



#ONSHOREWIND23

ONSHORE WIND CONFERENCE 2023

21 SEPTEMBER | EDINBURGH

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Claire Mack
Chief Executive
Scottish Renewables

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A1: Onshore wind – a pathway to achieving net-zero and a just transition

Chaired by Claire Mack,
Chief Executive, Scottish Renewables



Claire Mack

Chief Executive, Scottish Renewables

Barry Carruthers

Managing Director Onshore UK & Ireland,
ScottishPower Renewables

Heather Donald

Onshore Renewables Development & Construction Director,
SSE Renewables

Jon O'Sullivan

Director Onshore Wind & Solar, EDF Renewables

Ragne Low

Deputy Director – Onshore Electricity,
The Scottish Government



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A2: Land-use and environmental – pass it on down

Chaired by Nicholas Wright,
Technical Director – Onshore Renewables
Biodiversity Lead, ERM

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Neil Douglas
Director
BVG Associates

Session A2: Land use and environmental

Sector Deal context

Neil Douglas

September 2023



Land Use and Environmental in the Sector Deal



- The Sector will work with the Government, agencies, and stakeholders to ensure a balance is struck between the need for increased onshore wind capacity and the impacts that onshore wind can have on land use and the environment.
- Balancing the need for more wind farms with the safeguards defined in NPF4 will be a crucial aspect of achieving the 2030 onshore wind ambition.
- Scotland will continue to be a world leader in responsible onshore wind development, demonstrating how onshore wind can co-exist with a diversity of species, sensitive habitats, peatland, carbon rich soils, and forestry, ensuring positive outcomes for the climate and nature.



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Rebecca Rylott

Landscape Architect & Urban Designer

Technical Director

WSP

- **A2: Land-use and environmental – *pass it on!***

What could biodiversity look like?
Future proofing with design



Biodiversity – is simply the variety of life

Halt biodiversity loss by 2030

Restore biodiversity: 2045.

By 2045, Scotland will have restored and regenerated biodiversity across our land, freshwater and seas.

Our natural environment, our habitats, ecosystems and species, will be diverse, thriving, resilient and adapting to climate change.

Regenerated biodiversity will drive a sustainable economy and support thriving communities, and people.





1. 13% OF THE UK IS WOODLAND

In 2022, woodland covered 32,400 sq km of the UK; or 13% of the UK's land. Ancient woodland covers only 2.5% of the UK. Sadly, up to 70% of ancient woodlands in the UK have already been lost.

2. WOODLANDS ARE FANTASTIC CARBON CATCHERS

~4,000 million tonnes of carbon stored in UK forests.

3. OAK TREES GENERALLY LIVE FOR 600 YEARS

326 species are completely dependent on oak trees.

4. WE NEED TO PROTECT OUR WOODLANDS

Only 44% of the UK's woodland is managed sustainably.



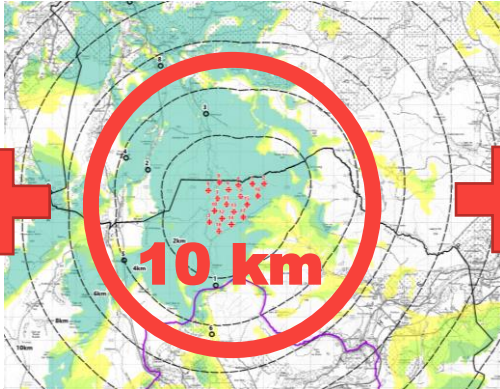
© ScotlandB

5. OUR ANCIENT WOODLANDS ARE UNDER THREAT

1,225 of the UK's ancient woods are currently under threat from development, overgrazing, air pollution and the spread of invasive species such as rhododendron. Around half of the UK's remaining ancient woodlands are affected by felling and replanting with non-native conifers.



Renewable energy: turbines 200m
 Visual impact – just transition?
 Bare hillsides / commercial forestry
 – biodiversity?



PLACE
 Diverse Creative Response
 LOCAL CHANGE



Community HEALTH Food
 Education Employment
 Energy efficiency
 NATURE Recreation LIFE

Managing Landscape Change – *in perpetuity*

Increase landscape capacity:

Reduce susceptibility, increase landscape capacity for wind farms.

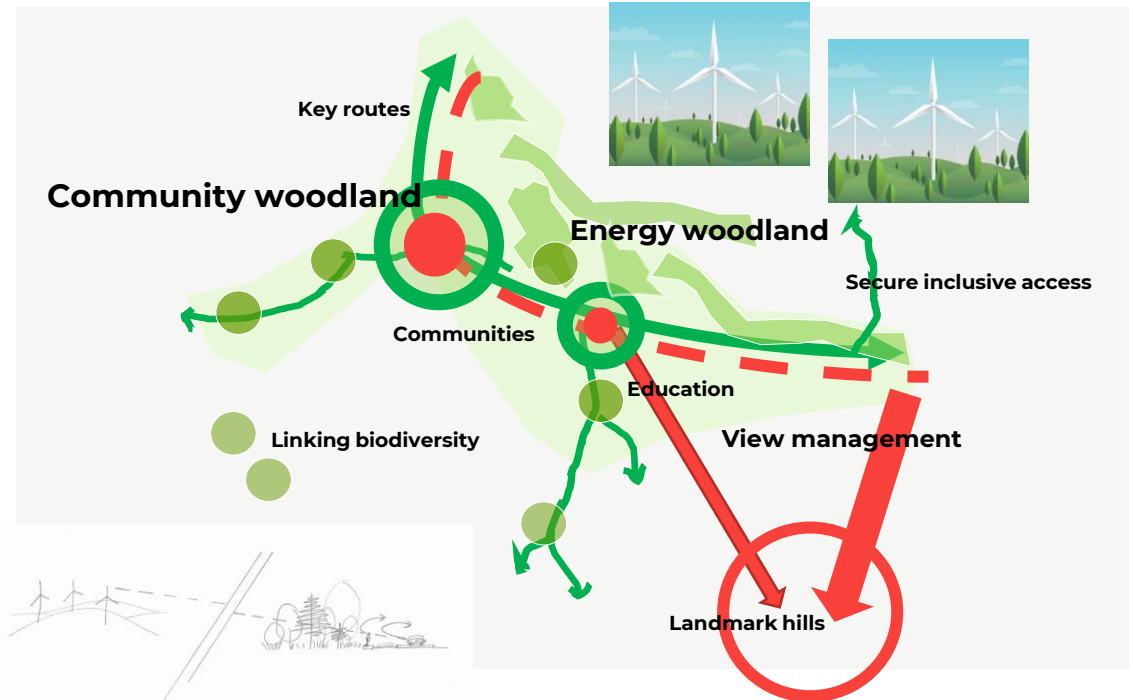
Villages / roads / footpaths.

Change landscape add variety:

wooded / forested landscapes
Caledonian Pine Forest, Birch and Oak Woodland along key receptors and linear routes.

Nature Positive - increase biodiversity foreground interest and interest for people.

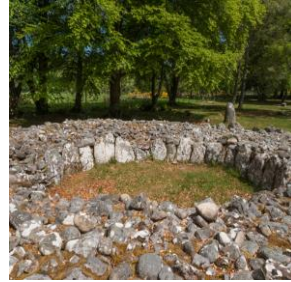
Manage views – create and retaining vistas reducing visibility of wind turbines.



Diversity of Woodland Landscapes



Create magic and wonder

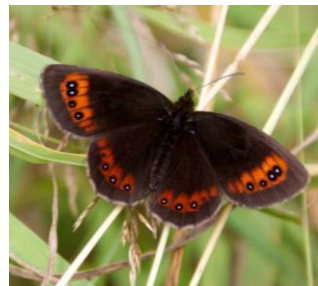
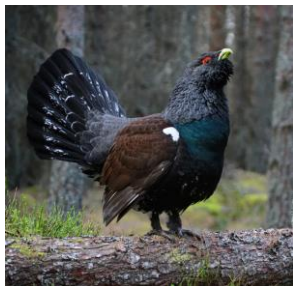


LAND ART – PASS IT ON

Diversity of foreground / human interest



Champion species / increasing biodiversity





Thank you - please pass it on!



wsp.com

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Mark Mulqueeny
Onshore Ecology Manager
SSE Renewables

SSE Renewables

A2: Land-use and environmental – Climate and Nature Emergencies

September 2023

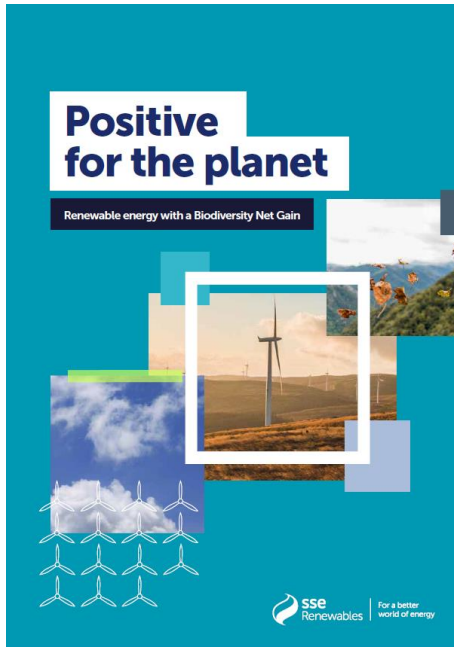
Mark Mulqueeny MA MCIEEM

Onshore Ecology Manager SSE Renewables



Positive For The Planet

A commitment to credibility, transparency and collaboration



- New **BNG report**, two **BNG toolkits** and user guides all published in full
- Launched on **COP27 Biodiversity Day** at twin events in Edinburgh and Egypt for key stakeholders
- Opportunity for Scotland to be a **leader** in BNG.
- [Biodiversity Net Gain | SSE Renewables](#)

Positive For The Planet

A commitment to credibility, transparency and collaboration

Our 10-point plan for Biodiversity Net Gain



1. Deliver Biodiversity No Net Loss on major onshore projects consented from 2023



2. Deliver Biodiversity Net Gain on major onshore projects consented from 2025*



3. Embed BNG ambitions in decision-making at each stage of all new project developments from 2023



4. Use our BNG Toolkit and collaborate with partners to identify biodiversity improvements on operational sites



5. Evolve our BNG Toolkit and approach to enable use in all geographies



6. Actively participate in industry forums to support the development of BNG across all renewable technologies



7. Contribute to research projects and the creation of knowledge around BNG in the renewables sector



8. Trial new approaches for BNG on offshore projects, including digital innovations



9. Develop the concept of 'Habitat Banks' with a transparent methodology for applying BNG credits

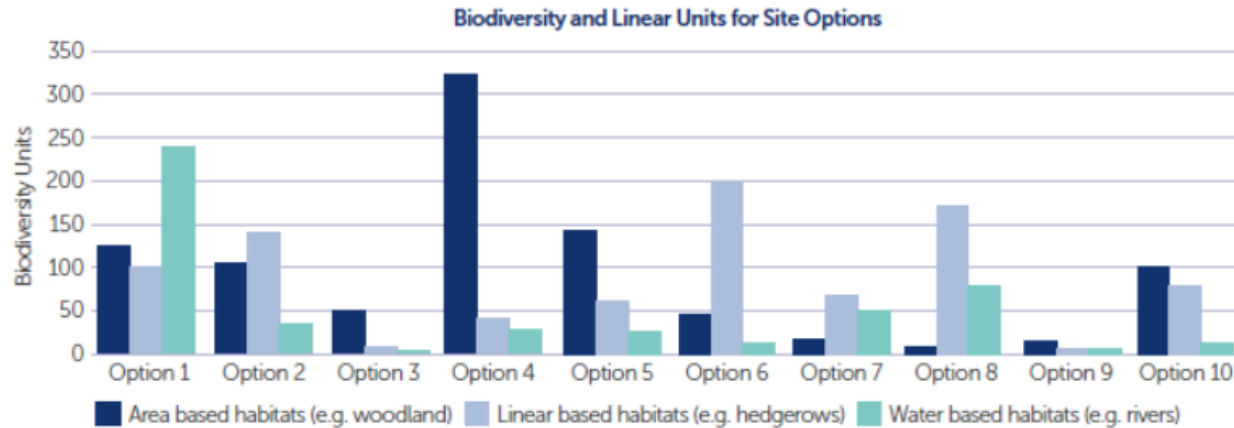


10. Lead the BNG working group of the Powering Net Zero Pact, a collaboration of global power sector companies

* This includes repowering and decommissioning projects.

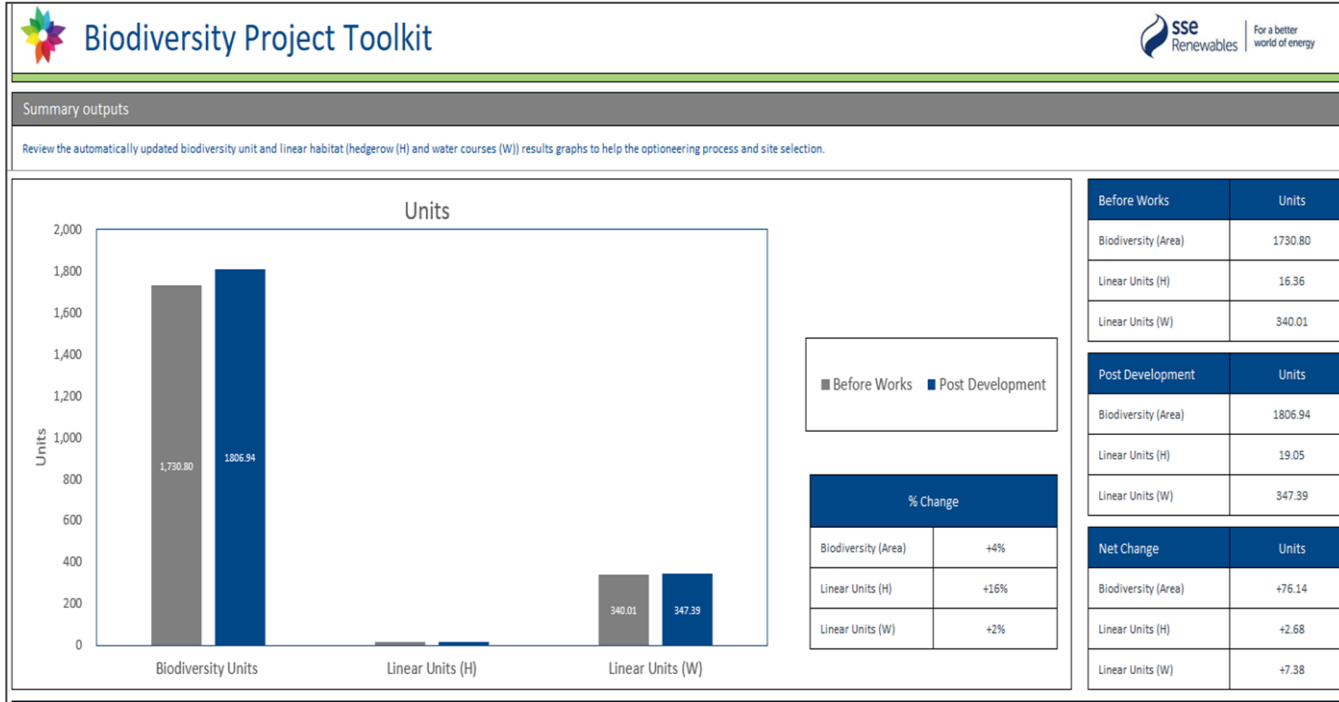
- Deliver **BNG** on **terrestrial projects** as the first step
- Commitment to develop approach for **international markets**
- **Collaborate and partner** to develop credible approaches for **delivering BNG in offshore wind**

|| Site Optioneering Toolkit Results



- Compares **baseline Biodiversity Units** for each site option
- Identifies **biodiversity hotspots** and provides and estimation of habitat creation or enhancement required to **meet no net loss/net gain**
- Toolkit is designed to be embedded into early project design to ensure **biodiversity is factored into decision making**

Project BNG Toolkit Results

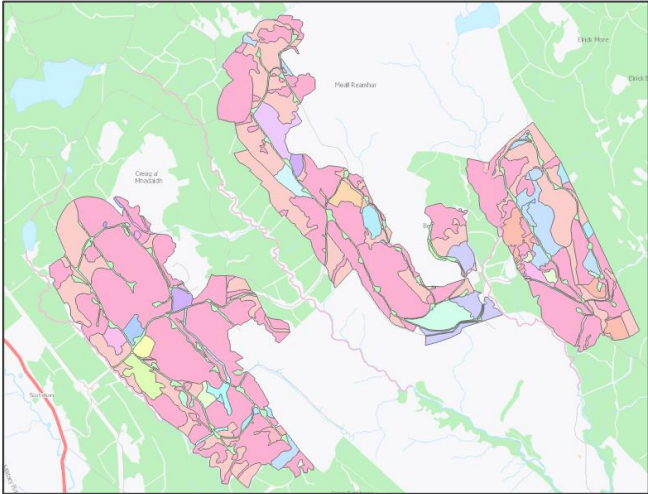


- Uses **detailed habitat data** to assess baseline value and losses (habitats affected by the development)
- **Gains** are calculated by assessing areas of **habitat created or enhanced** to offset the losses
- Net Change (%) is the difference between **post-development** and **pre-development baseline Units**.

|| BNG Examples

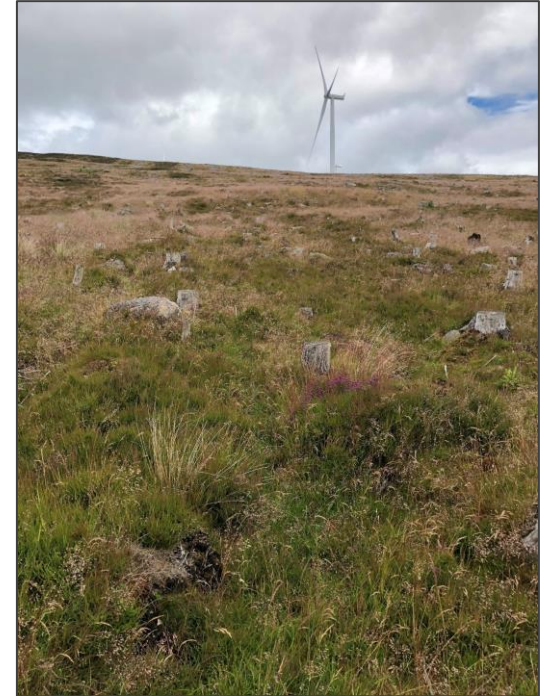


|| Wind Farm Case Study Results

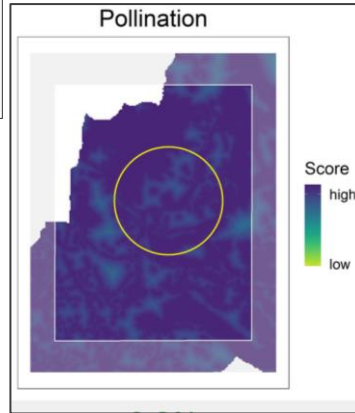
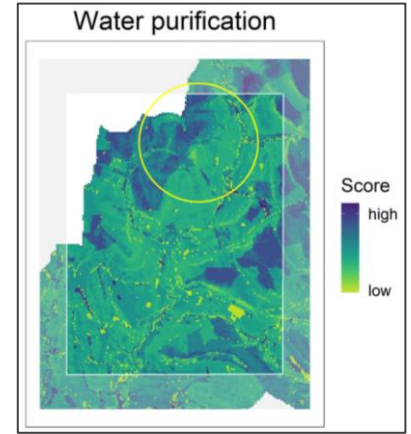
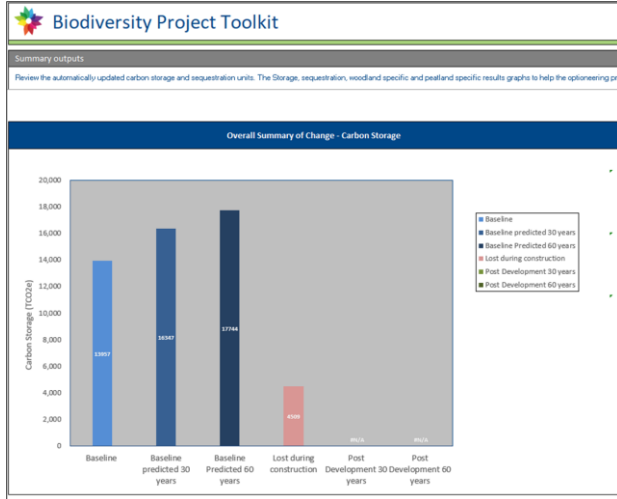


Total Area: 1000ha

- BNG Assessment for the 1000ha felling compartments is a **+66% net gain**.
- HMP main objective is to return afforested land (mid 80's) back to a mosaic of open moorland habitat and native broadleaves in riparian corridors.
- Over **13,000** native broadleaves planted.
- There has been a **221% increase** in the amount of dry heath from 126.85ha to 407.49ha



Next Steps and Innovation



Thank You

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Nicholas Wright

Technical Director – Onshore Renewables Biodiversity Lead, ERM

Neil Douglas

Director, BVG Associates

Rebecca Rylott

Landscape Architect & Urban Designer Technical Director,
WSP

Mark Mulqueeney

Onshore Ecology Manager, SSE Renewables



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B2: Community – get to know your neighbours

Chaired by James Robottom,
Head of Onshore Wind, RenewableUK



James Robottom
Head of Onshore Wind, RenewableUK

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 **Fred. Olsen Renewables**

Finley Becks-Phelps
UK Development Director, Fred. Olsen Renewables

Katy Woodington
Community Investment Manager, RWE

John Boyce
Development Director – Wind, RES

Sarah Merrick
Founder & CEO, Ripple Energy

Rachel Searle
Head of Communities & Impact, Foundation Scotland





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A3: The wind beneath our wings – aviation co-existence

Chaired by Alexandre Davies,
Head of Aviation, RenewableUK



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Sam Johnson
Senior Aviation Manager
RES

SR and RUK Onshore Wind Conference 2023

The wind beneath our wings - aviation co-existence

Sam Johnson

Chair, Aviation Investment Fund Company Limited

Senior Aviation Manager, RES Limited

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WHERE WE STARTED

- 2007 – European Council agreed 20% of energy from renewable sources by 2020
- 11 June 2008 – Memorandum of Understanding
- Aviation Plan – Aviation Management Board – Fund Management Board
- Aviation Investment Fund Company Limited incorporated 3 February 2009



WHO WE ARE

building aviation-wind co-existence through research and development

19 investors to date → @£5M

13 currently active shareholders

Enabler/Strategic Think Tank

BANKS Renewables
development with care

ecotricity

EnergieKontor

EDF

ENGIE

ESB

Energy for generations

REG POWER MANAGEMENT

Renantis

RES
power for good

RWE

ScottishPower
Renewables

sse
Renewables

VATTENFALL

WHAT WE'VE ACHIEVED

- **Radar Solutions** → Raytheon, Aveillant, C Speed
- **Trials** → 2013 MOD Technical Demo, OWIC Concept Demos, Wind Farm Filter, ADLS
- **Technical Studies** → Class G Airspace Modelling, Radar Data Transfer Study, MOD ADATS Research, MOD IR Lighting Study, CAA Turbulence Study, Eskdalemuir
- **People** → CAA Post, RUK Aviation Lead, RAF FTRS Post
- **Events Sponsor** → RUK aviation events

SECTOR DEAL – WHAT IT MEANS

- February 2023 – following OWPS, Scottish Government formed the Strategic Leadership Team
 - 6 Theme Leads
 - G12
 - S5
- Crucial step to frame the ambition to reach 20 GW by 2030 and ultimately net zero
- Key technical themes: CNS, IFPs, lighting, Eskdalemuir

FAIR

CONSISTENT

TRANSPARENT

- 21 September 2023 – Sector Deal signed
- Delivery/Implementation Plans – start **NOW**

AIFCL ROLE – SECTOR DEAL

Sector Commitments need funds to implement change and deliver outcomes

Eskdalemuir Tool and Management Process

IFP Optimisation

Emerging issues - Communication, Navigation and Surveillance

Airspace Modernisation

Electronic Conspicuity

Independent Radar Mitigation Market Survey

Refinements to RUK Survey

AIFCL – WORKSTEAMS

Current Projects:


- OWIC Programme A Support (including FTRS Post)
- Lossiemouth Wind Farm Filter Trials
- ADLS Trials
- Eskdalemuir technical study refinements
- Development of Sector Deal Delivery Plan (funded role)

Potential Projects:

- Wind Farm Pre Planning Assessment Tool
- Aforementioned Sector Deal worksteams
- AMB workstreams

AIFCL Funding Pot is reducing fast → new Investment required if we are to continue the good work

UK PLC – WE'RE IN THIS TOGETHER

An aerial photograph taken from the perspective of someone on an airplane, looking out over a vast landscape. The left side of the frame is dominated by the white, metallic surface of an airplane wing, with rivets and structural lines visible. The wing extends from the bottom left towards the center of the image. Beyond the wing, the landscape is a mix of green fields and brown earth, with a large number of white wind turbines scattered across the horizon. The sky is a dramatic mix of orange, red, and blue, suggesting a sunset or sunrise. The overall mood is one of vastness and shared experience.

LET'S MAKE THIS
WORK!

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Dujon Goncalves-Collins
Senior Strategy Advisor – Aviation
Vattenfall

Read Across and Lessons from OWIC Aviation Workstream

Dujon Goncalves-Collins,

Senior Strategy Advisor – Aviation, Defence & Radar, Vattenfall Wind Power

Aviation Workstream Lead, OWIC

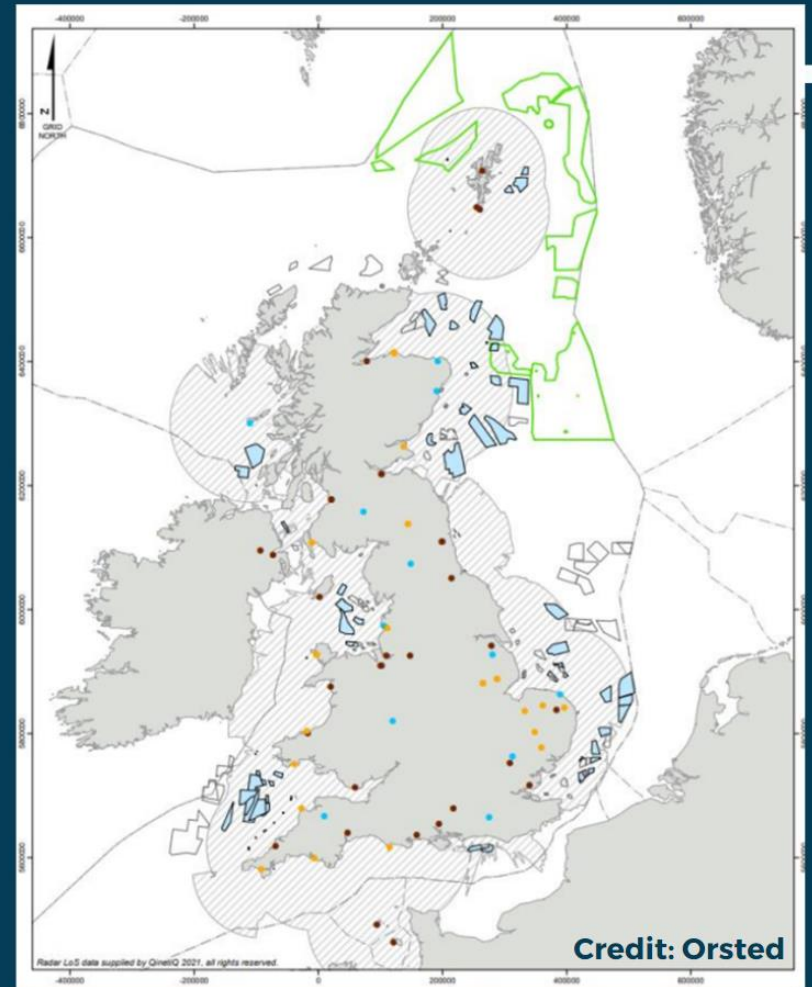
Vice-chair, RenewableUK Aviation Working Group

Co-chair WindEurope Aviation & Defence Task Force

Co-chair WindEurope Wind & Defence Roundtable Forum



The Operating Environment



OWIC | Aviation Radar

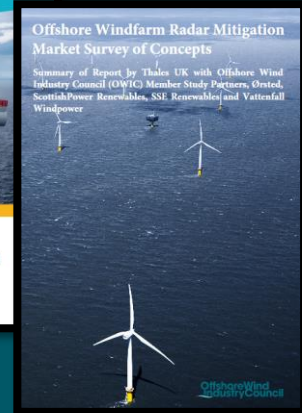
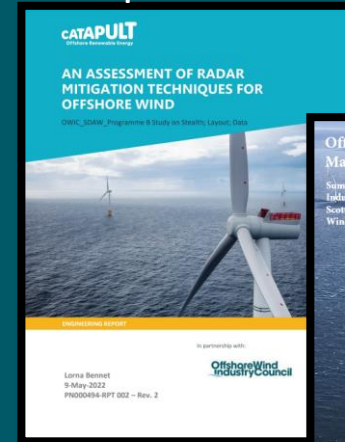
The Workstream Team – Sponsor, Benj Sykes, Orsted;
Lead, Dujon Goncalves-Collins, VWP Vice-Lead, Ian Toothill, SSE-R
Delivery Manager, Alex Davies, RUK Plus reps from Equinor, Orsted, SPR, VWP, TCE

Programme A – Joint Programme Board & Joint Task Force re Offshore Wind & Air Defence

Programme B – Joint Steering Group re Offshore Wind & Airspace Requirements

OWIC MEMBERS' REPORTS:

- Windfarm Layout Optimisation, Stealth Technology, and Data & Information Exchange report released at RUK W&A 2022. [Radar Mitigation Techniques for Offshore Wind \(owic.org.uk\)](https://www.owic.org.uk)
- Radar Mitigation Markey Survey of Concepts report released at RUK W&A 2022. [1c0521_855d2a7cf4224148a43e6d3c855f46ea.pdf \(owic.org.uk\)](https://www.owic.org.uk)



OWIC Aviation Task Force Commissioned 3in1 Study

Background

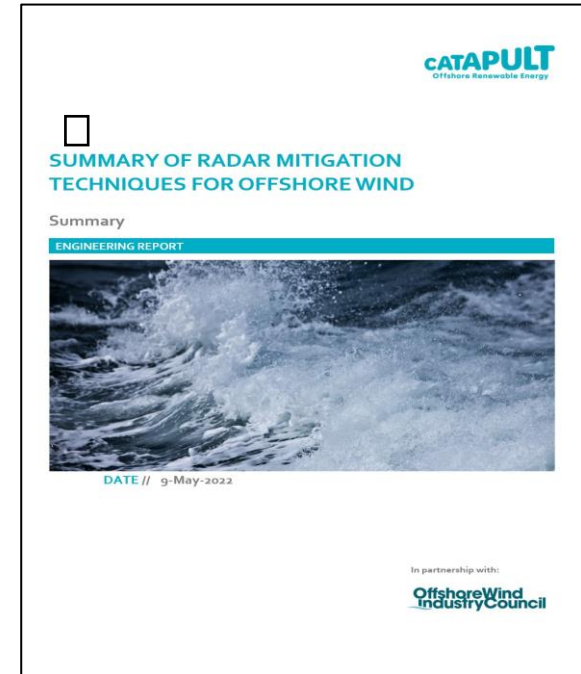
Critically assess opportunities versus challenges for:

- Layout optimisation
- Stealth for WTGs
- Data & information exchange

Non-sensitive input

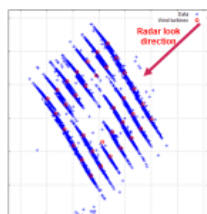
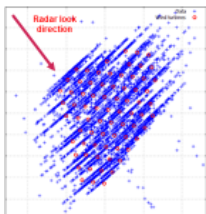
- Literature review
- Interviews

Mainly focused on Air Defence Radar mitigation



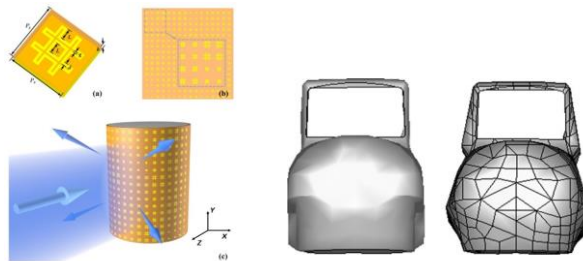
Layout

- **Considered:**
 - Orientation, spacing, size
- **Conclusions:**
 - Site specific impacts – location, orientation, radar head position(s), impact on AEP
 - Pragmatic: Rows perpendicular to the axis of a single radar with greater spacing between rows
 - More benefit if coupled with radar upgrades
- **Recommendations:**
 - Model the options, but only accept if project still viable
 - Work together to validate evidence on legacy radars
 - More modelling and research into false alarms and false tracks



Stealth

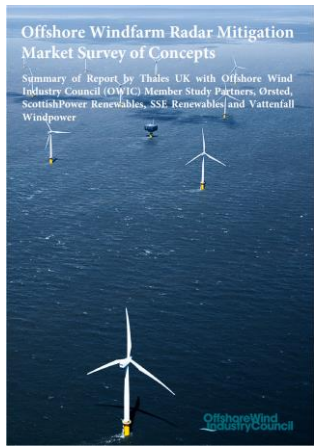
- **Considered:**
 - RAMs, shaping, active techniques
- **Conclusions:**
 - Not much real evidence – lots of unknowns suitable for retro-fit
- **Recommendations:**
 - Further joint investigation – worthy of practical progression?
 - Determine where to focus any improvements
 - Determine how much RCS reduction is required
 - Keep watching brief on new technology



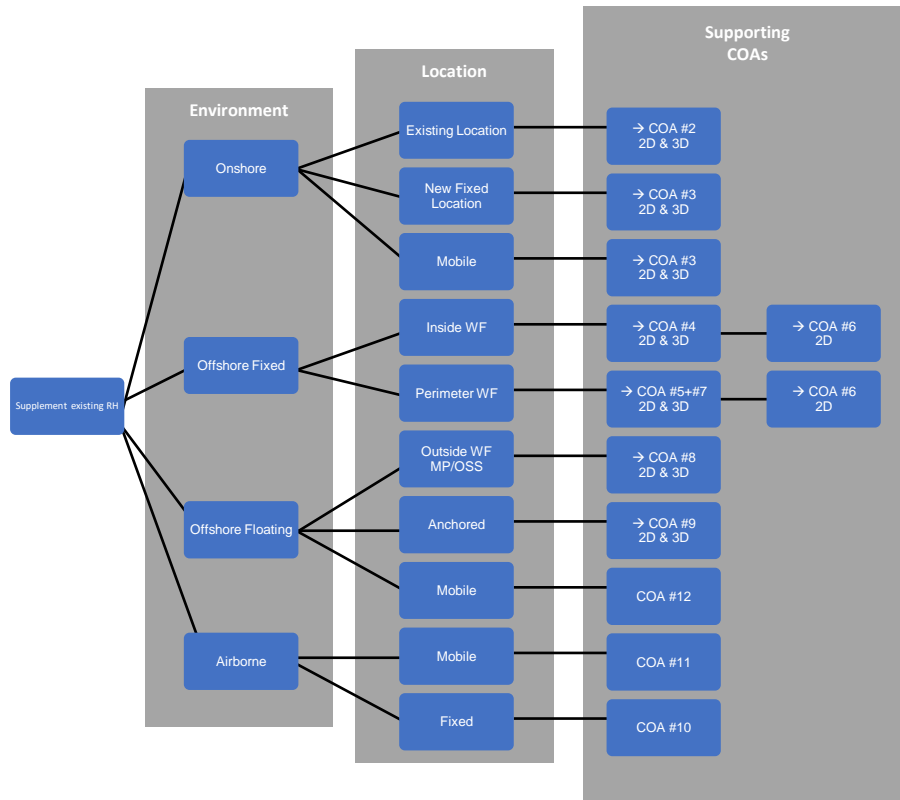
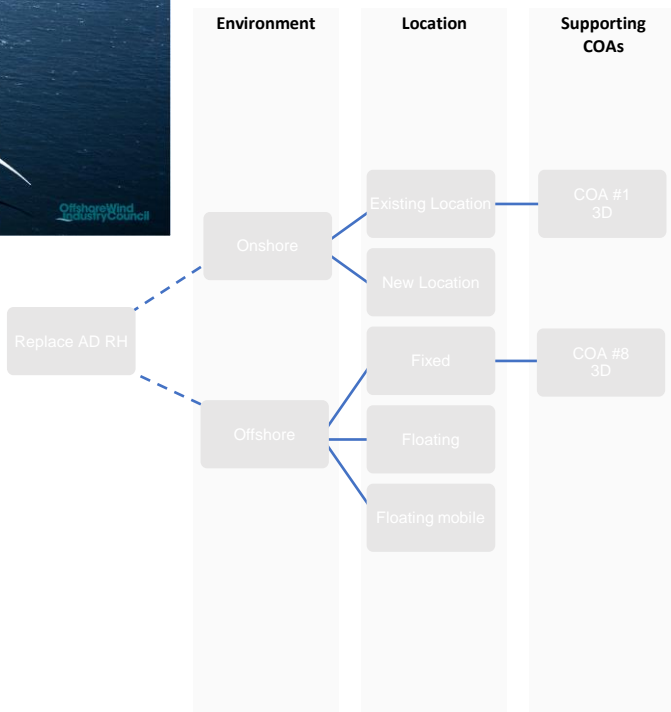
Data

- **Considered:**
 - ML, processing capabilities, radar replacement/ supplement
- **Conclusions:**
 - ML can improve detection and tracking
 - NAIZs have been OK, but not good enough going forward
 - TMZs good for ATC radar
 - New infill, primary and supplemental surveillance options show real benefits
- **Recommendations:**
 - Continue investment in ML techniques to “train” radars
 - Create large datasets for ML
 - Use real windfarm data for radar development
 - Pursue options for further trials/ validation of infill and new radar/ surveillance technology



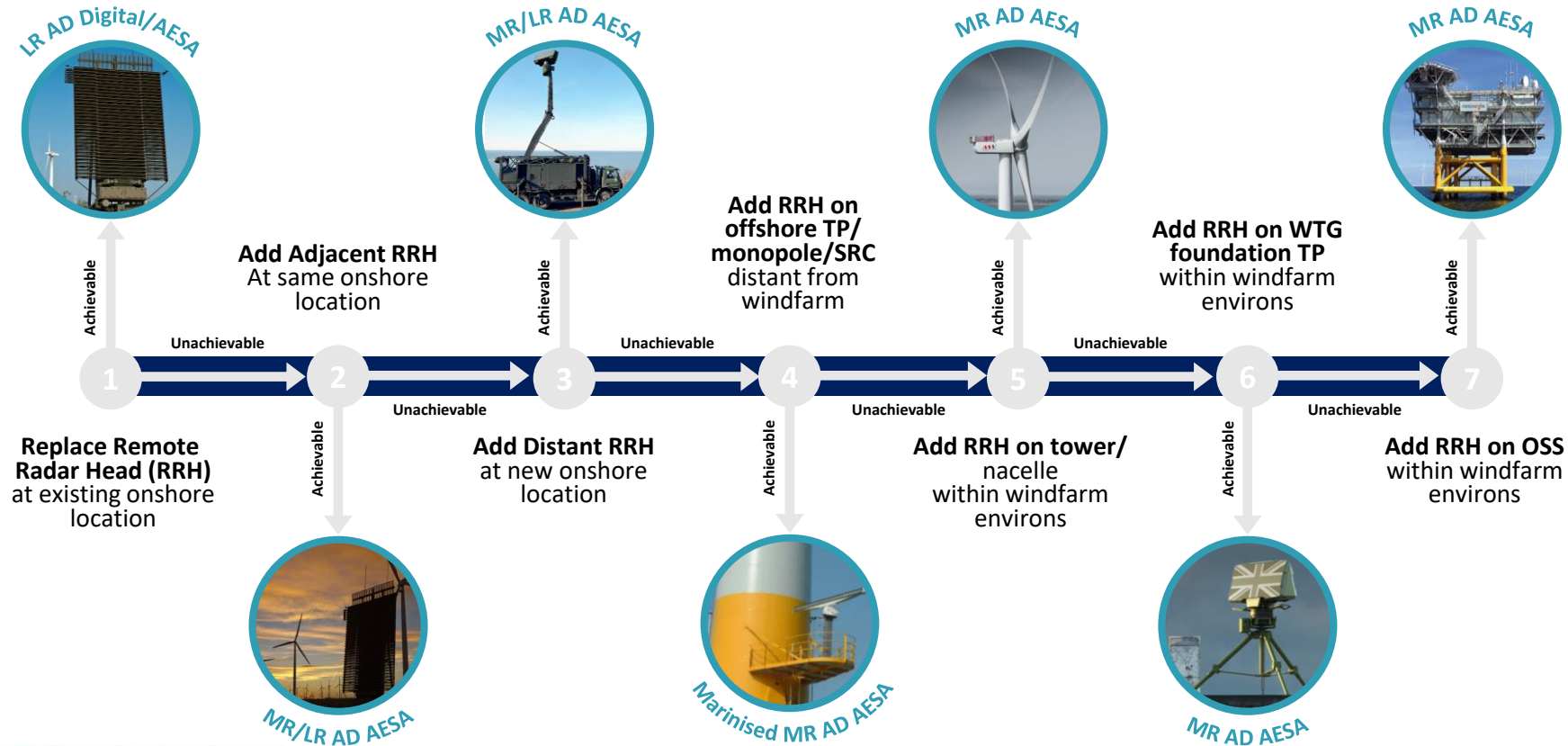


Operating Concept Evolution



Update/Replace or Improve/Supplement existing Air Defence capability

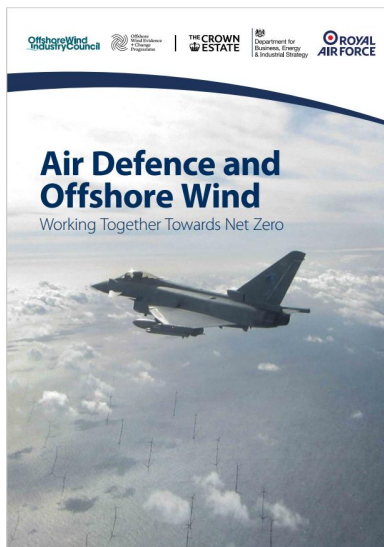
Solution Down-Selection Diagram



Joint Programme Board and Joint Task Force – Focus on Offshore Wind and Air Defence

EVIDENCE

- Paper-based studies
 - OWIC-contracted Thales report (concepts)
 - DE&S Feasibility Study (mature solutions)
 - BAES low-TRL study
- BEIS/DESNZ / MOD(DASA) Innovation Challenge
 - Phase 1 ended Mar 21
 - Phase 2 launched Apr 21
 - Phase 3 launched Feb 23
- Concept Demonstration
 - Campaigns 1 & 2 in parallel
 - Technical and public-facing reports
- Operational Analysis
- Requirements



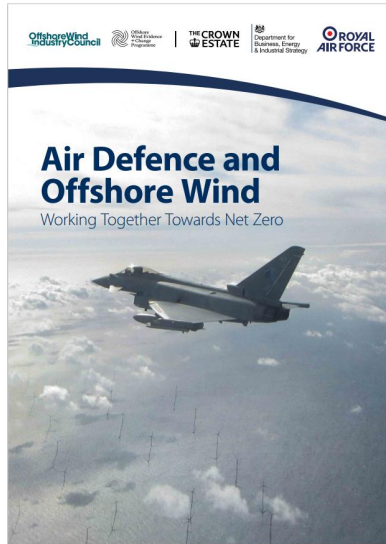
PROCESSES

- Procurement Strategy
 - Procurement Scenarios
 - Commercial Strategy
 - Contracting Mechanisms
 - Draft Commercial agreements
- Offshore deployment?
- Cumulative impact?

RISK & MITIGATIONS

- BEIS/MOD/TCE/Industry
- 'What if' scenarios and mitigations

The Joint Strategy



X-Govt Ministerial endorsement

- Minister for Defence
- Minister for Business, Environment, Innovation and Science
- Senior Sector Stakeholder endorsement.
 - Empowers the Task Force to drive forward.



[Air defence and offshore wind - working together towards Net Zero - GOV.UK \(www.gov.uk\)](https://www.gov.uk)



[Air Vice Marshall Linc Taylor \(Twitter video clip\)](#)

Concept Demonstrations

GOV.UK

Topics Government activity

Home > Defence and armed forces > Mitigating the adverse effects of offshore wind farms on air defence radar: concept demonstrations

Ministry of Defence

Policy paper

Mitigating the adverse effects of offshore wind farms on air defence radar: concept demonstrations

Published 24 May 2022

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7. Test Method
8. Trial Constraints and Weather
9. Trial Results
10. Recommendations
11. Conclusion

Print this page

1. Wind Turbines and Radar - The Need for Co-Existence

There has never been sharper focus on the importance of both offshore wind's contribution to UK energy security and net zero, and the importance of effective and robust defence of the UK homeland.

As the nation strives to meet our renewable energy targets, the need to find and implement technical measures to achieve co-existence of radar surveillance systems and wind turbines is both important and urgent. This report describes work that the MOD has undertaken, funded by the wind power industry, as a crucial step in identifying and assessing systems with potential to fulfil this requirement.

2. The Concept Demonstration Programme

The Windfarm Mitigation Concept Demonstration Programme, funded by the members of the Offshore Wind Industry Council (OWIC), and delivered by the MOD, has been an excellent example of MOD and industry working together. The programme aim was to identify whether solutions might be available to mitigate the adverse impacts that the



Mitigating the adverse effects of offshore wind farms on air defence radar: concept demonstrations

Published 24 May 2022

[Mitigating the adverse effects of offshore wind farms on air defence radar: concept demonstrations - GOV.UK](https://www.gov.uk/government/policy-papers/mitigating-the-adverse-effects-of-offshore-wind-farms-on-air-defence-radar-concept-demonstrations)
www.gov.uk

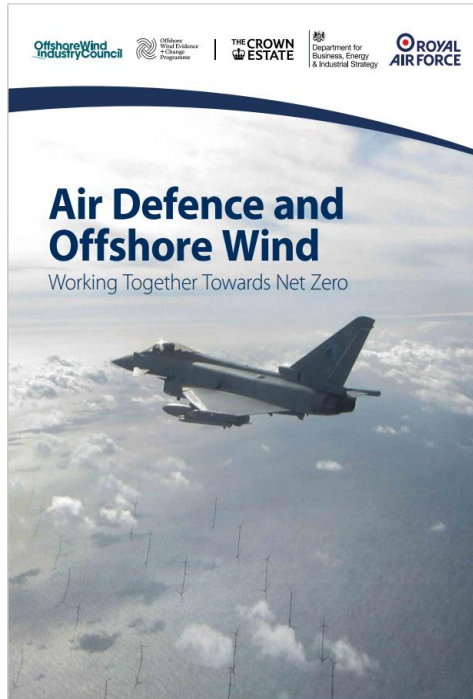


DESNZ funded, DASA run challenges - Windfarm Mitigation for UK Air Defence

Phase 1 (Feasibility)	Phase 2 (De-Risking)	Phase 3 (Prototype Demo)
<ul style="list-style-type: none">• £2.1m• Oct'20 – Mar'21 [6m]• 2 technology areas• 6 Projects [Thales, SAAB, TWI, QinetiQ x 2, Plextek]	<ul style="list-style-type: none">• £3.8m• Oct'21 – Feb'23 [17m]• 3 technology areas• 7 Projects [Thales, Aveillant, SAAB, Livelink, AMD, Trelleborg, TWI]	<ul style="list-style-type: none">• £14.15m• Jul'23 – Feb '25 [19m]• 2 streams (demos + analytical study)• Winners announced Stream A– Livelink and Trelleborg; Stream B launched (simulation)

- Moving up the Technology Readiness Level Ladder
 - No one solution is likely to solve the problem
- Read across to onshore and read across to ATC radar
- System of systems may be required, so important to support different technologies (multi-track approach)

Next Steps



Run a procurement competition targeting regions in which first windfarms will be deployed

(Early Market Engagement Days completed and procurement completion PQQ / ITT launched)

Develop funding arrangements and contractual agreements

Innovation Competition: Phase 3

Publish Issue 2 of the Joint Strategy & Implementation Plan

Summary of Lessons and Read-across – Dujon’s unofficial list for consideration

its complex,
its many parties,
you need top down direction and guidance and buy in,
focus to agreeing the exam qs and joint desire to resolving them,
its beyond any one project, entity, stakeholder’s needs,
need to gather solid evidence from all parties,
all parties need to be willing to contribute resources, its not for talking and just raising problems,
its run with an agile programme management approach,
require to have clear tangible deliverables and outputs so have positive change, outcomes and benefits,
its not about yesterday and today but tomorrow and beyond,
there will be process, operational etc challenges as work across numerous stakeholders, but need motivation and drive to
get over the dips and bumps,
there will be times of tension, frustration etc, but work to weather those through development of trusted, respected
relations,
there is much from Jt Programme to read across, some from the tech reports out, from the DASA comps, from the S&IP
doc etc, and stuff still to come in next year+,
agree on the success end state and retain that focus,



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Aviation Investment Fund Company Limited

Andrew Liddell
Development Director
Banks Renewables



OnWARD 2030

Onshore Wind Conference 2023

Andrew Liddell

To achieve co-existence between onshore wind and aviation stakeholders

Develop and build at pace to meet 2030 deployment targets (and beyond)

Help ensure aviation remains safe and sustainable

All will help to achieve national Net Zero targets

OnWARD (Onshore Wind Aviation and Radar Delivery) 2030 was established by the UK Aviation Management Board in 2021/22

“To create an onshore wind industry Radar committee comprised of prominent developers from across the UK and relevant stakeholders”

The group stands ready to support delivery of the AMB’s Onshore Civil Solution Work Programme as well as deliver a longer term enduring plan for aviation and onshore wind coexistence

The Scottish Government are members of OnWARD 2030, helping us shape the future and ensuring alignment with existing and emerging policies

- Andrew Liddell – Banks Renewables – Chair
- Jasmine Killen & Chris Park – Scottish Government
- Sam Johnson – RES (also Onshore Wind Sector Deal technical lead & AIFCL chair)
- Dujon Goncalves-Collins – Vattenfall (also OWIC member)
- Ian Toothill – SSE (also OWIC member)
- Nick Taylor – RWE (also chair of AWG)
- Jim Wylie – SPR
- Lesley McNeil – Muirhall
- Alexandre Davies – RUK
- James Robottom – RUK (link to other key onshore workstreams – planning, policy etc)

The group represents vast experience across the onshore wind industry including positive collaboration with Government departments and aviation stakeholders across multiple projects

The team was agreed through the RUK Aviation Working Group (AWG)

1. *Development of an onshore wind industry RADAR committee*

COMPLETE – OnWard 2030

2. Provision of pipeline data

IN PROGRESS

3. Review of guidance for aviation stakeholders – CAP764 (DFT/CAA)

IN PROGRESS

4. Assessment of cumulative impact from Onshore wind turbines -
(DFT/CAA)

IN PROGRESS

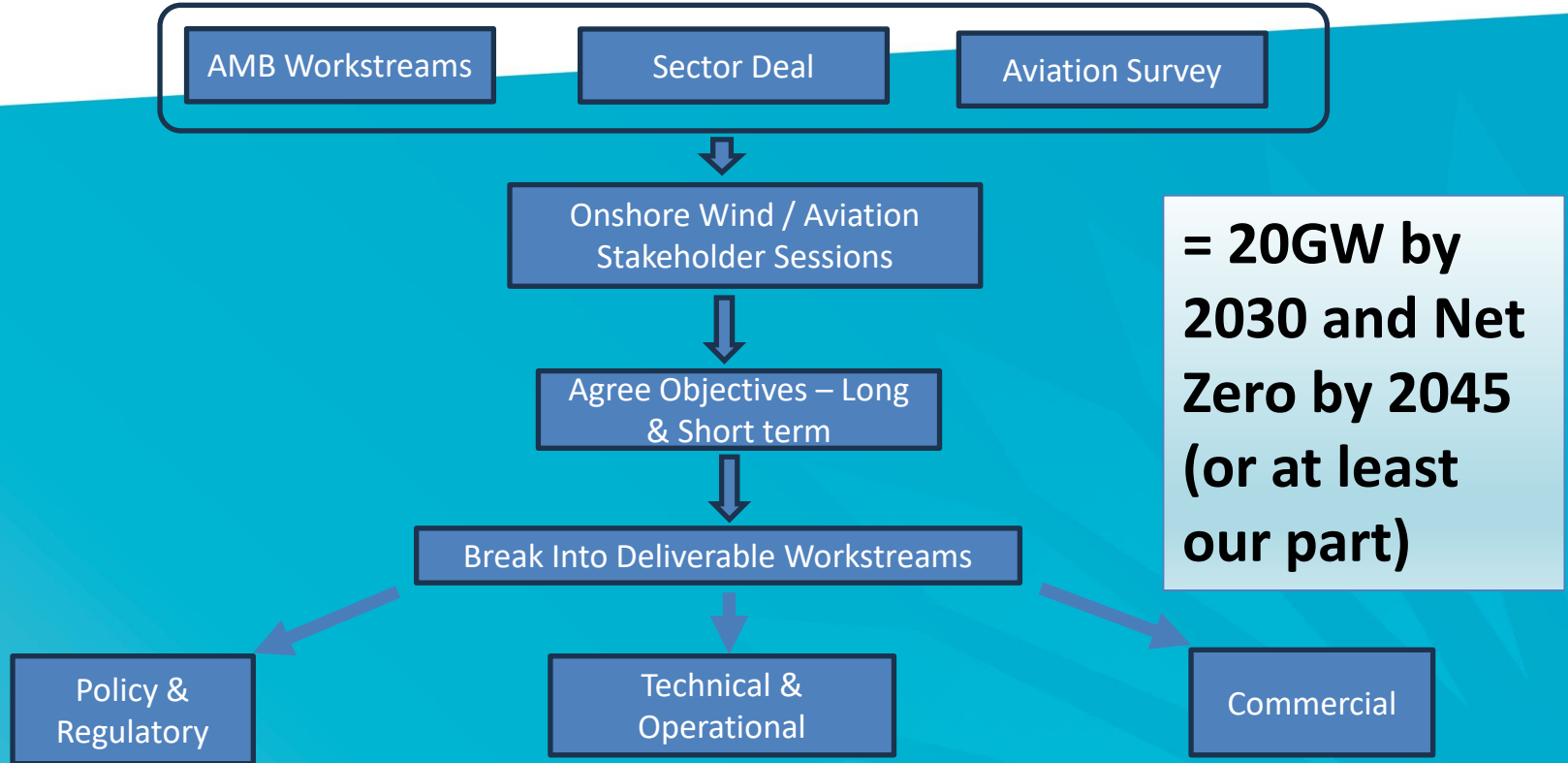
Work with all stakeholders to build a delivery plan for positive long term systemic change & short term swift deployment of developments

Support aviation stakeholders in their drive to be more sustainable and continue to operate safe airspace

Keep the cost of onshore wind deployment low

Consider the outcomes of the Sanquhar II and Clauchrie PLI's

It is no longer just about radars





Thank you for listening



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Andy Knill
Director
Extensity Consulting

Sector Deal – Principles to Delivery

Development of the Work Programme

ANDY KNILL

EXTENSITY CONSULTING LTD – INDEPENDENT SUPPORT TO AIFCL/ONWARD

ANDY.KNILL@EXTENSITY-CONSULTING.EU

What Next?

- ▶ Sector Deal provides context, direction and framework
- ▶ Requires a robust programme of work:
 - ▶ Avoid talking shop syndrome
 - ▶ Promote engagement and ownership
 - ▶ Governance
 - ▶ Effective use of resources
- ▶ Learn from OWIC
 - ▶ Acknowledge differences
 - ▶ Read across from relevant work

Principles

77

- ▶ Aim to achieve Fair & Equitable Coexistence based on reasonableness
- ▶ Clarity of Issues to be addressed
- ▶ Transparency
- ▶ Civil and Military
- ▶ Identification of Key Topics
 - ▶ Gap Analysis
 - ▶ Priorities
 - ▶ Benefit to all stakeholders
- ▶ Evidence Based
- ▶ Need for certainty and assurance

Themes

- ▶ Policy and Regulation
- ▶ Technical and Operational
- ▶ Cost Effectiveness

Potential Topics – Not exhaustive

79

- ▶ Impact of policy and regulation – top down
- ▶ Communications, Navigation and Surveillance
 - ▶ VHF Comms
 - ▶ Airport/Airfield Approach e.g. ILS, IFPs
 - ▶ Surveillance
 - ▶ PSR
 - ▶ Cooperative Surveillance
- ▶ Lighting – including ADLS
- ▶ Military aspects
- ▶ Impact of Airspace Modernisation Strategy
- ▶ Developing Technologies

Actions

- ▶ Gap analysis to capture all issues
- ▶ Baseline existing work to avoid duplication
- ▶ Production of Work Programme/Project Plan
- ▶ Engagement with Stakeholders including Government/Regulators
- ▶ Development of Working Structure and resource identification
- ▶ Agreement of priorities and timelines

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Aviation Investment Fund Company Limited

Alexandre Davies

Head of Aviation, RenewableUK

Sam Johnson

Senior Aviation Manager, RES

Dujon Goncalves-Collins

Senior Strategy Advisor – Aviation, Vattenfall

Andrew Liddell

Development Director, Banks Renewables

Andy Knill

Director, Extensity Consulting

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B3: Pounds and pylons – deep diving into the legislation and regulation

Chaired by Lynette Purves,
Head of UK Legal Affairs, ERG

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Kristina Rabecaite
Founder & CEO
PPAYA

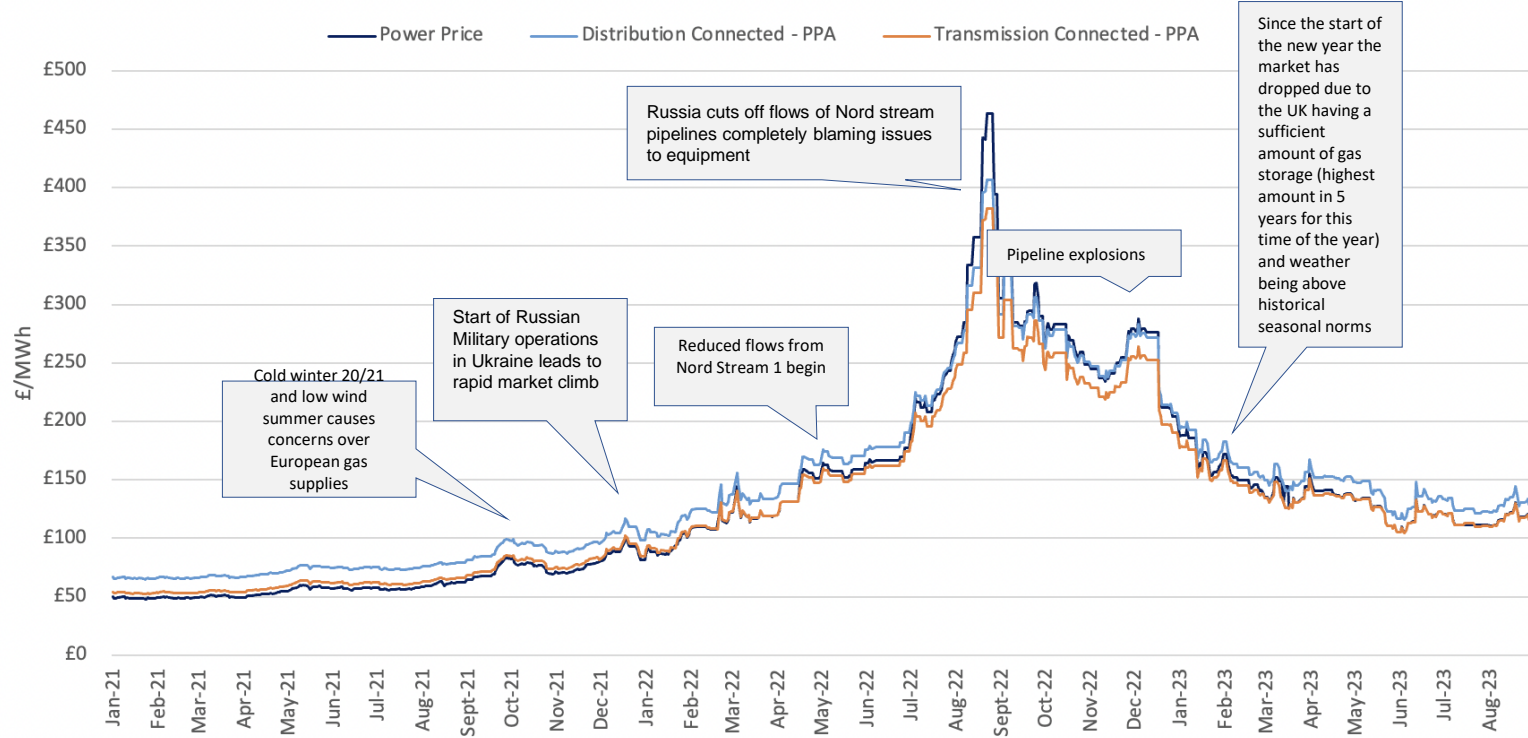


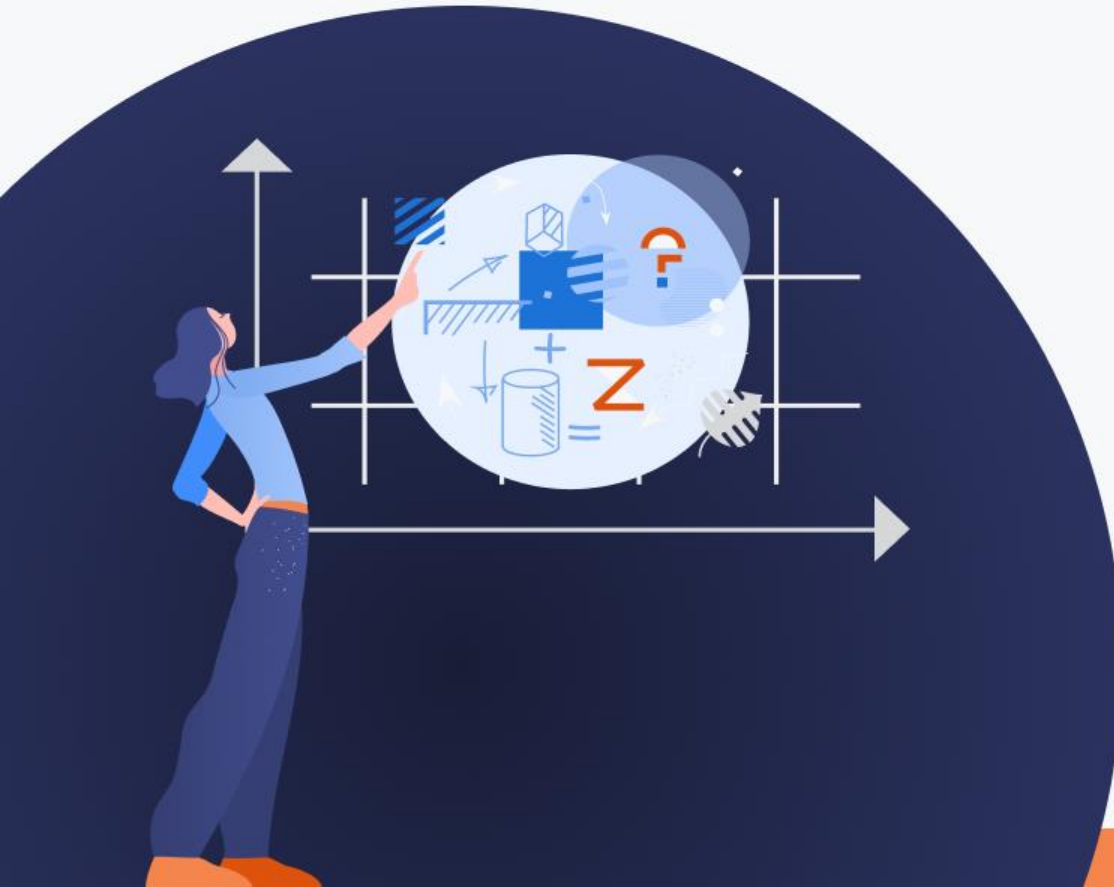
ppaya



Over the past 18 months price spikes have punctuated a steadily rising market

Wholesale Power Price vs PPA Price - Oct23 Start





Energy crisis



Reshape of the PPA
market



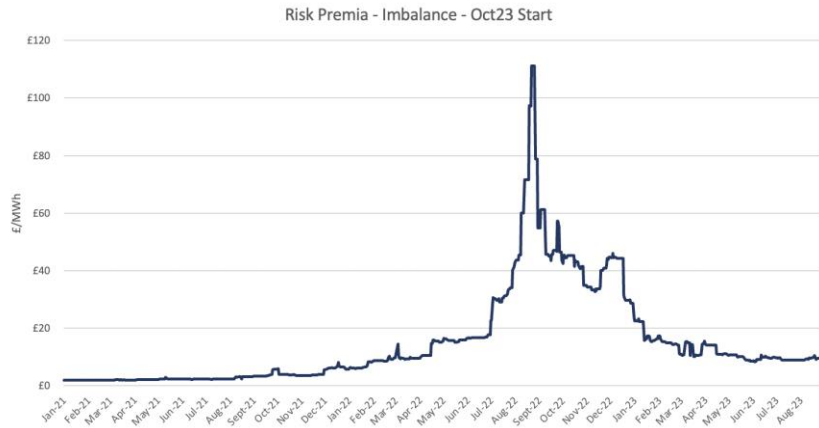
How to secure the best
price for your power?

So, what's changed in the market in the last 24 months?

- Severe market volatility
- Over 30 suppliers went under
- Bid and offer spreads **£0.5p to £10+ per MWh**
- Risk premiums increased
- **Market volatility** - extremely risky to trade intermittent generation
- It is crucial that generators pay **extra attention to their start dates**

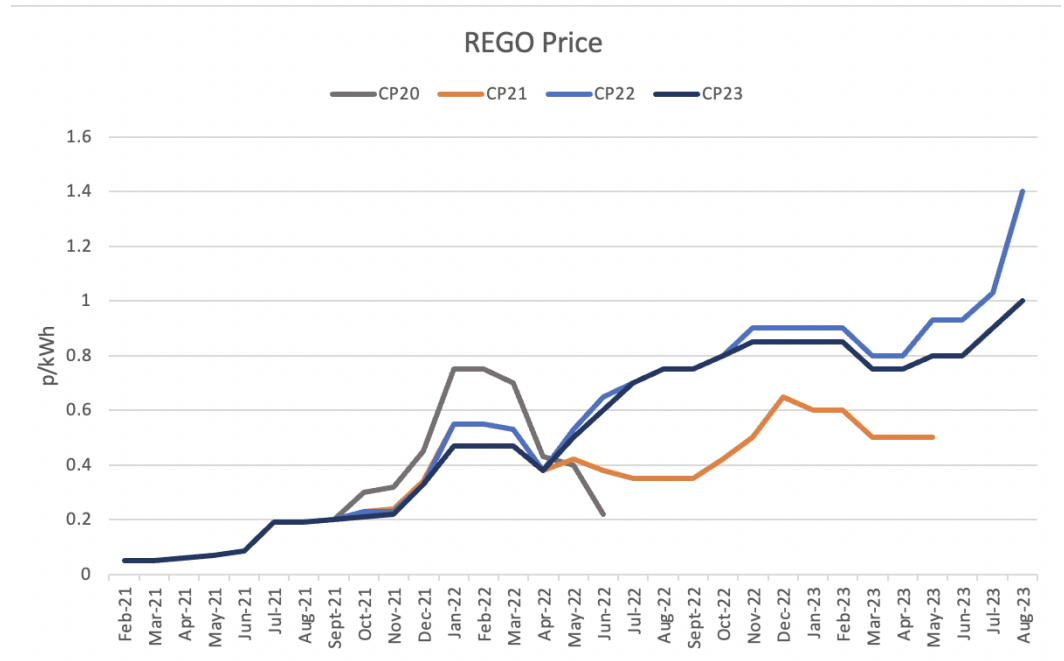


As power prices increase so do risk premia due to non-linear imbalance risks



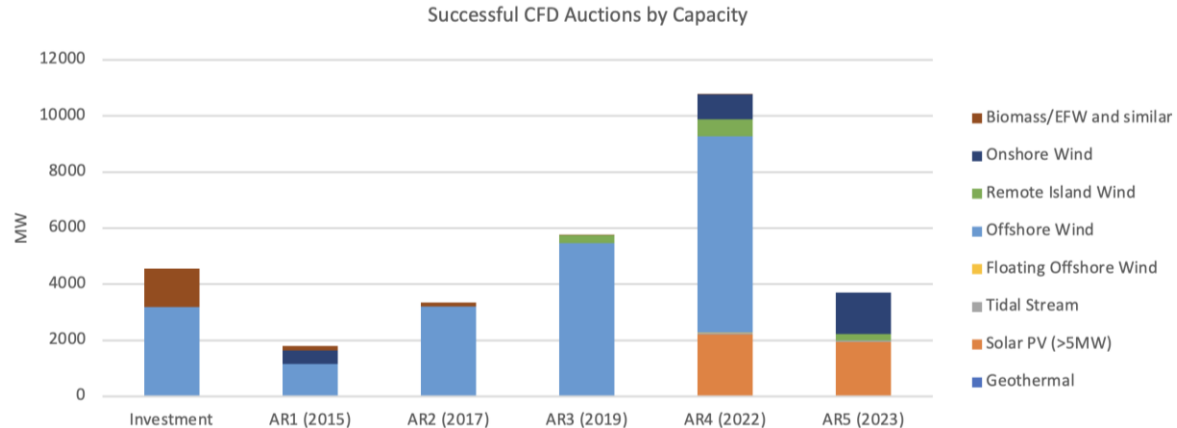
A combination of factors have led REGO prices to rapidly increase over the past 24 months

- Until 2021 the REGO market was heavily oversupplied and a large percentage of REGOs expired (c20%) without being declared
- Demand for REGOs for FMD (fuel mix disclosure) usage is increasing
- From the 1st of April 23, UK recognition of Guarantees of Origin (GoOs) have ceased.
- Demand for REGO have risen as suppliers look to replace 42TWh of renewable energy that was imported in 21/22. (28% of UK renewables supply)



Contracts for Difference

- 3.7GW of onshore volume delivered
- 0 GW of Offshore wind
- UK Government resisted the push from Offshore Wind developers to increase the strike price
- Future auctions are due to be held annually
- The strike price for the next auction may be adjusted to allow for the inflation which has hit the offshore wind market specifically



New PPA structures

- Suppliers cannot fix risk premiums for longer than 12 months
- Suppliers that fix further out have defined tolerance levels
- Some suppliers no longer allow 100% hedges
- Generator's appetite for long term PPAs is back!



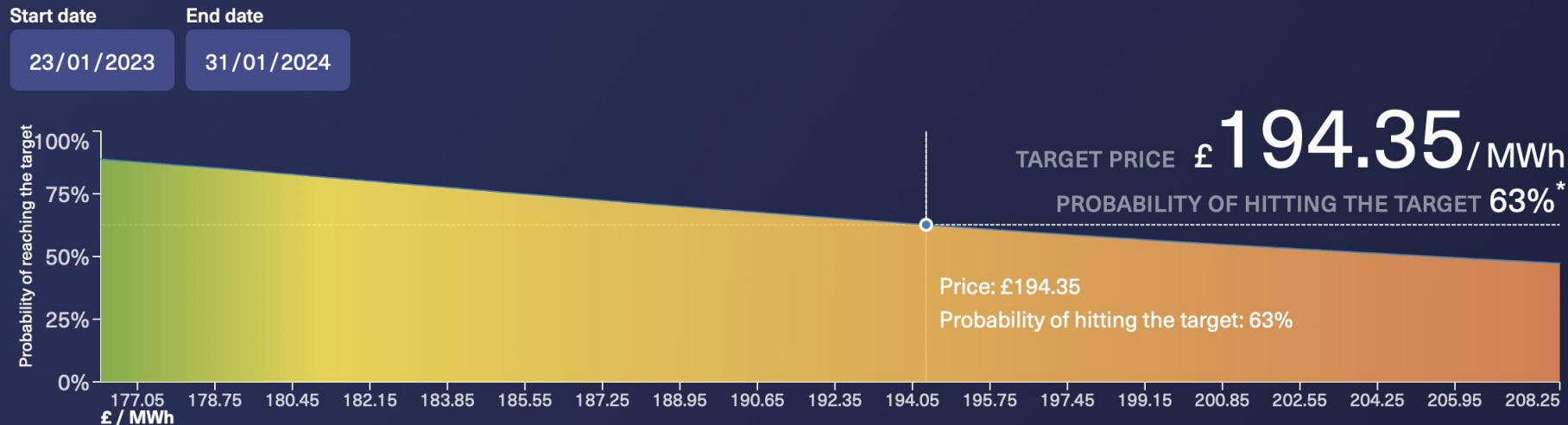
How can you help suppliers reduce your risk premiums?

- Consider **partial hedging**
- **Avoid days of high volatility**
- **Reduce tender requests** and only trigger suppliers when **target price can be achieved**
- **Execute ASAP**



PPAYA's cutting edge technology

- An innovative, **continuous auction and management platform**, which is designed to maximise the value of renewable Power Purchase Agreements (PPAs) and reduce the administrative burden.





<https://ppaya.co.uk/>

 /ppaya

 @ppaya_energy

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Randall Linfoot
Lead Commercial Manager
Ørsted

Let's create a world that runs entirely on green energy

Randall Linfoot
Program and Investment Manager



Markets

- Review of Electricity Market Arrangements – once in a lifetime opportunity. Must be set up for 100% low carbon electric world.
- Volatility or not – how to incentivise investment.
- Legacy matters – grandparent rights.

Grid

- How far we have come – lets embrace the change.
- Management and communication is key to unlocking capacity.
- Transmission and distribution need to work in harmony

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Simone Giacchè
Lead Power Trader
Renantis



Energy that matters.

WHO WE ARE

Renantis exists to build a better future for all by powering people's everyday lives with care. We develop, design, construct and operate onshore wind farms, solar PV plants, floating offshore wind farms and energy storage facilities globally.

Our commitment to delivering innovative sustainable solutions through integrated renewables is our north star. We believe that the only energy is clean energy.

Not satisfied with being merely a producer, we actively participate in shaping the global energy transition, working together with the industry every step of the way in developing new, better solutions. For the future of people and our planet.



Market Access

Discover our solutions



RENANTIS ENERGY TRADING TEAM

Our dedicated **trading team**, based in **London**, **Milan**, and **Madrid**, operates **24/7** proposing itself as a partner for Renewable Generators.

Our goal is to enable our Clients to optimise the revenues with competitive Power Purchase Agreement (PPA) conditions and to manage the risk related to the intermittent electricity output on different timescales, by applying sophisticated internal analysis and forecasting models.

Thanks to the wide range of capabilities and services we offer, we can support power producers holistically.



OUR NUMBERS

2 Trading Desks 24/7

1 new Trading desk coming soon in Spain

850 MW PPAs Route to Market

2.6 TWh traded on physical markets

1,8 TWh certificates traded (GOs,REGOs,ROCs)

1 TWh of Energy Commodities

3 Batteries under management



OUR SERVICES

We are an industrial and non-speculative player. Having direct experience in renewable energy generation, we are well familiar with the issues energy producers have to face when interacting with the market, and we can help them make their way in this challenging yet lively field.



Energy forecasting and trading

We manage energy flows on all types of markets (spot, intraday and balancing), using sophisticated analysis features and forecasting systems. We also trade green certificates at the most competitive conditions.



Power off-take and Imbalance management

We offtake energy from renewables plants and we minimise the imbalances arising from the difference between the forecast and the actual production of the plant.



Portfolio management

Thanks to our in-depth knowledge of European Energy markets, we aim to optimise the profits of merchant plants through fixing actions, performed according to the criteria shared with producers.

OUR SERVICES

We are an industrial and non-speculative player. Having direct experience in renewable energy generation, we are well familiar with the issues energy producers have to face when interacting with the market, and we can help them make their way in this challenging yet lively field.



Market advisory

We enable power generators to access the market and to make informed decisions to support the grid balance.



Regulatory support

We help energy producers to understand the new regulatory framework, and we guide them through the big challenges of the electricity market.



Customised products

We offer diversified products according to our clients' needs: PPAs with different possible tenors, bridge contracts for new assets to reduce the risk of delay penalties, and other customised products.

MARKET ACCESS

Simone Giacchè

Lead Power Trader
GB Trading & Dispatching
simone.giacche@renantis.com

3rd Floor, 10 Lower Grosvenor Place
SW1W 0EN
London – UK



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Simon Gill
Energy Consultant
The Energy Landscape

A transmission network to support onshore wind and full electricity decarbonisation

Scottish Renewables and Renewables UK: Onshore Wind Conference

21st September 2023

Dr. Simon Gill

Independent Consultant: The Energy Landscape
Associate with Regen

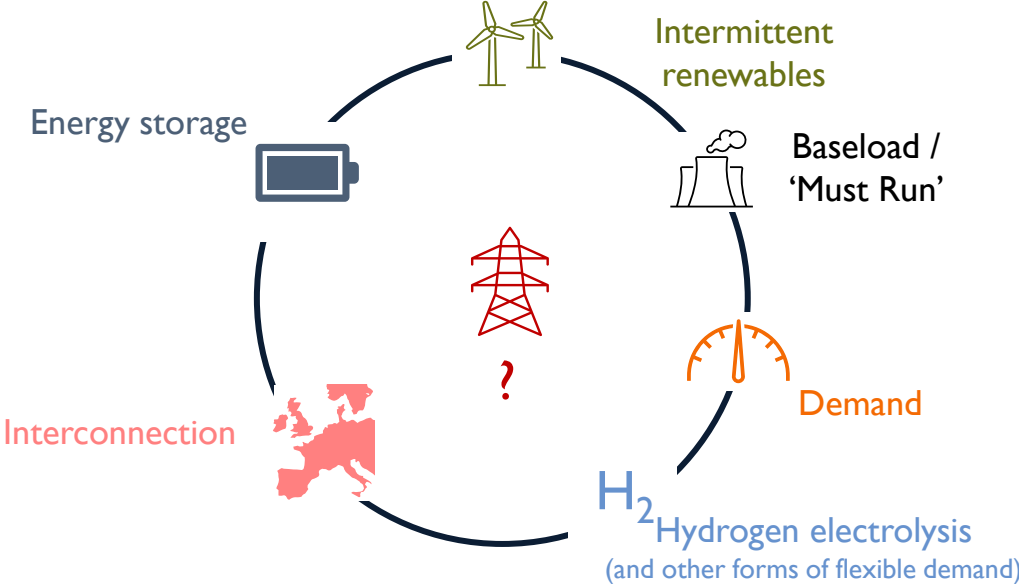
simon@energylandscape.co.uk

<https://www.linkedin.com/in/simon-gill-energy/>

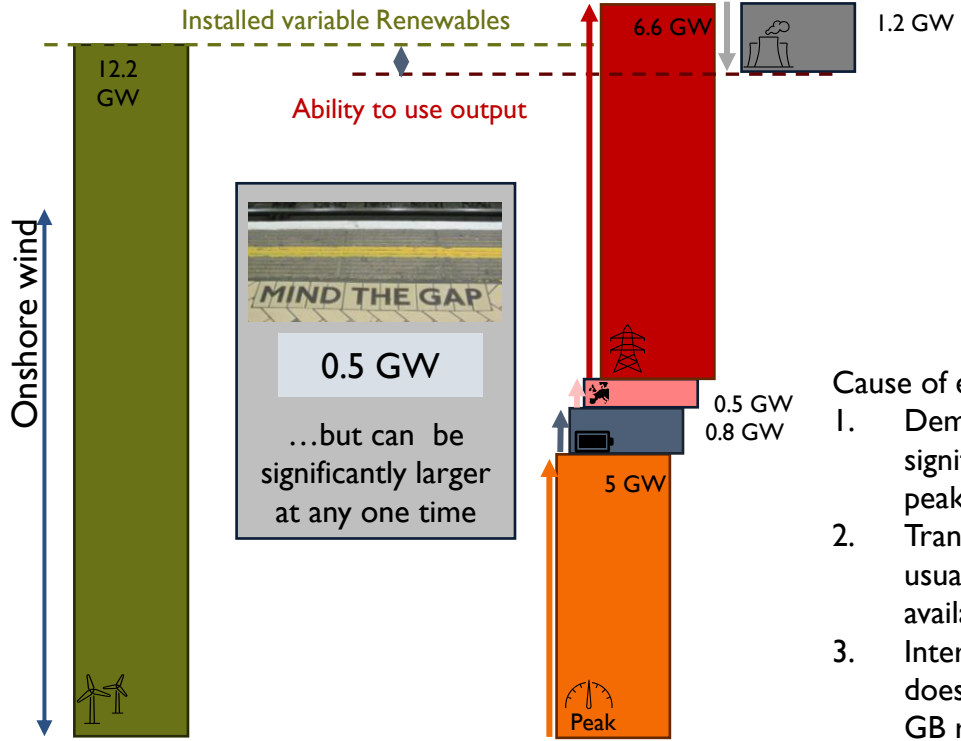
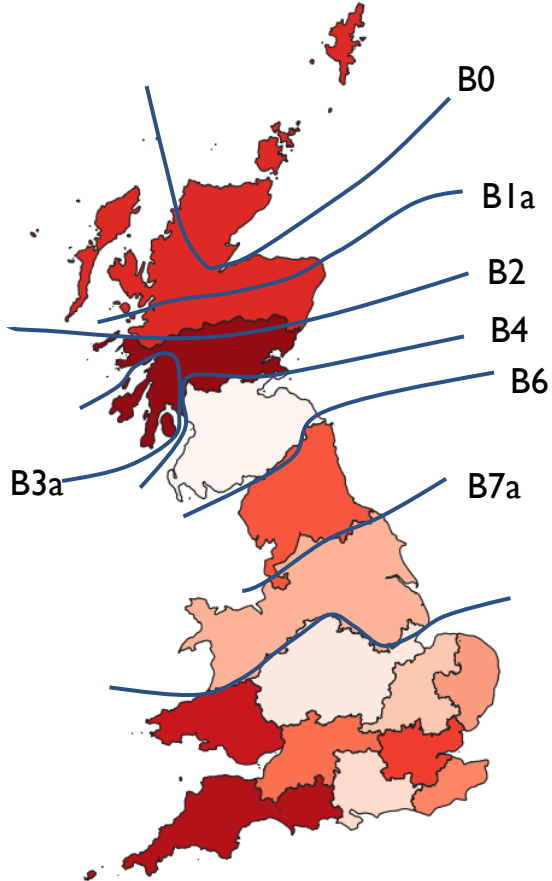
Tel: 07990668445



Mind the gap: how much transmission capacity does Scotland need?



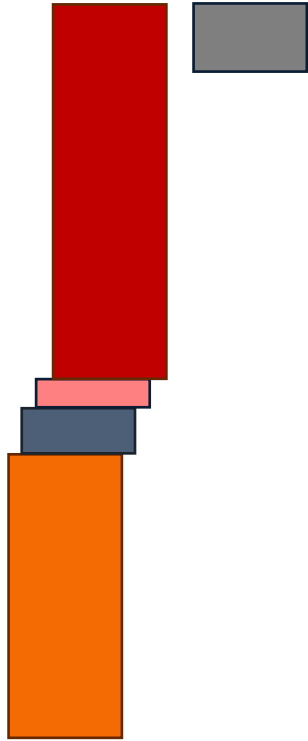
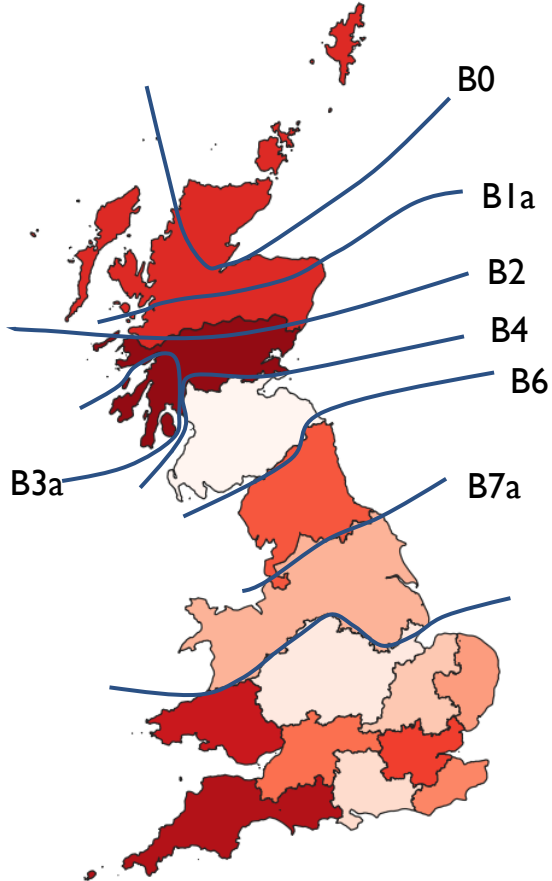
Comparing supply and demand in Scotland today



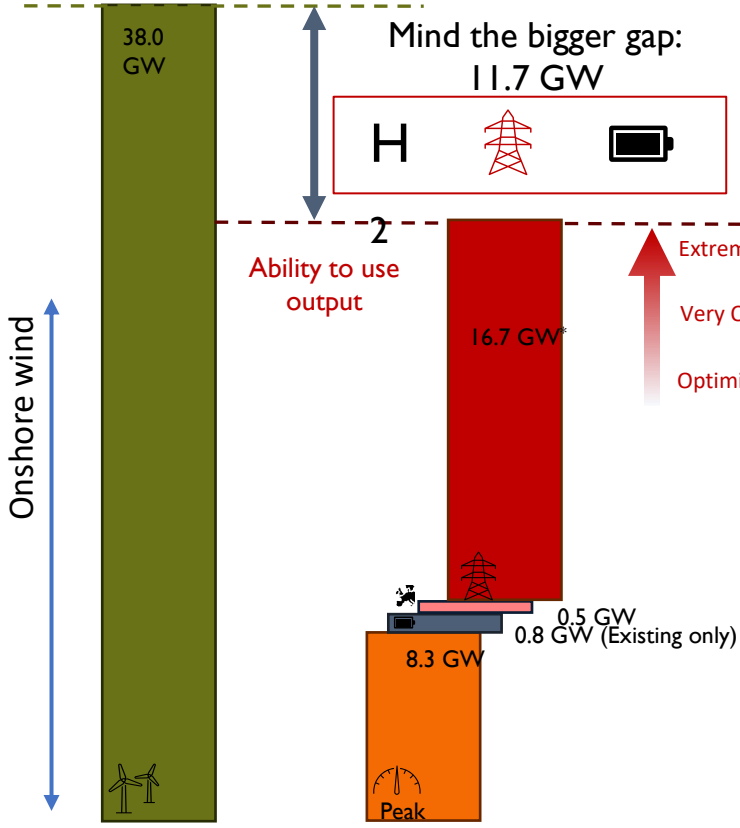
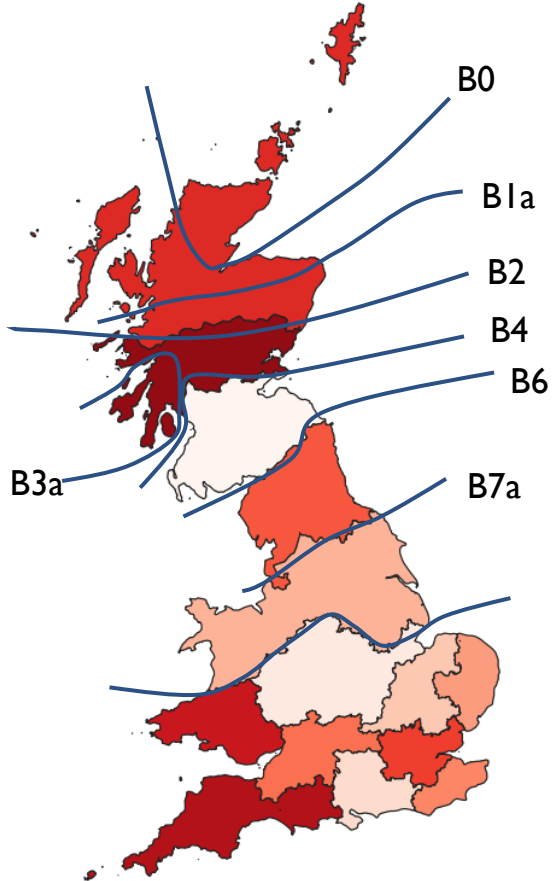
Cause of excess curtailment?

1. Demand often significantly lower than peak
2. Transmission network usually not fully available
3. Interconnector dispatch doesn't always support GB renewables
4. Other generation operates in windy condition.

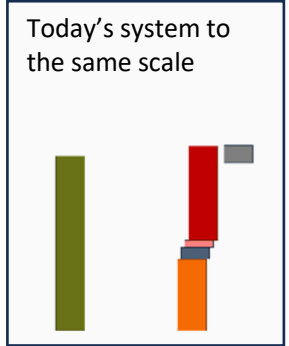
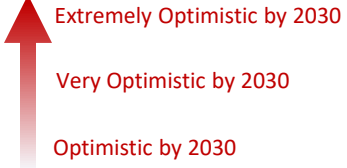
Comparing supply and demand in Scotland today



Comparing supply and demand in Scotland 2030

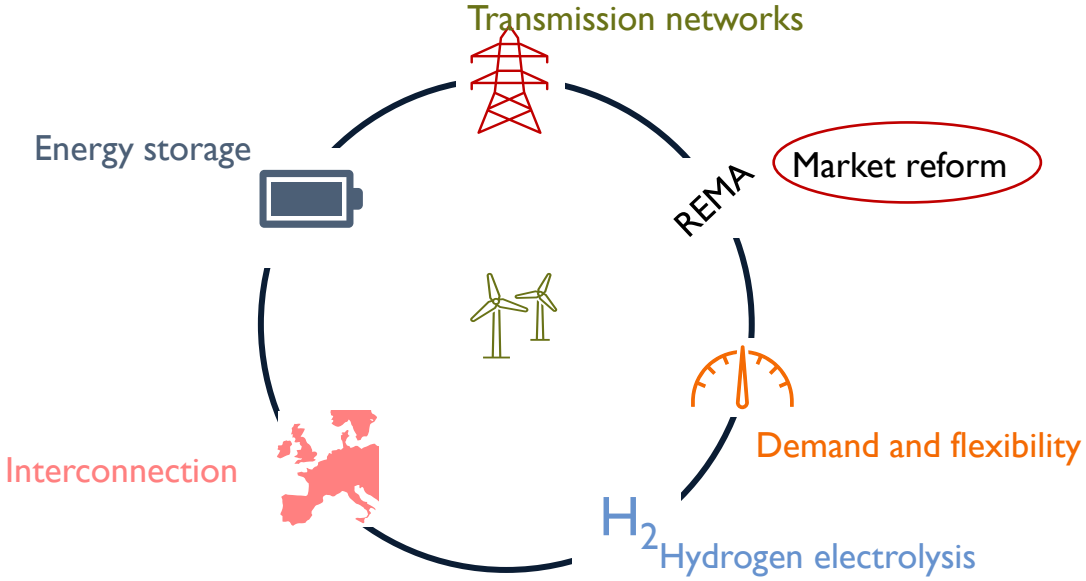


- Options to fill the gap include:
- New electrolysis demand (possibly a couple of GWs)
 - New energy storage (possibly several GWs)*
 - But there is still a big gap!



Source: NGENO [FES 2022 leading the Way scenario](#) (which aligns reasonably closely with Scottish renewable ambitions) and network planning publications [Electricity Ten Year Statement 2022](#) and [Network Option Assessment Refresh \(Summer 2022\)](#)

How to strategically plan the future transmission ~~network~~ system



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Giles Scott

Deputy Director – Renewable Electricity
Strategy Team
UK Government

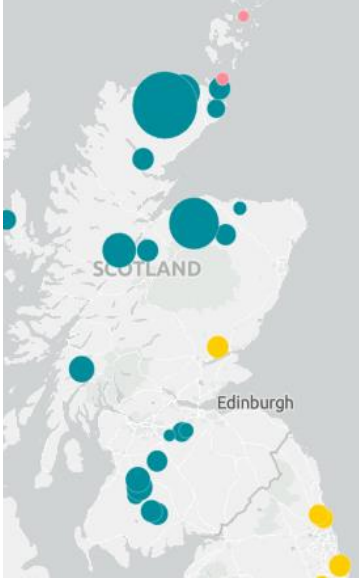


Department for
Energy Security
& Net Zero

Giles Scott Deputy Director
Renewable Electricity Directorate
Department for Energy Security and Net Zero







Contracts for Difference (CfD) scheme



- Outcome of Allocation Round (AR) 5 was published on 8 September, confirming contracts for 3.7GW of clean energy.
- Onshore wind projects have secured 1.7GW, with almost 1.5GW mainland onshore wind.
- The majority of onshore wind projects are in Scotland, with one in Wales, ranging from 231MW to 52.29MW.
- AR6 applications are due to open from March – April 2024, with core parameters due mid-November.

CfD AR5 project locations

-  Solar PV (>5MW)
-  Onshore Wind (>5MW)
-  Tidal Stream
-  Geothermal
-  Remote Island Wind (RIW)

Size (MW)



UK Government's Review of Electricity Market Arrangements (REMA)

- REMA considers options for reform to all electricity (non-retail) markets
- The aim for REMA's next consultation is to set out a direction of travel, next steps and support a smooth transition to any new arrangements over time.
- As part of REMA the Government is:
 - Considering options to send more efficient signals through electricity markets
 - Looking to optimise the CfD and renewable support mechanisms.





Grid access

Network Acceleration

- Nick Winser, the Electricity Networks Commissioner, made his recommendations to Government in August on accelerating electricity transmission network build.
- Government has committed to publishing an Action Plan this year in response to the Commissioner's recommendations.

Connections

- The Government will jointly with Ofgem publish a Connections Action Plan soon setting out further actions by Government, Ofgem and network companies to accelerate network connections.



Lynette Purves
Head of UK Legal Affairs, ERG

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Kristina Rabecaite
Founder & CEO, PPAYA

Randall Linfoot
Lead Commercial Manager, Ørsted

Simone Giacchè
Lead Power Trader, Renantis

Simon Gill
Energy Consultant, The Energy Landscape

Giles Scott
Deputy Director – Renewable Electricity
Strategy Team, UK Government



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Ministerial Address with Neil Gray MSP Cabinet Secretary for Wellbeing Economy, Fair Work and Energy

Chaired by Claire Mack,
Chief Executive, Scottish Renewables



Neil Gray MSP

**Cabinet Secretary for Wellbeing
Economy, Fair Work and Energy**

The slide features a white background with decorative green geometric shapes in the corners. In the top-left corner, there are three overlapping, semi-transparent green shapes that form a triangular pattern pointing towards the center. In the bottom-right corner, there are three overlapping, semi-transparent green shapes that form a triangular pattern pointing away from the center. The text is centered on the slide.

Barry Carruthers
Chair of the G12/S5 Onshore Wind
Sector Working Group



Claire Mack

Chief Executive, Scottish Renewables

Gillian Martin MSP

Minister for Energy and the Environment

Barry Carruthers

Chair of the G12/S5 Onshore Wind Sector
Working Group



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EVENT PARTNERS |



RWE





A4: A 9/ 12/ 24/ month consenting process – bringing plans to fruition

Chaired by Morag Watson,
Director of Policy, Scottish Renewables



Marcus Trinick KC
Planning Considerations Lead
Sector Deal



Carolyn Wilson
Head of Planning & Consents -
Onshore
SSE Renewables

SSE Renewables

Industry Perspective

Carolyn Wilson

September 2023



HOW THE INDUSTRY CAN OPTIMISE APPLICATIONS AND ENSURE GOOD PRACTICE PRINCIPLES TO HELP REDUCE PLANNING TIMELINES

- **Early pre- application consultation & continuous engagement with decision making authorities & consultees**
- **Early & effective community engagement – Good practice not a tick box!**
- **Robust research and baseline survey**
- **EIA Scoping at appropriate time and with sufficient information**
- **Front loading- robust applications/submission - Get it right first time!**
- **Support for decision making authorities and consultees- understanding & collaboration**
- **CPD – keep up to date with guidance/technological advancement**
- **Digitalisation**
- **Processing Agreements – All parties need to agree & adhere !**

VIKING- WHY WE NEED TO SPEED UP CONSENTING

VIKING WIND FARM

The long road to Net Zero

PLANNING 12 YEARS

Shetland Islands Council and Scottish and Southern Energy sign Busta House partnership agreement to develop large wind farm in Shetland.

Revised application for 127 turbines submitted to Scottish Ministers. Shetland Islands Council votes its support.

Wind farm progress delayed by legal challenges and changes in UK Government policy on onshore wind.

Turbine tip height increased by up to 10 metres, to a maximum of 155m. Wind farm consent renewed.



Application for 150-turbine project in north and central Shetland Mainland submitted to Scottish Government.

Scottish Government grants consent in April for a 103-turbine Viking wind farm.

Viking Energy seeks approval for first civil works.

CONSTRUCTION 3 YEARS

2023 Final turbine installation at Viking wind farm.



Major wind farm construction works begin.



Viking wind farm due to be connected to the National Grid selling cleaner, greener power to the nation.



|| THE EXPERTS' VIEWS ON FIXING RESOURCE BOTTLENECKS IN KEY AGENCIES AND STAKEHOLDER ORGANISATIONS

- **Training & Education!**
- **Give them what they need – Do they know what they need ?**
- **Transparency**
- **Accountability – on both sides**
- **Dialogue**
- **“Lean” concepts and continuous improvement culture**
- **Innovation and digitisation – work together not independently**
- **Communication & Collaboration**

MOBILE OPERATORS ASSOCIATION -10 COMMITMENTS TO BEST SITING PRACTICE – KEY LESSONS CAN WE USE

MOA – What Worked ?

- Industry Collaboration- Development Plan Monitoring & Annual Rollout Plans
- Community Education & Engagement – Best Practice (SPEED – PAS)
- Elected Member & Planning Officer Training Programme

How Can The Onshore Wind Sector Deal Help Deliver ?

- Planning- Standardisation, Resourcing, Education
- Community – Education & Early Engagement
- Section 45 Planning (Scotland) Act 2019- Scottish Government commitment to introduce mandatory elected member training – Will it make a difference?

COMMUNITY INVESTMENT – THE SSE RENEWABLES PERSPECTIVE : WHY TELL A GOOD STORY

In 2022/23 **£10.4 million** was donated by SSE Renewables through our community benefit funds across the UK and Ireland. During that period our funding has supported projects which are addressing some of the most complex societal issues, including:

- **£1 million** investment to reduce **extreme fuel poverty** in the Scottish Highlands.
- Creation of a **retrofit academy** in Galway to train **280 local people a year** in green skills.
- Supporting **168 community projects** focused on the **net zero transition**.
- Awarded **111 scholarships** to help students gain the **STEM jobs** of the future.
- Creating **137 local jobs**, particularly development roles which help capacity **build local areas**.
- Building of **community-owned housing** and community assets including **community-owned shops** and hubs.
- Increasing **STEM attainment** in **100 schools** in the north of England through the award-winning Dogger Bank Community Fund.



SSE Renewables says it has now donated almost £400,000 to local charities and groups through the Viking Energy community benefit fund.

The money comes from the advance grant scheme during the construction of the 103-turbine wind farm. When the wind farm is operational, it is expected to pay out £2.2 million a year in community benefit.

SSE Renewables managing director Stephen Wheeler said: “SSE Renewables is committed to investing in Shetland communities. We believe that renewables should provide value for communities, and we are proud we re-invest into local areas.”

|| SSE GRADUATE PROGRAMME - CONSENTS ADVISOR GRADUATES

SSE Perspective

- SSE Graduate Programme predominantly engineering & commercial
- In 2021 extended to take on Consents Advisor Graduates within Renewables
- Jack & Rachel now coming to end of programme and moving into permanent roles within Renewables
- Adam now into second year of programme

What more can Industry do to support planning & consents staff internally & externally:

- RTPi Apprenticeships
- CPD
- Graduate Programmes
- Mentoring for professional membership accreditation
- Training for local authority planners – Site Visits/Virtual Training Presentations with Highland Council



HOW PLANNING POLICY CAN FACILITATE THE MODERN, TALLER TURBINES NEEDED IN A CLIMATE EMERGENCY

- **NPF4 – Policy 11 (e) (ii)**
- **Appeal Decisions – Shepards Rig**
- **New Development Planning Regulations 2023**
- **Early engagement with LPA's on Evidence Reports**
- **Development Plan Monitoring – Ensure positive policy support**
- **Communities & Decision Makers– Educate & Communicate**
- **Good Visualisations – VR & 3 D Models**
- **Repowering- what to expect ?**



|| DEVELOPERS' WILLINGNESS TO PROGRESS REPOWERING AND CO-LOCATED PROJECTS TO BUILD INVESTOR CONFIDENCE

- **Repowering – Essential to achieve Net Zero Targets**
 - **Need to consider repowering early- SSE Renewables Baseline Sprint 2020**
 - **Policy support at national & local level**
 - **Sustainability**
 - **SSE Renewables Focus – Onshore Masterplanning**
-

:

carolyn.wilson@sse.com



Carmen Caminero
Country Manager UK & Ireland
EDP Renewables



Harnessing Synergies through Project Hybridization – Insights by EDP Renewables

Onshore Wind Conference 2023, Edinburgh

Increasing shares of renewables in global power systems increases the need for hybridization

Hybrid renewable facilities refer to installations in which two or more renewable electric generation technologies (including storage) operate jointly, sharing an access and connection to the electric grid, or, to a consumer's internal grid

Most common hybrid RES configurations



- Uses complementary resource profiles and maximises grid connection utilization
- Maximises land usage while reducing developing costs
- Lack of storage means no dispatchability



- Can better enable 100% RES and off grid solutions
- However, high cost and complexity involved with installation and operation

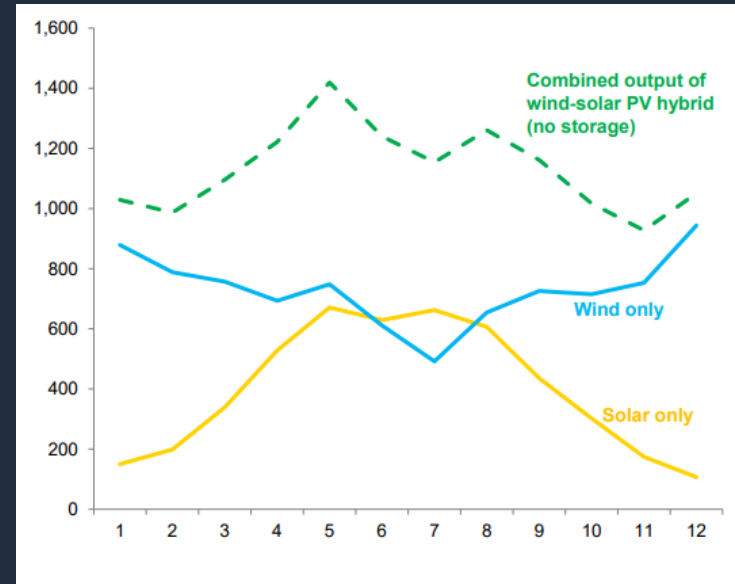


- Readily deployable at scale
- May reduce curtailment during peak times in regions with high solar penetration



Not always considered hybrid

Example of monthly generation profile for solar and wind assets



Source: IHS

Hybrids can bring benefits to different stakeholders: Governments

1

Governments

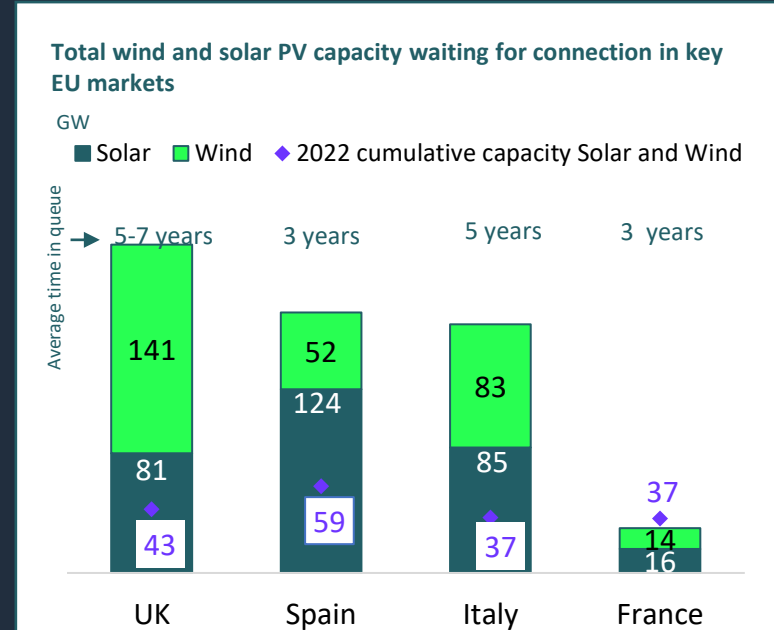
Increased
network/land
utilization

Increased grid
stability

- New RES projects are useless without the infrastructure to connect the facility and transport the energy
- Total capacity of solar PV and wind projects waiting in connection queues totals 596 GW just in 4 EU markets: UK, Spain, Italy and France
 - This equates to twice their existing installed solar and wind capacity
- Adding a complementary technology to an existing asset can increase the energy output without the need to increase the capacity of the connection contract

Hybrid assets:

- Allow a more cost-effective grid utilisation
- Mitigate RES variability
- Reduce balancing needs and curtailments
- They may also defer investments in grid infrastructure



Source: BNEF, EDPR analysis

Hybrids can bring benefits to different stakeholders: RES developers

2

RES developers

Increased revenues

Cost reductions



Stable power output



More efficient infrastructure usage



Reduced development & construction costs



Access to additional revenues



Reduced risk



Hybrid power plant. Source: EDPR

Hybrids can bring benefits to different stakeholders: Clean energy consumers

3

Clean Energy
consumers

24/7 clean power

Cost reductions

Off-grid systems

- Off-grid energy systems, such as remote mining and islands, typically rely on conventional fuels such as oil or diesel for power generation owing to lack of grid access
- Utilizing wind, solar PV and storage hybrid configurations in place of diesel generation can significantly reduce emissions and costs for off grid applications, while providing a more stable power supply compared with standalone RES

Commercial and Industrial segment

- Global C&I users are increasing procurement of renewable energy, driven by emission reduction targets
- Over 350 C&I energy users, have signed agreements as part of RE100 initiative to consume 100% RES by 2050
- Matching hourly energy demand to RES can be achieved by installing carbon-free technologies on site, or by procuring a corporate PPA with a green energy developer

Increasing requirement for hourly energy matching from C&I users presents an opportunity for development of hybrid RES in order to ensure stable “round-the-clock” supply of clean power.



Hybrid power plant. Source: EDPR

How other countries are supporting hybridization across Europe

In the UK, there is no established regulation regarding hybrid assets.

In Europe, the European Commission wants to promote hybridization, but it's not still explicitly covered in the EU regulation. Therefore, efforts are being made at State level.



Spain

Regulatory	<ul style="list-style-type: none"> • RDL 23/2020
Permitting process	<ul style="list-style-type: none"> • Update connection agreement, for the new hybrid asset : <ul style="list-style-type: none"> – “Same installation” criteria: <ul style="list-style-type: none"> – Access capacity increase below 5% – Distance between original asset and hybrid < 10km – “Same technology” – Original installed capacity at least 40% of total capacity • Abbreviated procedure deadlines and reduced guarantees (50%) • Standard procedure for building permit • Separate measurement devices if remuneration scheme in place
Route to market	<ul style="list-style-type: none"> • Auctions and PPAs/Merchant



Portugal

Regulatory	<ul style="list-style-type: none"> • DL 76/2019 modifying SEN(1)
Permitting process	<ul style="list-style-type: none"> • Hybrids from scratch might have priority in the connection capacity request process • Regular permitting process for the production license, but the licensing authority informs of the pre-existing files that can be leveraged • Separate measurement devices. Energy from pre-existing asset has priority to be delivered. • Additionally, regulation strongly supports repowering and allows connection capacity to be increased 20% and exempt it from environmental impact assessment
Route to market	<ul style="list-style-type: none"> • PPAs/Merchant



Poland

Regulatory	<ul style="list-style-type: none"> • Amendments to the RE act, 08/23
Permitting process	<ul style="list-style-type: none"> • Established framework for both cable-pooling from scratch and hybridization of existing assets. • In case two SPVs are constituted, a cooperation agreement is required, selecting from among themselves a single representative (SPV) who will be the main interlocutor and manage imbalance of the entire structure. • Besides the connection process, permitting process remains the same.
Route to market	<ul style="list-style-type: none"> • Auctions only for one asset, the other PPA/Merchant.

Always one step ahead, EDP Renewables has achieved a significant milestone by being the first to install hybrid assets in Romania, Portugal, Spain, and Poland



Mosteiro & Mina de Orgureil hybrid plant. Source: EDPR

In June 2023, Cruz de Hierro, **the first hybrid plant combining solar PV and wind to be installed in Spain, received authorization for operation.** The wind farm consists of 22 wind turbines with an installed capacity of 14.5 MW, and it will now be supplemented by 13.8 MWp (11.38 MWac) of installed photovoltaic capacity.

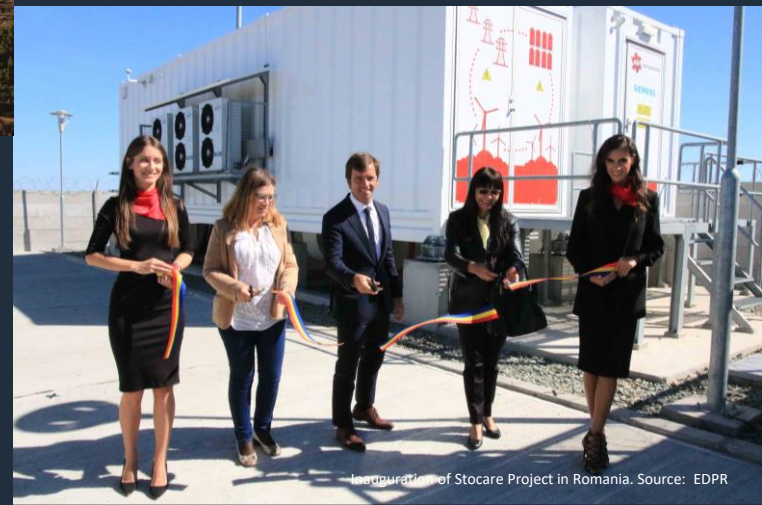
In August 2023, EDP Renewables put into operation a 45 MWp photovoltaic project, making it **the pioneer hybrid plant from solar and wind in Poland.** The Konary farm will use the same receiving station to which the 79,5 MW Pawlowo wind farm, also owned by EDPR, is connected.

Regarding battery storage, in 2018 EDP Renewables opened a pioneering facility for the **battery-based storage of wind energy amassed from the Cobadin wind farm in Romania.** EDPR's project represented the first energy storage activity in Romania, where the company has been present since 2008.

Traveling along Highway 233 between Sabugal and Guarda, you catch a glimpse of the eight wind turbines of the Mosteiro Wind Farm, which have been feeding **electricity into the grid since 2004.**

It is here, near the border town of Sabugal, along the Côa River, that EDP Renewables (EDPR) inaugurated its **first hybrid wind-solar project on the Iberian Peninsula.**

Hybridization of Mosteiro WF has allowed to double the project's net power output, from 25% of capacity of the wind farm; to an output close to 50% with both wind turbines and solar panels.



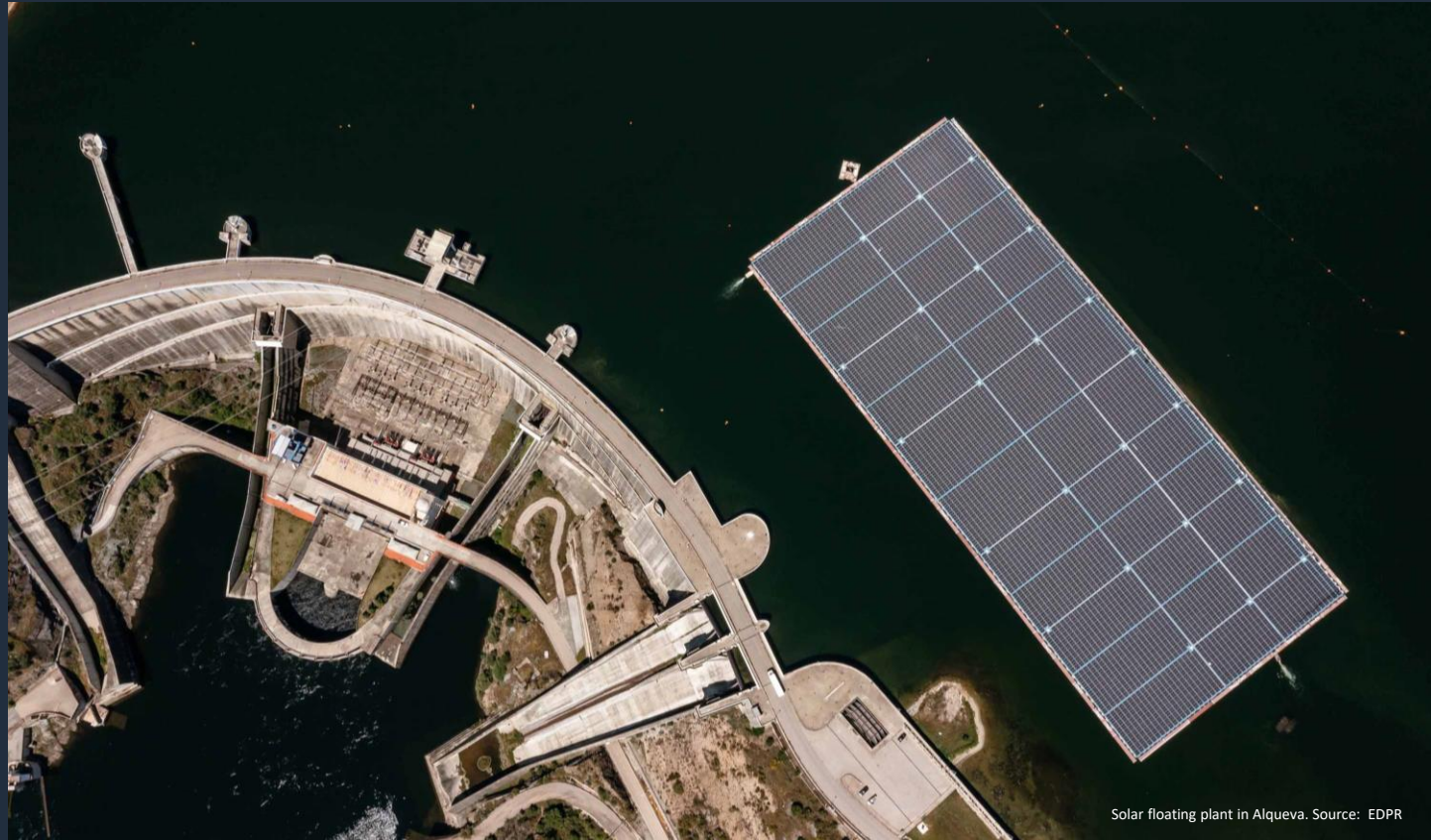
Inauguration of Stocare Project in Romania. Source: EDPR

Expanding Innovation Horizons: Beyond wind, solar, and batteries through Hybridization

Located in the region of Alqueva, EDP inaugurated in July 2022 the **largest floating solar plant in Europe in a reservoir**, and the second one built in Portugal, after EDP's pilot project in Alto Rabagão.

With close to 12,000 photovoltaic panels - occupying 4 hectares, equivalent to around 0.016% of the total area of the Alqueva reservoir -, the new platform has an installed power of 5 MW and the capacity to produce around 7.5 GWh per year, which means that it can supply more than 30% of the families in this region in the south of Portugal (Portel and Moura).

This first large-scale project in Alqueva - which went ahead after the success of the **first pilot initiated in Alto Rabagão** about seven years ago - is thus in line with EDP's strategy of investing in innovation and renewable projects and being 100% green by 2030.







Cara Davidson

Head of Energy & Environment –
Planning, Architecture &
Regeneration Division
The Scottish Government

NPF4 Delivery: *'Bringing plans to fruition'*

Cara Davidson

Head of Environment and Net Zero | Planning, Architecture and Regeneration Division



Scottish Government
Riaghaltas na h-Alba

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NPF4: Recap

- Guides spatial development
- Sets out national planning policies
- Designates national developments
- Highlights regional spatial priorities.
 - ✓ Approved by the Scottish Parliament
 - ✓ Adopted 13 February 2023
 - ✓ Part of statutory development plan

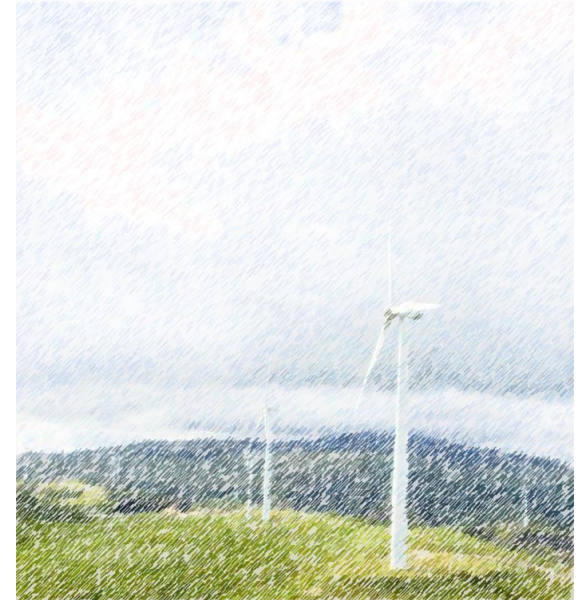


- NPF4 strategy and policies support development that helps meet greenhouse gas emissions targets

Policy 1 *‘When considering all development proposals significant weight will be given to the global climate and nature crises’*

Policy 11 *‘Development proposals for all forms of renewable, low-carbon and zero emissions technologies will be supported’.*

- Support for enabling works, such as grid transmission and distribution infrastructure;



Legend

Sustainable Places

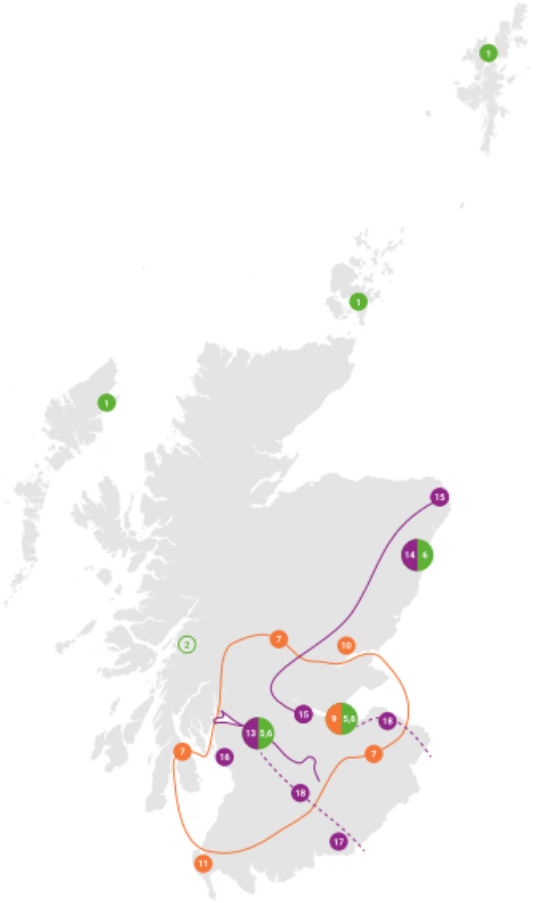
- 1 Energy Innovation Development on the Islands
- 2 Pumped Hydro Storage
Scotland Wide
- 3 Strategic Renewable Electricity Generation and Transmission Infrastructure
Scotland Wide
- 4 Circular Economy Materials Management Facilities
Scotland Wide
- 5 Urban Sustainable, Blue and Green Surface Water Management Solutions
Edinburgh and Glasgow
- 6 Urban Mass/Rapid Transit Networks
Aberdeen, Edinburgh and Glasgow

Liveable Places

- 7 Central Scotland Green Network
- 8 National Walking, Cycling and Wheeling Network
Scotland Wide
- 9 Edinburgh Waterfront
- 10 Dundee Waterfront
- 11 Stranraer Gateway
- 12 Digital Fibre Network
Scotland Wide

Productive Places

- 13 Clyde Mission
- 14 Aberdeen Harbour
- 15 Industrial Green Transition Zones
- 16 Hunterston Strategic Asset
- 17 Chapelcross Power Station Redevelopment
- 18 High Speed Rail



Indicative

- Renewable energy
- Circular economy
- Sustainable transport
- Green infrastructure
- Ports and harbours
 - Islands, Aberdeen Harbour, Grangemouth
- Strategic industrial sites:
 - Hunterston, Grangemouth, Chapelcross
- Waterfront redevelopments:
 - Dundee, Edinburgh, Stranraer and Clyde

NPF4 Delivery

- New style Local Development Plans: New regulations / guidance
- New Planning, Infrastructure and Place Advisory Group (PIPAG) established
- Consultation on new /extended Permitted Development Rights electricity undertakers.
- New National Planning Improvement Champion in post
- Future Planners Project
- Masterplan Consent Areas – engagement with stakeholders later this year
- Biodiversity enhancement - guidance later this year

Optimising applications – a view from SG

- New ways of thinking – reshaping our approach to EIA?
- Clear supporting information / evidence
- Optimising community engagement
- Working collectively and collaboratively to drive change.



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