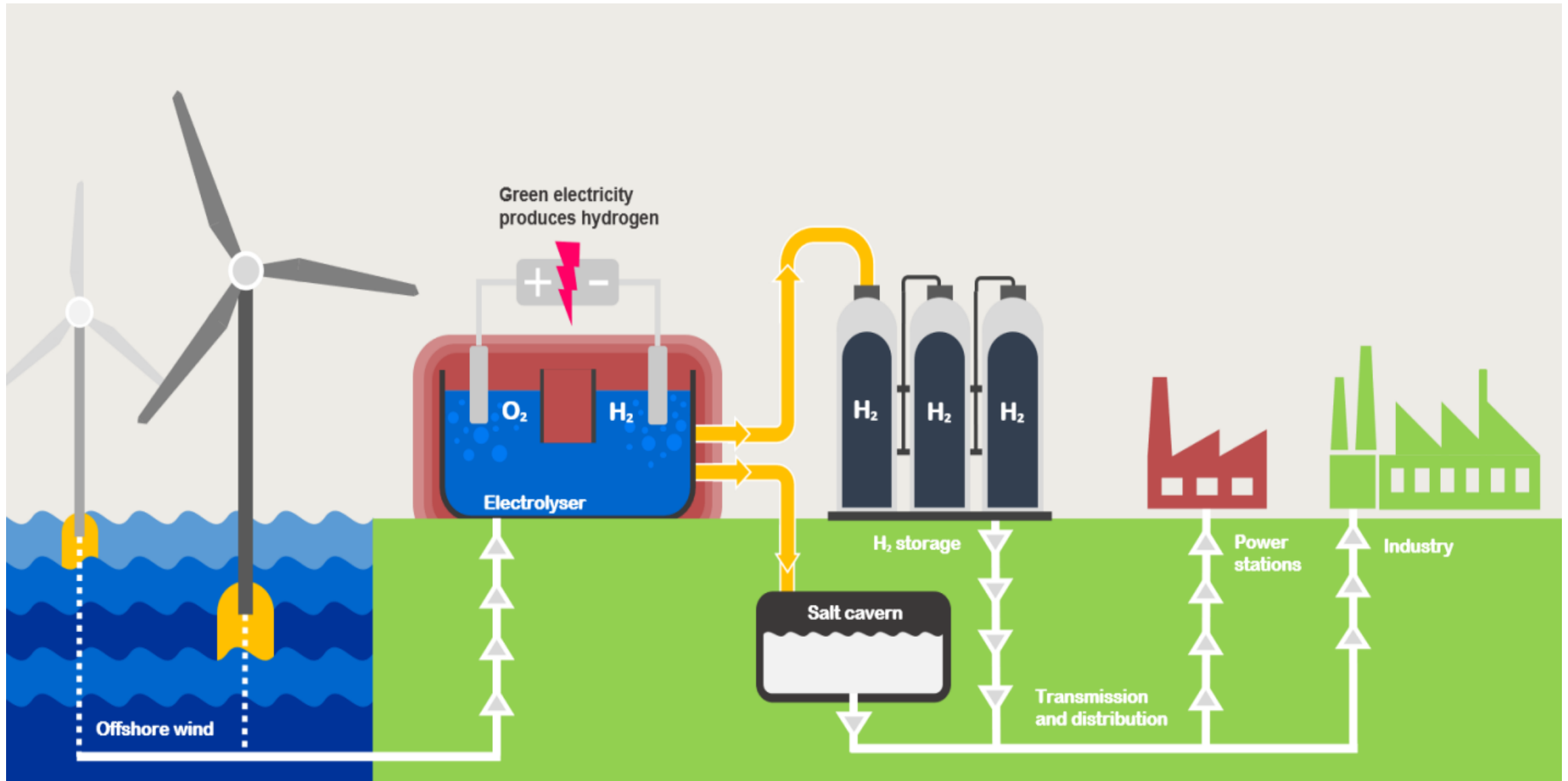
Hydrogen has amazing potential to help society tackle the energy transition challenge by including renewable sources in the energy mix and decarbonising the end uses of fossil fuels – e.g. transport.

**Transportation is responsible for 23% of Greenhouse Gas emissions worldwide. This makes it one of the major focuses for the energy transition.**





# The Green Hydrogen Value Chain



**M**  
MOTT  
MACDONALD



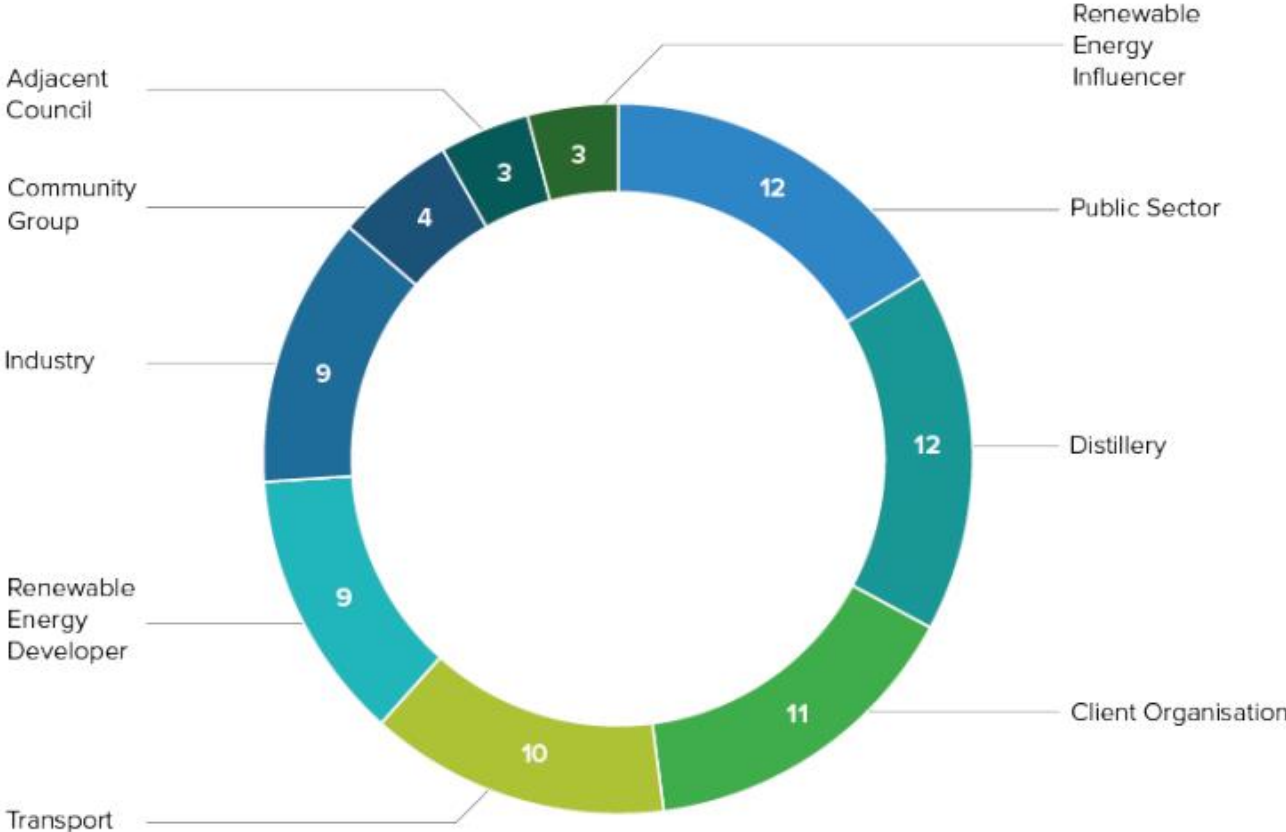
# Moray Council Hydrogen Strategy – Phase 1 Overview

Moray Council  
Highlands and Islands Enterprise  
Mott MacDonal



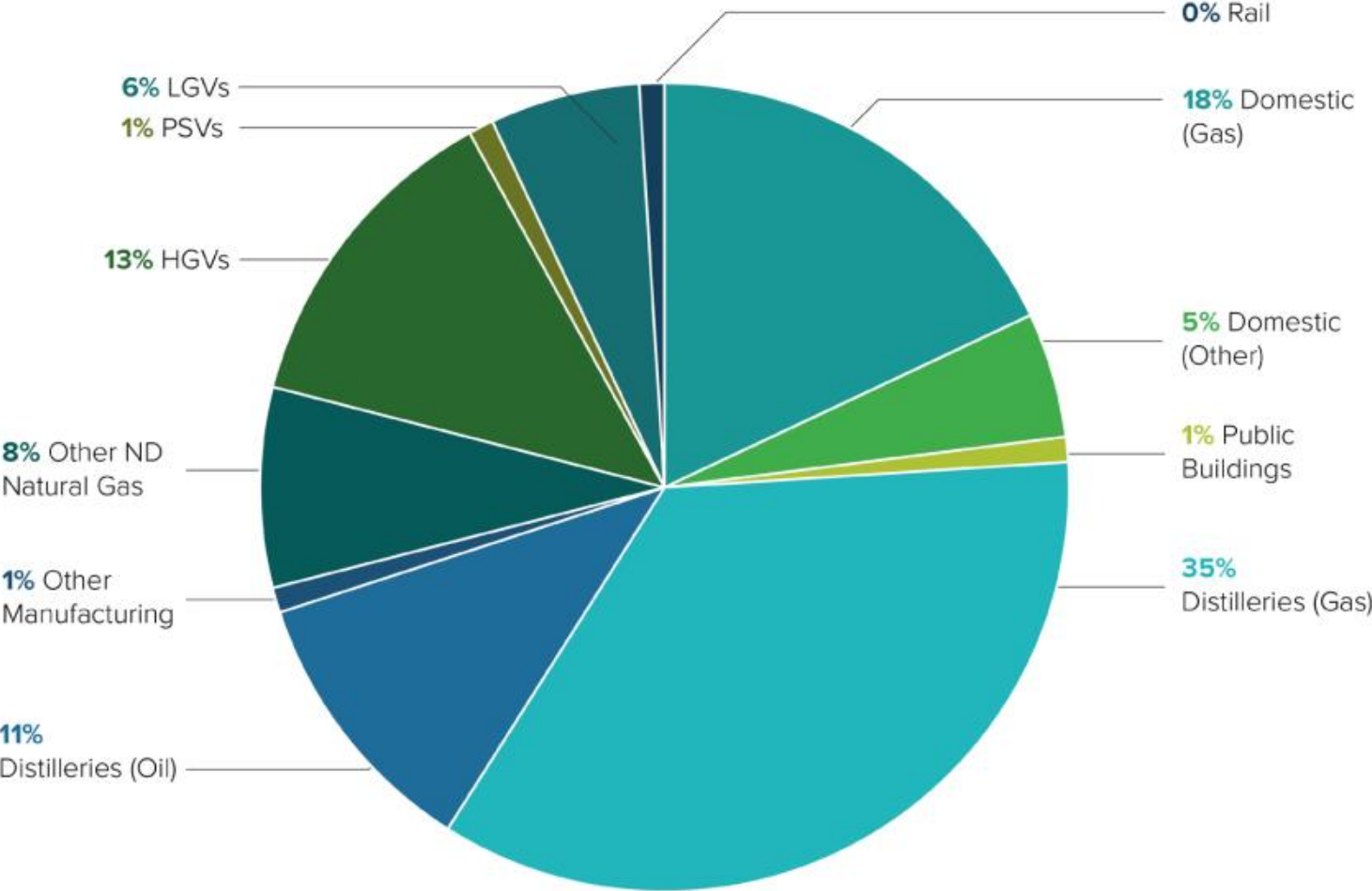
# Moray Hydrogen

## Stakeholder Engagement



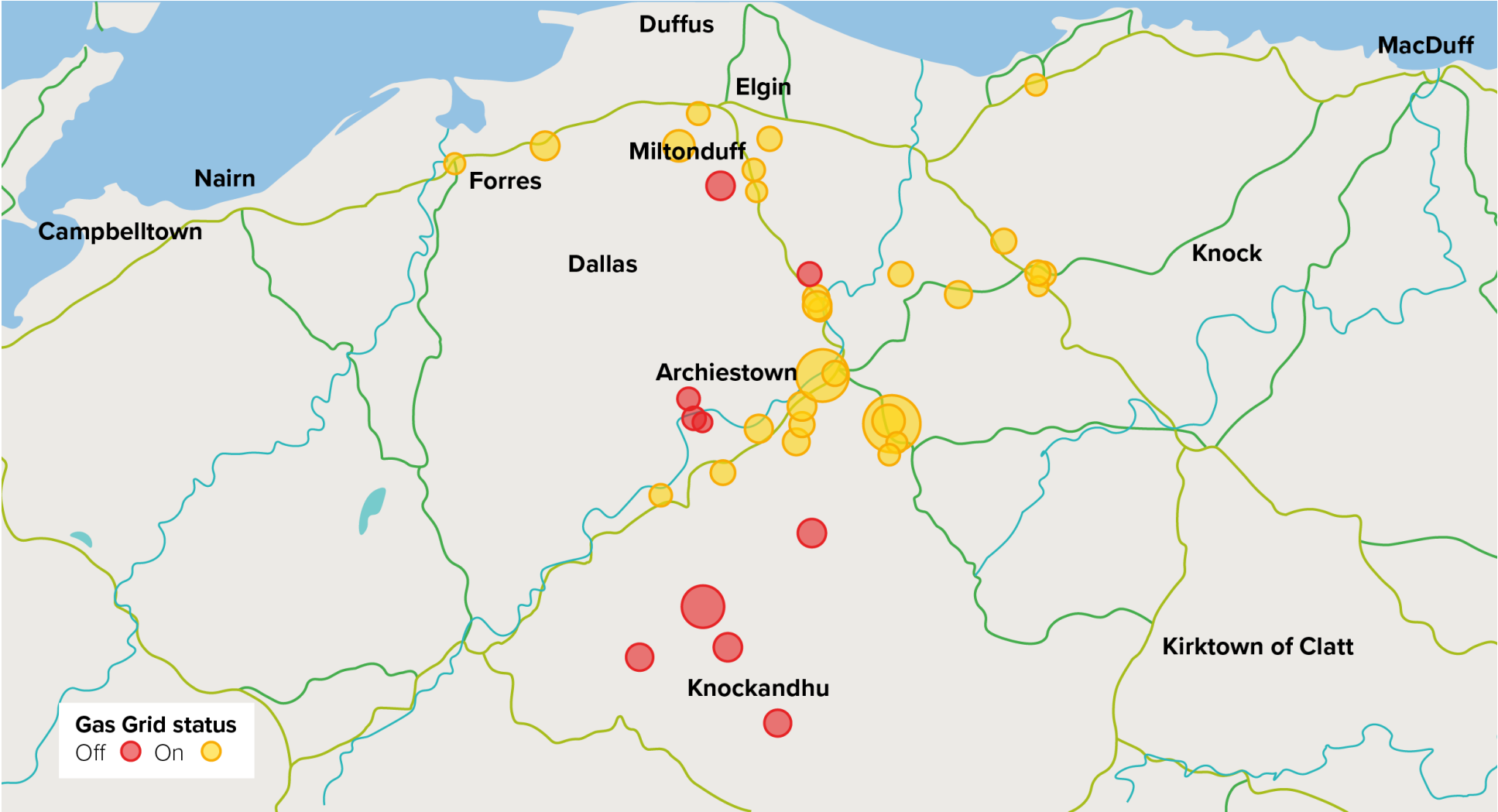
# Moray Hydrogen

## Hydrogen Demand by Sector



# Moray Hydrogen

## Distribution of Distillery Demand



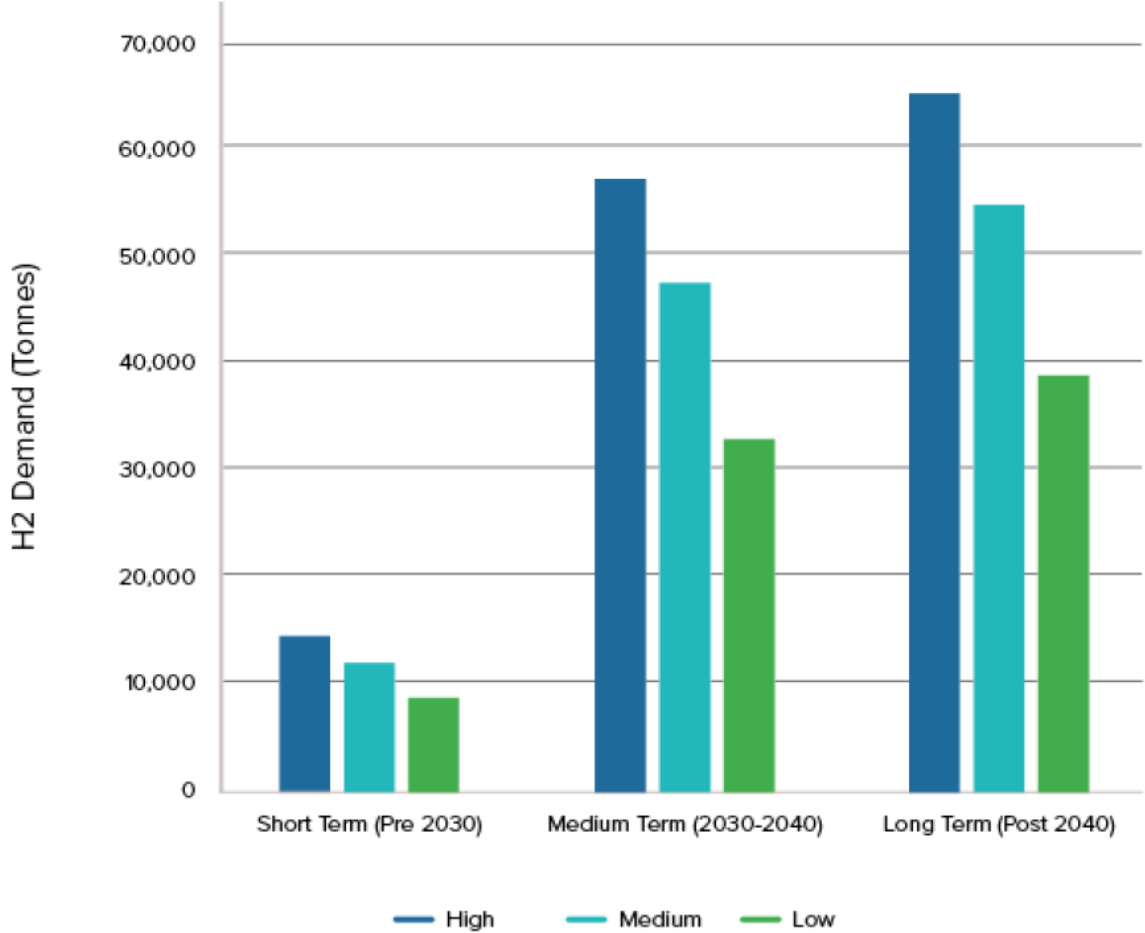
# Moray Hydrogen Strategy

## Time Line and Route Map

- **Short-term (up to 2030)**
  - Moray Hydrogen Working Group
  - Deliver Initial Hub in Moray
  - Develop hydrogen at small scale
- **Medium-term (2030 – 2040)**
  - Established Hydrogen Network
  - Widespread hydrogen use in Transport (and key industries) within Moray
- **Long-term (2040 onwards)**
  - Continued development of Hydrogen Economy in Moray



# Moray Hydrogen Uptake Scenarios



# Moray Hydrogen

## Partnership Working

### Partnership working is key

- *Public Sector – Highlands & Islands Enterprise, UHI Moray*
- *Professional technical support – Mott MacDonald*
- *Industry and commercial contacts*
- *Other LAs*
  
- *Many LA Services have an interest – strategic planning, development control, transport, fleet, economic development*

**Differentiate between those with an interest, and those who are actively progressing a hydrogen economy**

**Keep Members and community involved and informed**

**This is a long-term project**

- *Don't be bounced into signing customer agreements*







## Moray Hydrogen Steering Group

Comprised of: Moray Council, Mott MacDonald, Storegga, UHI Moray, HIE  
Meeting on a monthly basis

Each party responsible for the delivery of their own WP, sharing learnings and updates with the steering group.

### **WP1: Speyside Hydrogen** **Responsible Party: Storegga**

- Development of hydrogen production facilities
- Development of hydrogen distribution facilities
- Development of HRS infrastructure
- Subsequent ownership and operation of above facilities

### **WP2: Moray Hydrogen Strategy** **Responsible Party: Moray Council**

- Conversion of Moray council fleet vehicles to hydrogen
- Support for local transport users to convert to hydrogen
- Evaluation of further hydrogen demand from council assets
- Strategic planning for delivery

### **WP3: Skills & Regional Development** **Responsible Party: UHI Moray**

- Local skills training for a low carbon economy
- Development of supply chain capability within region

## Moray Hydrogen Network

Open forum to share learnings and engage and develop local supply chain, skills etc.

# Moray Hydrogen

## Moray Hydrogen Strategy Phase 2

### 1) Hydrogen Demand Analysis

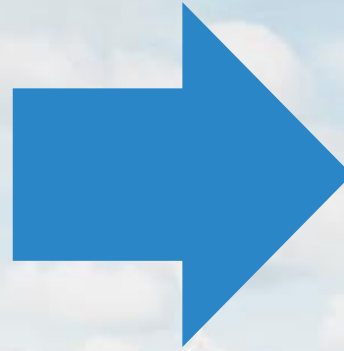
- Multi-criteria assessment
- Stakeholder engagement exercise

### 2) Social Outcomes

- Local Needs Assessment
  - ❖ Labour Market and Local Area
  - ❖ Skills and Training
  - ❖ Local Economy
  - ❖ Health and Wellbeing

### 3) Site Selection

- Land availability
- Power, Water and Wastewater
- Road Access



**Identification of preferred Site(s)**

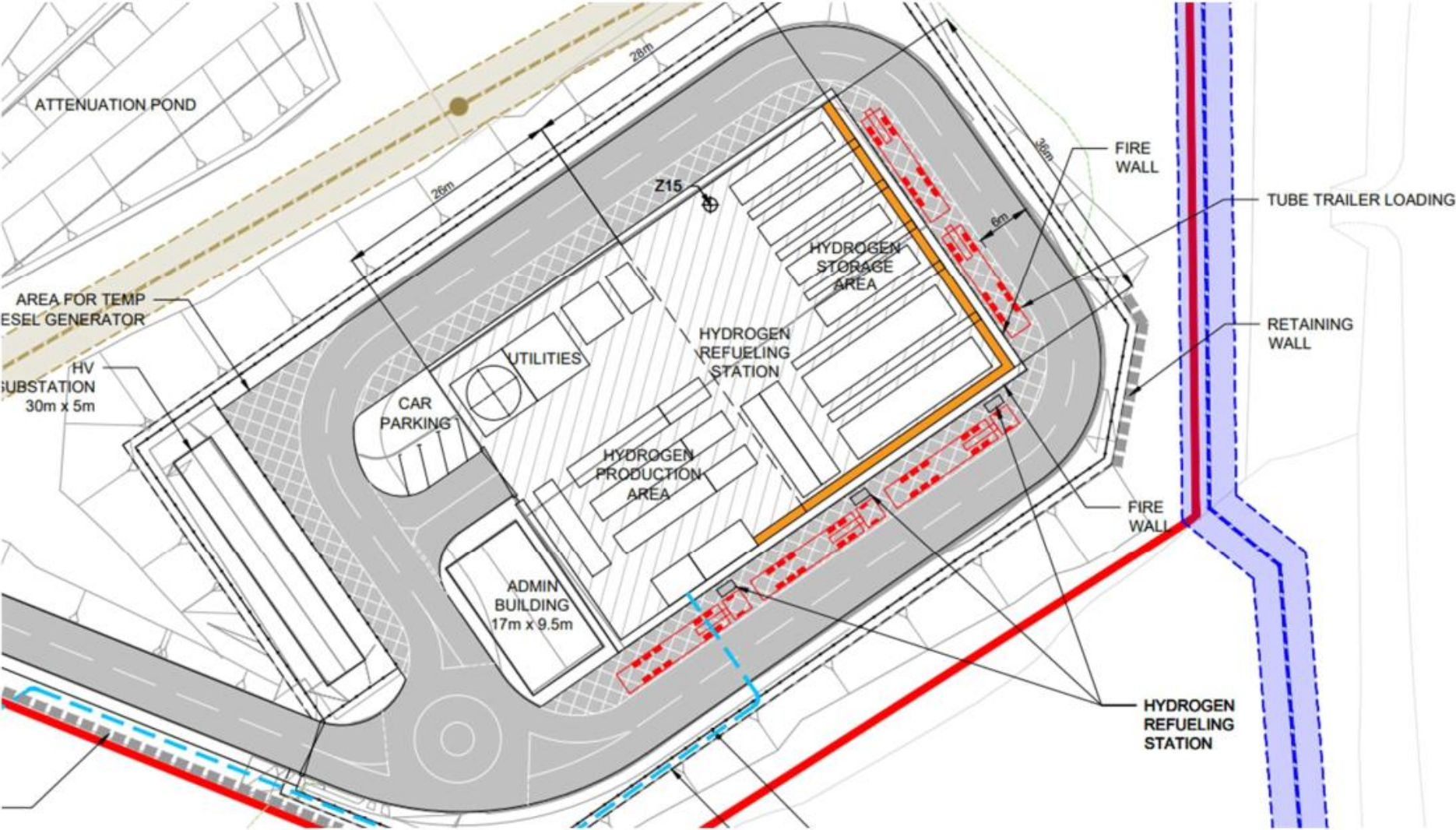
# Moray Hydrogen

## Potential Hydrogen Hub Locations

- Buckie Harbour – Maritime Vessels (& HGVs)
- Aberlour – Distilleries and HGVs
- Elgin – HGVs
- Lossiemouth – HGVs
- Keith (Blackhillock) – HGVs

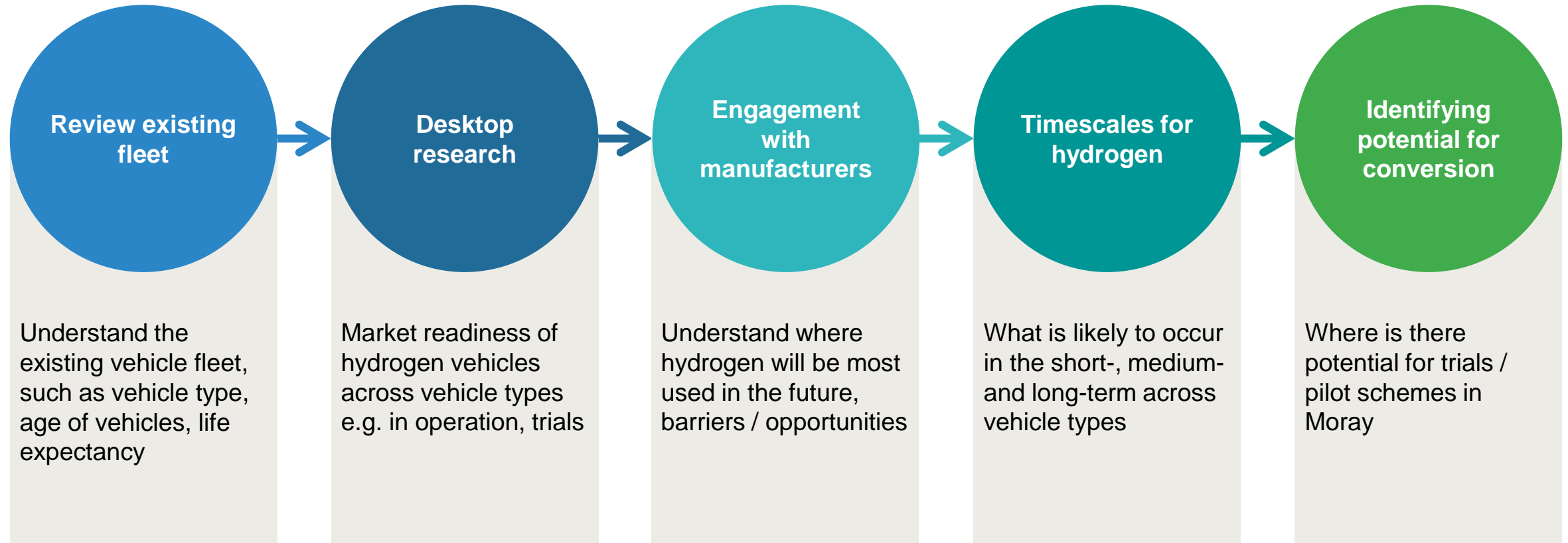
# Moray Hydrogen

## Typical Hydrogen Refuelling Station Layout



# Moray Hydrogen Strategy

## Fleet Review



# Moray Hydrogen Strategy

## Fleet Review

**1**

**Hydrogen vehicles are becoming available across vehicle types**

**2**

**Battery electric is more mature for cars / LCVs, but trials for LCVs are underway**

**3**

**Greatest potential in heavier vehicles e.g. buses, freight**

**4**

**Hydrogen buses in operation, manufacturers are trialing HGVs**

**5**

**Misc. vehicles, such as gritters and sweepers, have been deployed in Scotland**

**6**

**Access to fuel remains a key barrier to uptake**

**7**

**High potential in areas with a local hydrogen source and reduced operational costs**

**8**

**Beneficial to local economy e.g. need to upskills / train people**



# Thank you