The future for tidal range energy in the UK, post-Paris, post-Brexit and post-Hendry

Tim Carter, Head of Environment
Tidal Lagoon Power
tim.carter@tidallagoonpower.com

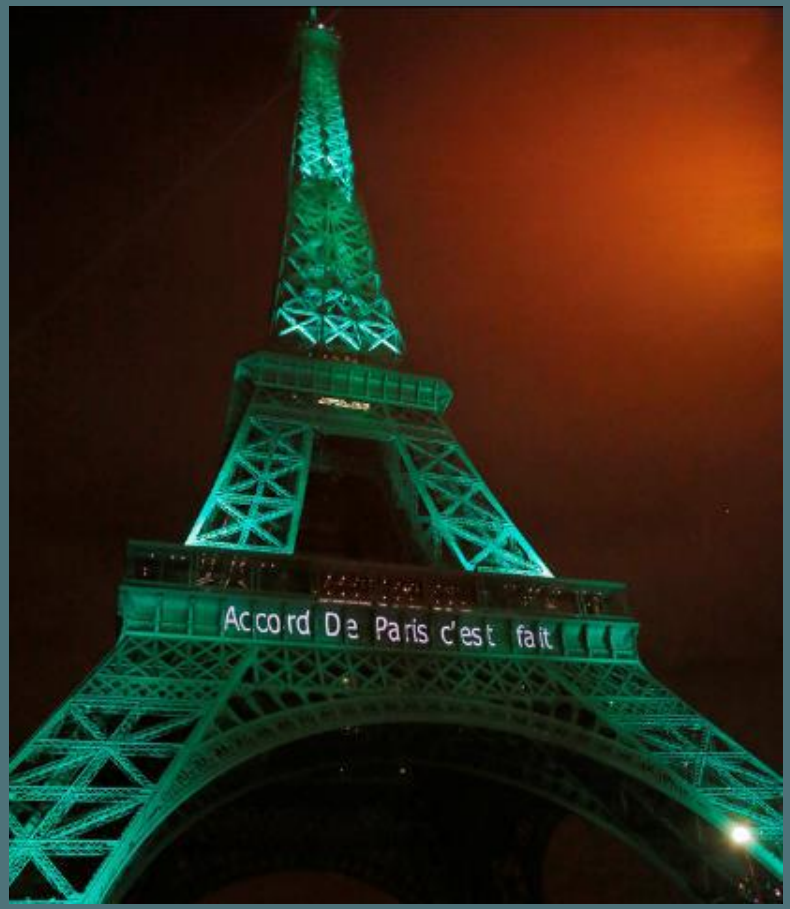
January 2017

What are we going to cover?

- Paris Climate Agreement
- Brexit context
- Energy context
- Hendry Review - outcomes
- Tidal Lagoon Swansea Bay – update
- Tidal Lagoon Cardiff – ongoing work

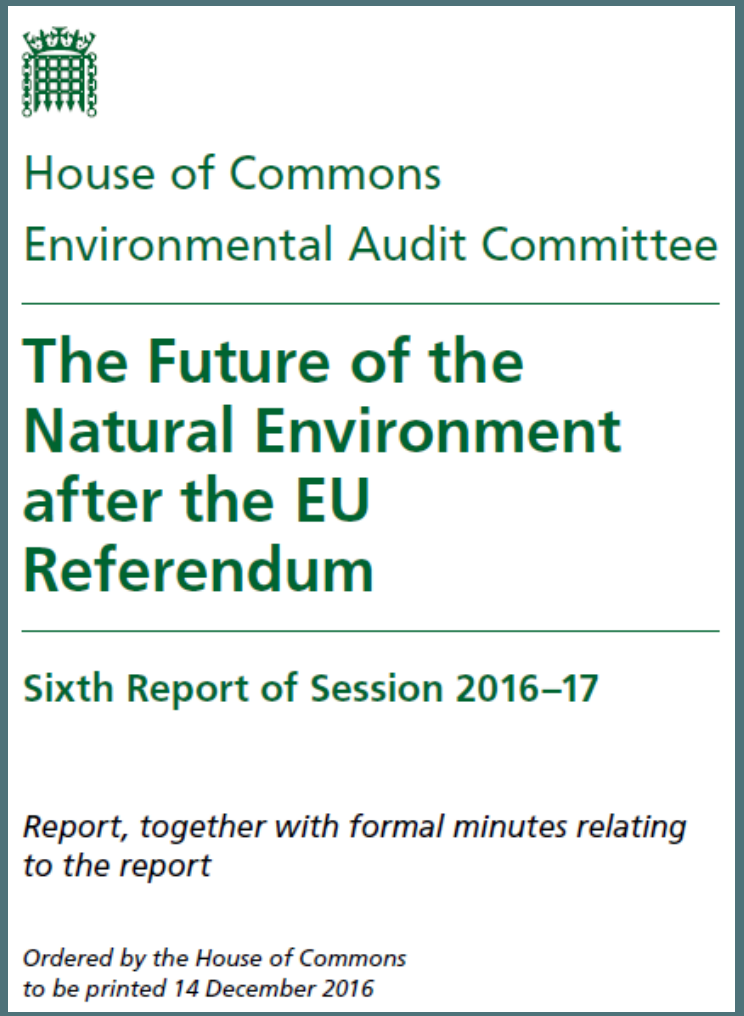
Tidal Lagoon Power – Paris

- **Paris Climate Agreement – signed – 22 April 2016, effective – 4 November 2016**
- **United Nations Framework Convention on Climate Change (UNFCCC)**
- **Members promised to reduce their carbon output “as soon as possible” and to do their best to keep global warming “to well below 2 degrees C”**
- **Trump administration?**



Tidal Lagoon Power - Brexit

- **Implications of Brexit**
- **Future focus - Energy security, sovereignty, industrial strategy**
- **Legislation changes – what happens when UK leaves EU?**
- **Great Repeal Bill - What will replace current legislation?**



House of Commons
Environmental Audit Committee

The Future of the Natural Environment after the EU Referendum

Sixth Report of Session 2016–17

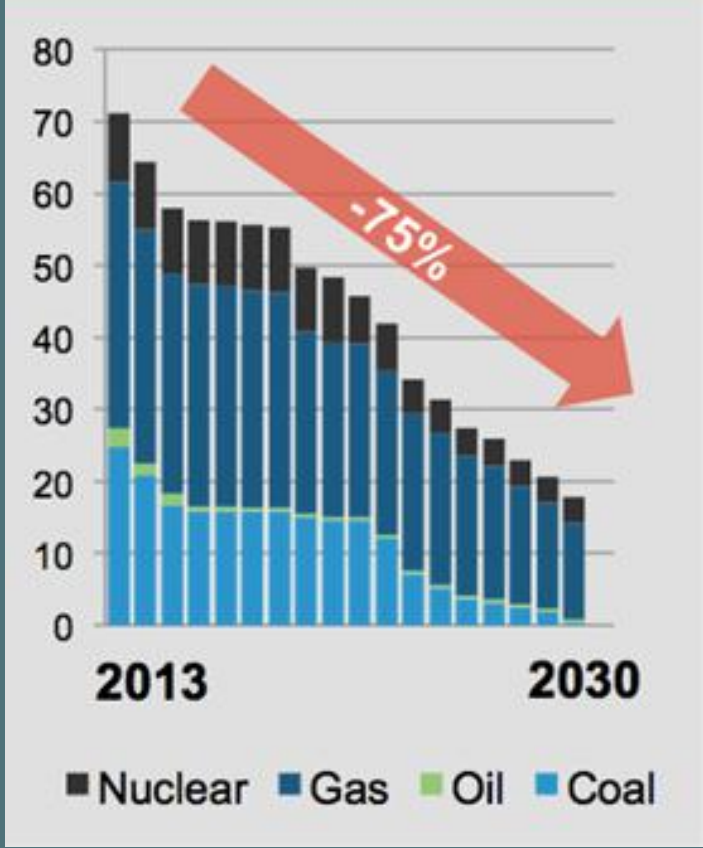
Report, together with formal minutes relating to the report

Ordered by the House of Commons to be printed 14 December 2016

UK energy challenge

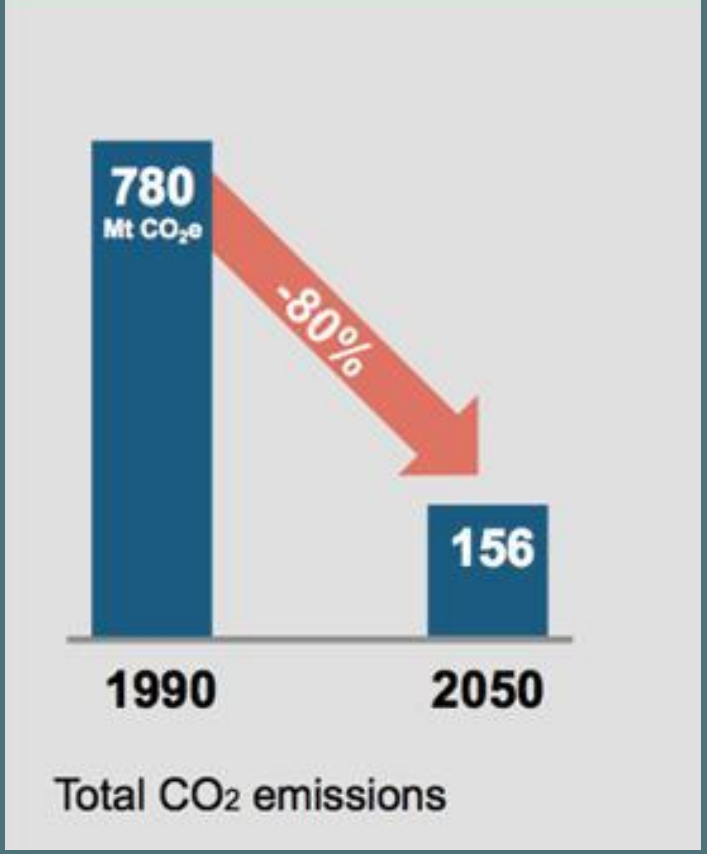
Rapid decommissioning

75% of thermal capacity to be decommissioned by 2030



Ambitious climate targets

80% reduction in CO_2 emissions by 2050



Source: Statkraft 2015

Hendry Tidal Lagoons Review

1. **An assessment of whether, and in what circumstances, tidal lagoons could play a cost effective role as part of the UK energy mix**

2. **The potential scale of opportunity in the UK and internationally, including supply chain opportunities**

3. **A range of possible structures for financing tidal lagoons**

4. **Different sizes of projects as the first of a kind**

5. **Whether a competitive framework could be put in place for the delivery of tidal lagoon projects.**

A new UK industry is created to deliver…

- UK investment and growth: £40+bn investment programme with 65%+ local content
- UK jobs: Long-term, diversely skilled, industrial employment
- Social and economic regeneration: Iconic energy infrastructure at the heart of the community
- Export potential: UK industry supplying an 80GW+ global deployment market

Hendry Review - Outcomes

1. **Moving ahead with a pathfinder lagoon at Swansea Bay ‘as soon as is reasonably practicable’ - ‘no-regrets policy’**

2. **Tidal lagoons can ‘play a valuable and cost competitive role in the electricity system of the future’**

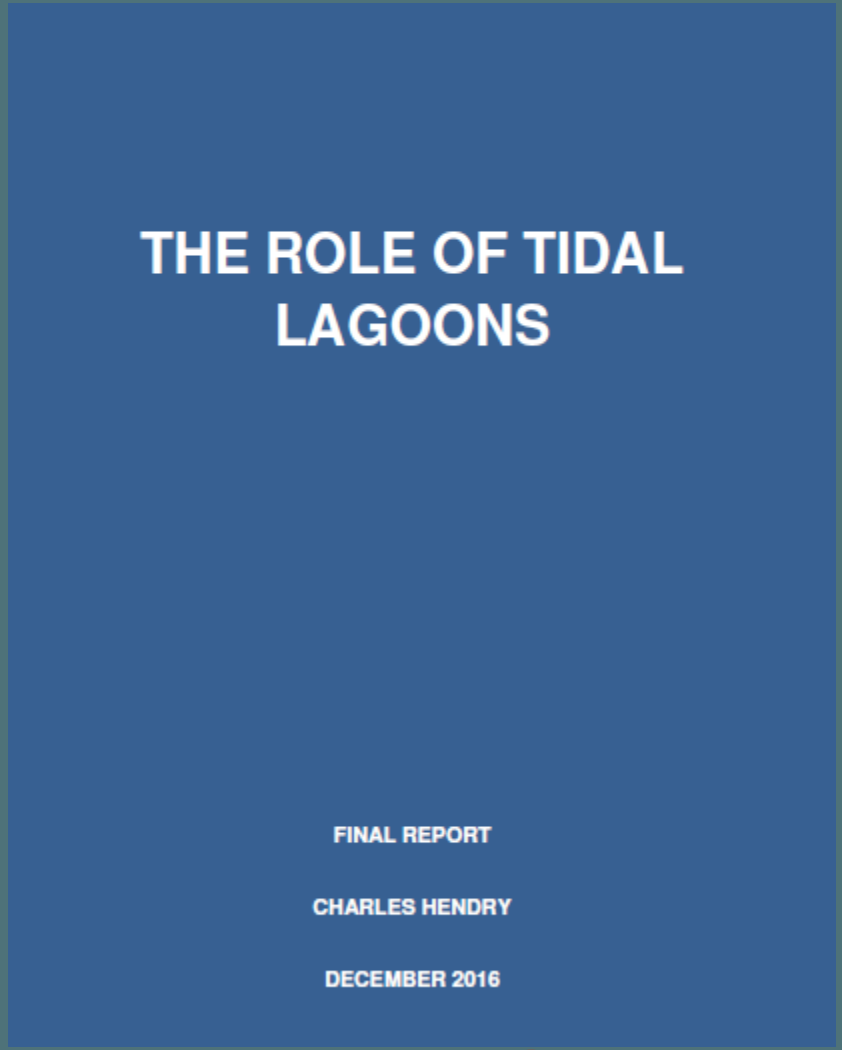
3. **Industrial opportunity - seen as a ‘lifeline’ for UK industry, protecting existing jobs for the long-term as well as creating new jobs**

4. **Government faces ‘a strategic decision, every bit as much as an economic decision’ – ‘leaders or followers’?**

5. **Swansea support - a positive decision would be a popular decision**

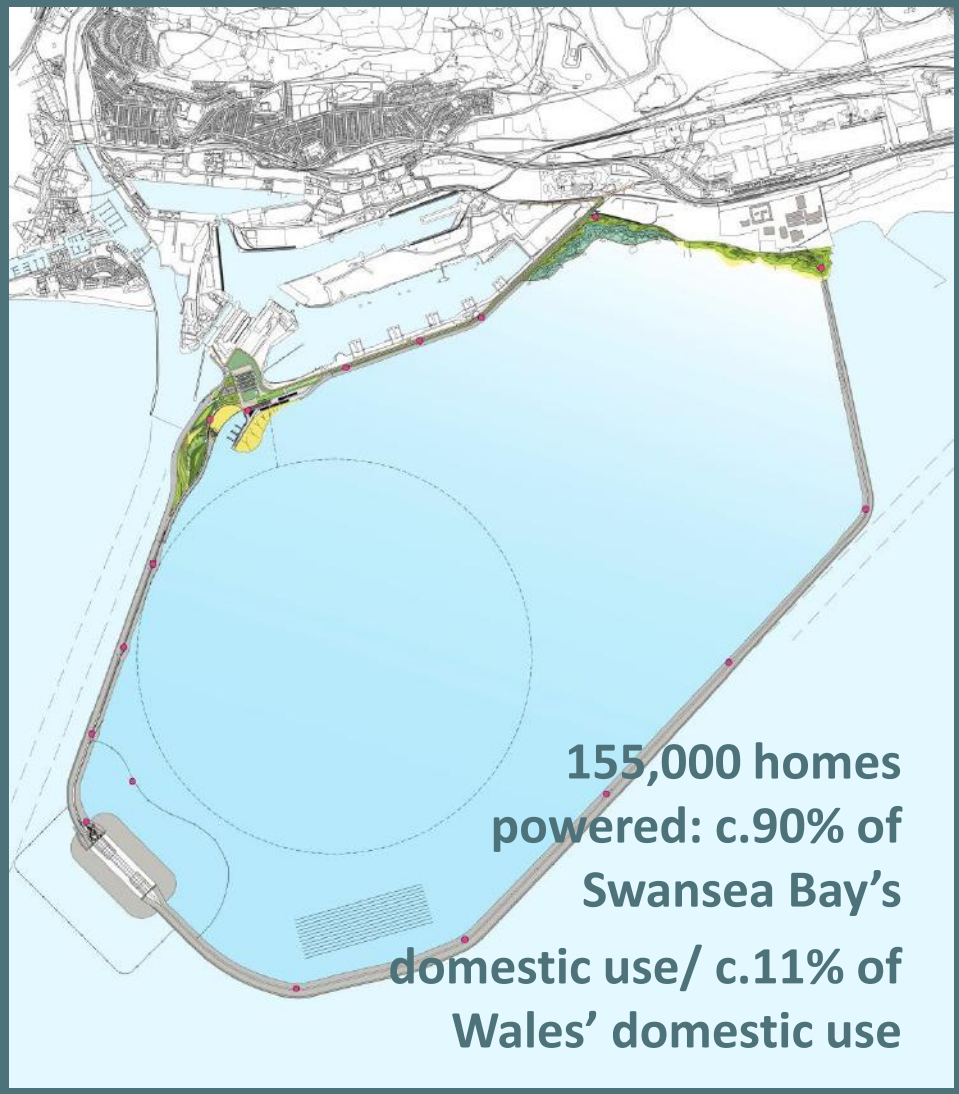
Hendry Review - Outcomes

- **Tidal Power Authority – set up and scope?**
- **National Policy Statement – planning policy context, Swansea Pathfinder**
- **Competition – how will this be run?**
- **Crown Estate – leasing?**
- **Recommendations - Government response?**



Establishing a blueprint: Swansea Bay Tidal Lagoon

Wall length:	9.5km
Area:	11.5km^2
Rated capacity (@4.5m head):	240MW
Installed capacity:	320MW
Daily generating time:	14 hours
Annual output (net):	495GWh
Annual CO^2 savings:	236,000 t
Design life:	120yrs
Height of wall:	5-20m
Wall above low water:	12m
Wall above high water:	3.5m
Tidal range Neaps:	4.1m
Tidal range Springs:	8.5m



Tidal Lagoon Swansea Bay - update

- Development Consent Order (DCO) – granted 9 June 2015
- Hendry Review – Feb 2016, published Jan 2017

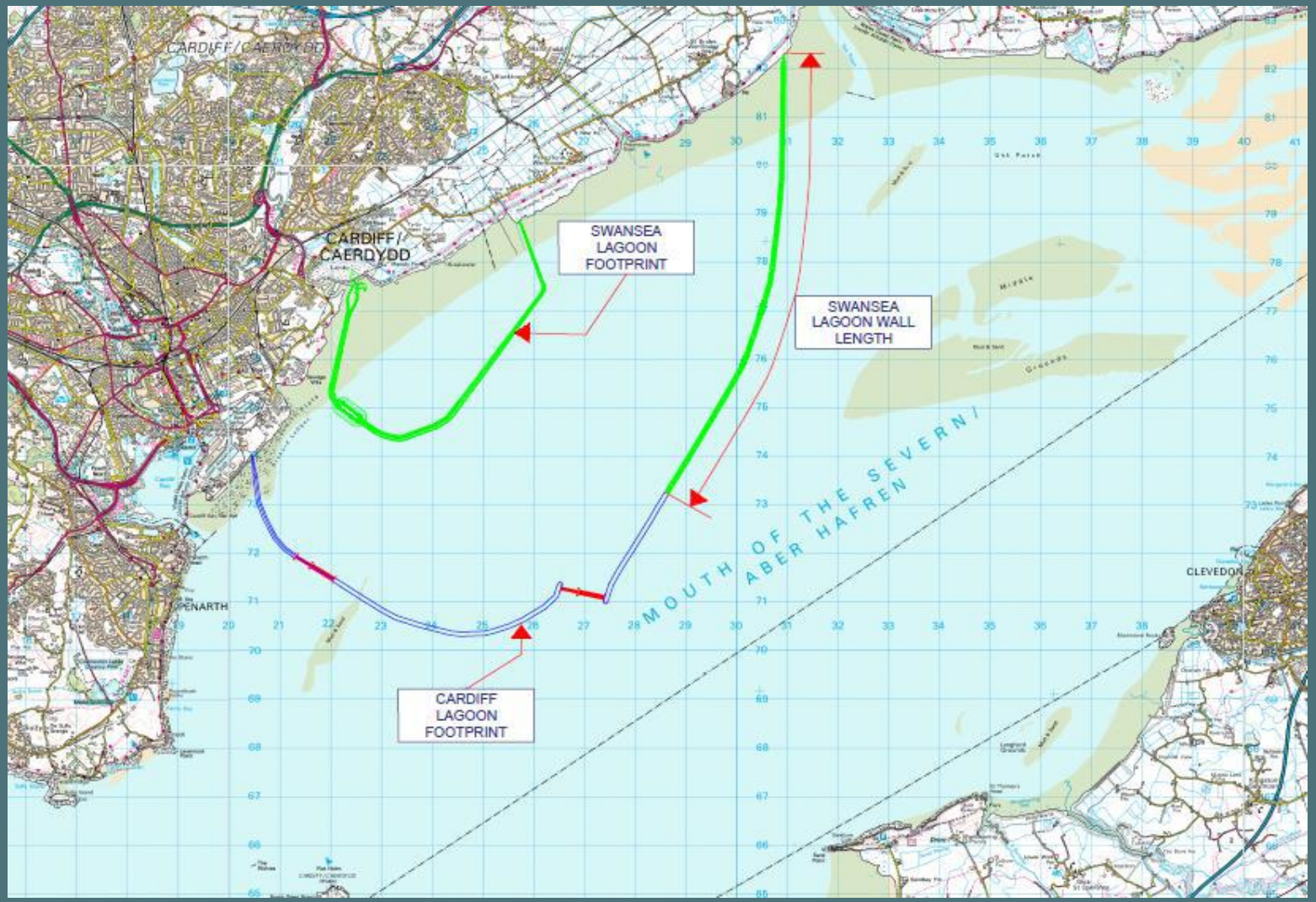
We still need:

- Marine Licence – NRW Permitting Service
  - Potential effect on fish – mitigation and monitoring
- Harbour Revision Order (HRO)/Boundary Review – discharge of DCO requirements

- Crown Estate – lease required
- Contract for Difference (CfD) – Government response to Hendry Review
- Discharge of Marine Licence conditions

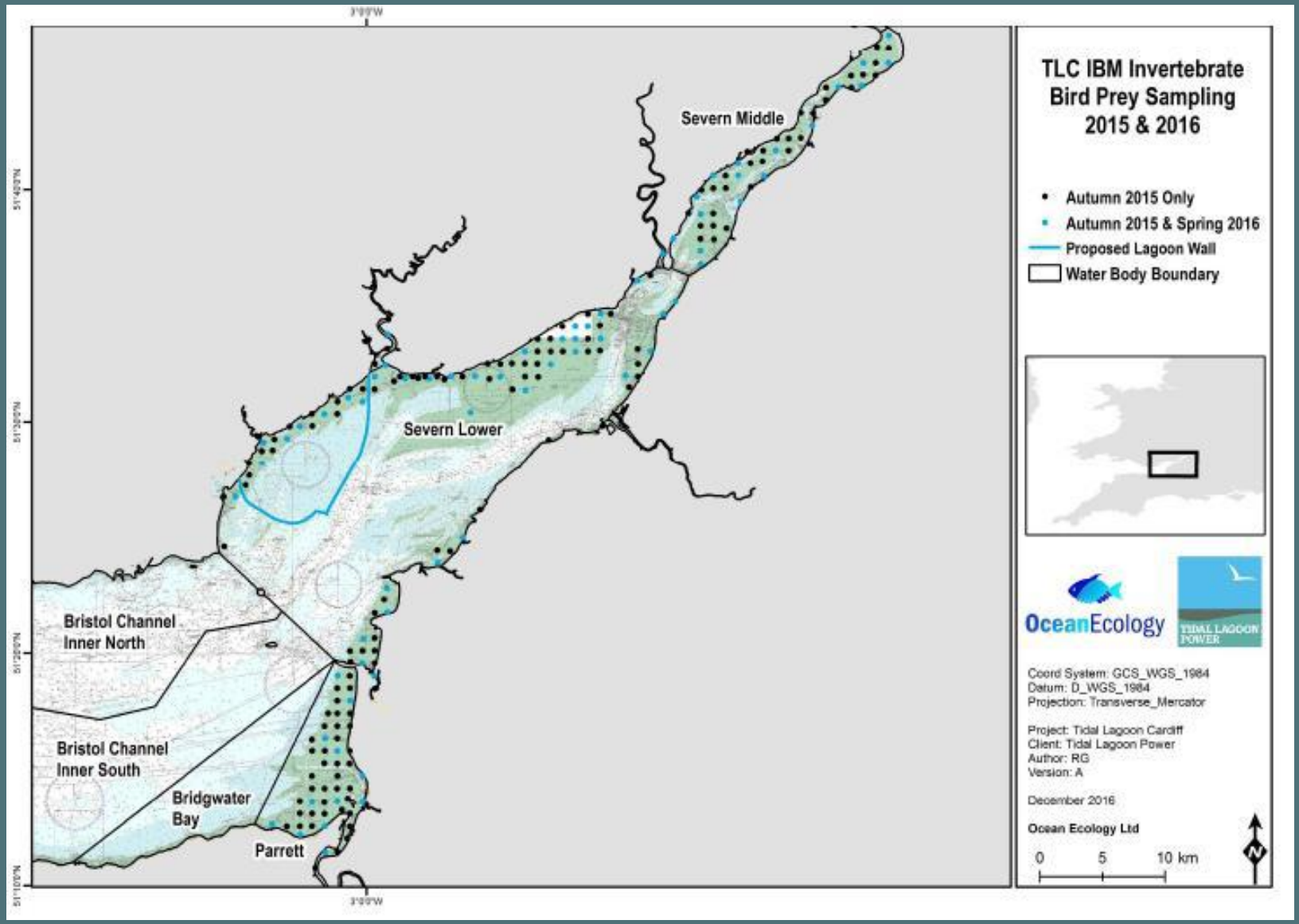
Offsetting Our Impacts

Tidal Lagoon Cardiff - Scaling up

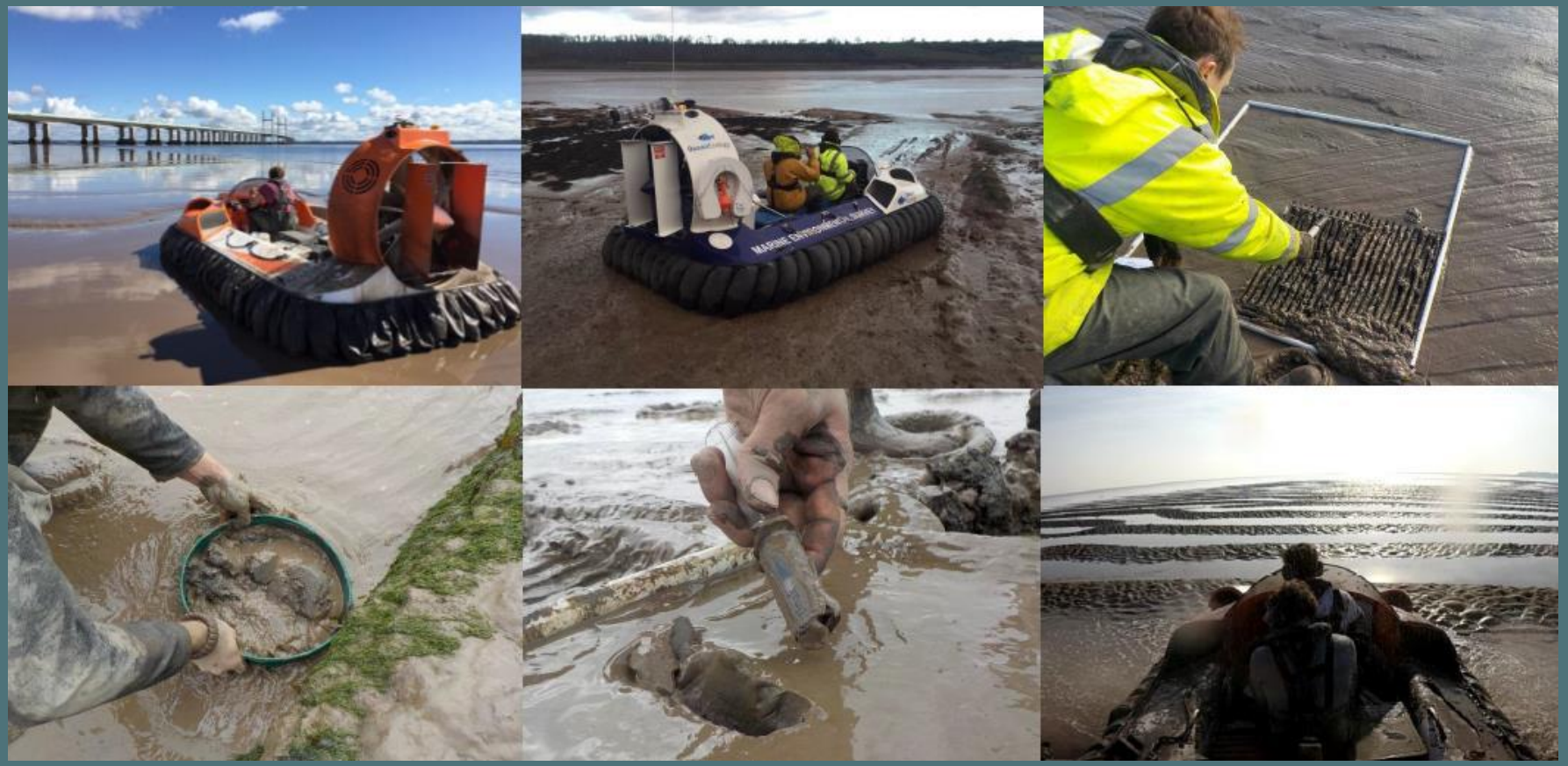


Tidal Lagoon Cardiff - Update

Coastal birds – Invertebrate sampling 2015 and 2016



Coastal birds – Invertebrate sampling 2015 and 2016

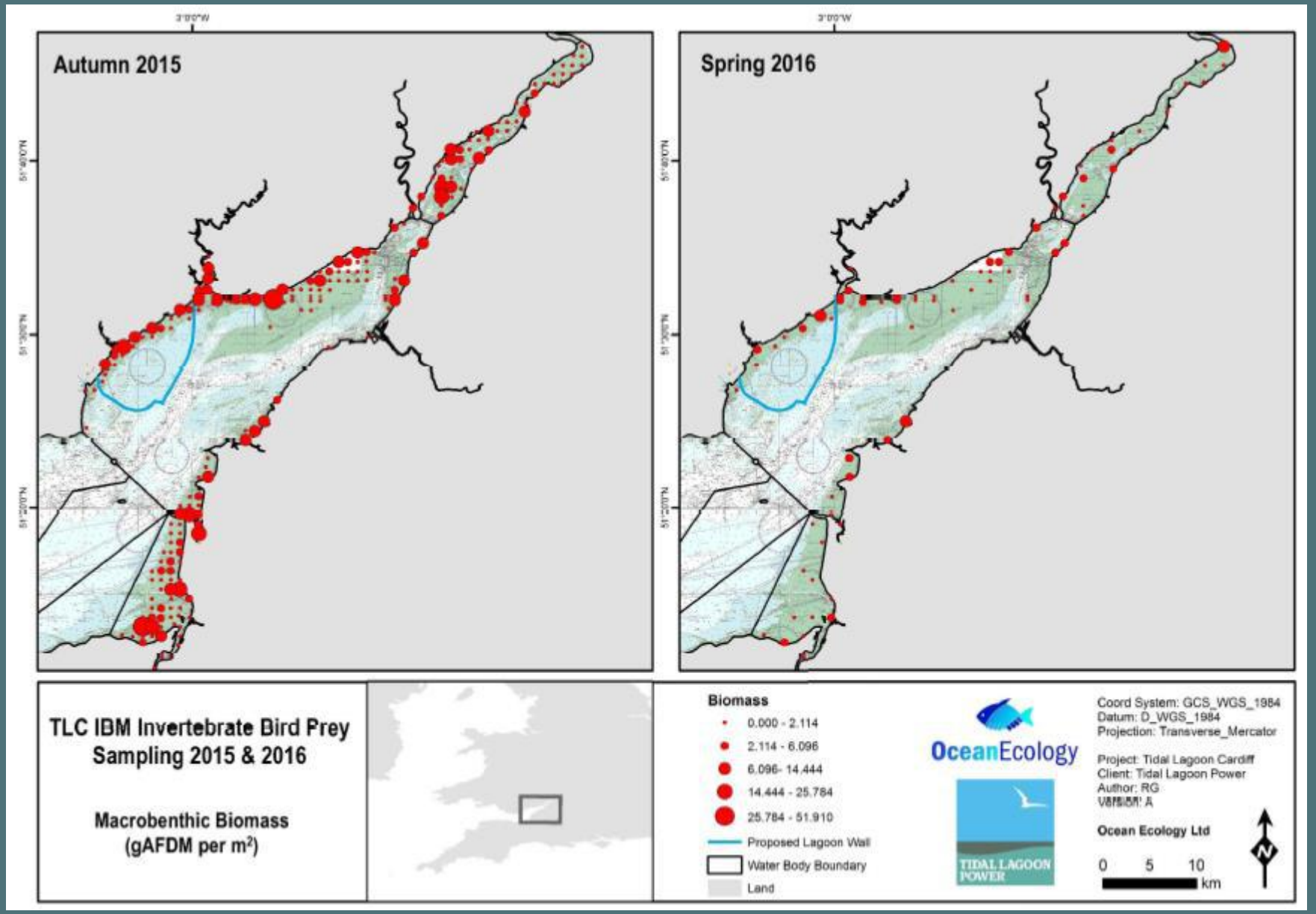


Coastal birds – Invertebrate sampling 2015 and 2016

Coastal birds – Invertebrate sampling 2015 and 2016

Plate 3. Examples of the sediment types encountered during the autumn and spring intertidal surveys of the Severn Estuary. (a) Coarse sediment / gravel (b) muddy sandy gravel (c) muddy sand (d) soft mud (with diatom film) (e) *Sabellaria alveolata* on muddy gravel (f) *Zostera marina* on muddy gravel.

Coastal birds – Invertebrate sampling 2015 and 2016



Seagrass survey

Coastal Birds – Shelduck

Coastal Birds – Shelduck range

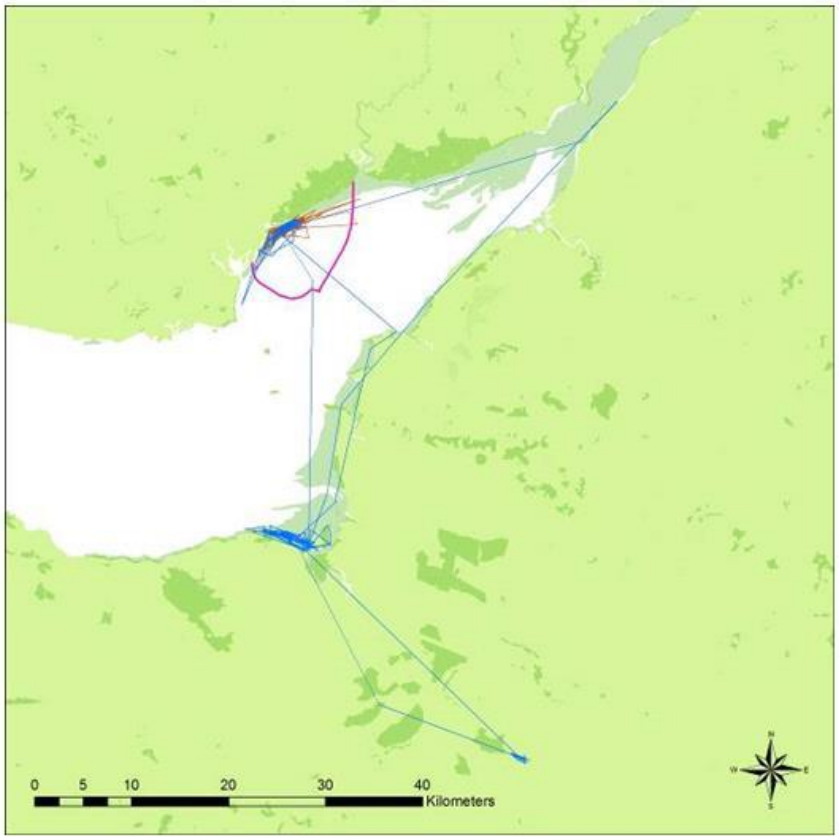


Figure 3.5.8 Example movements for a Shelduck that moved away (blue) and for a bird that stayed in the study area (red, protected areas = darker green).

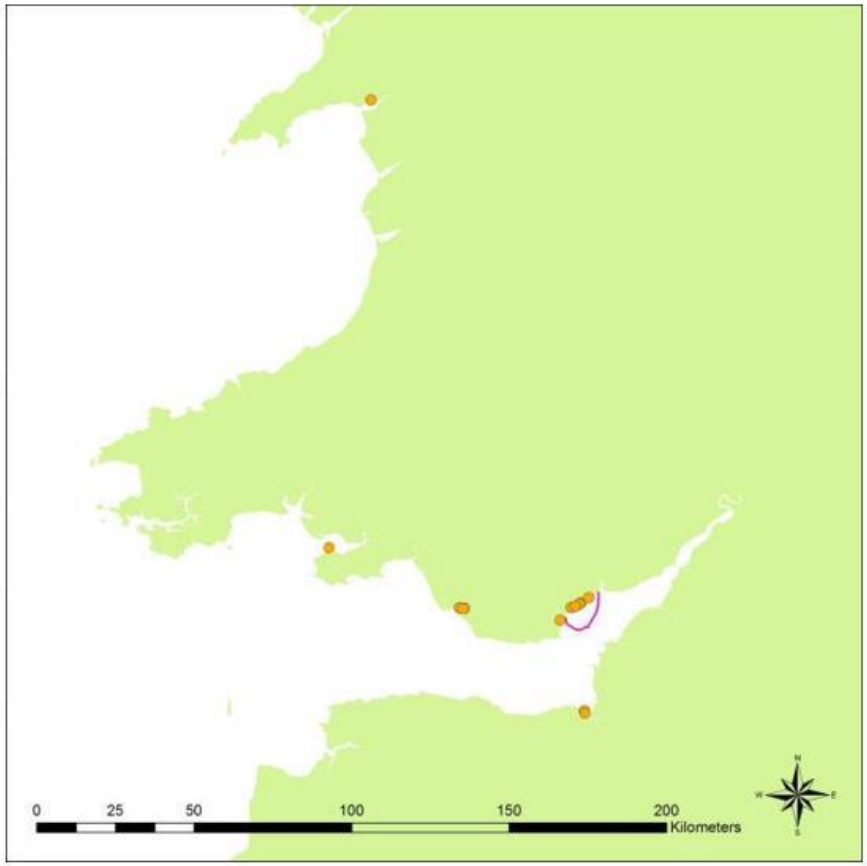
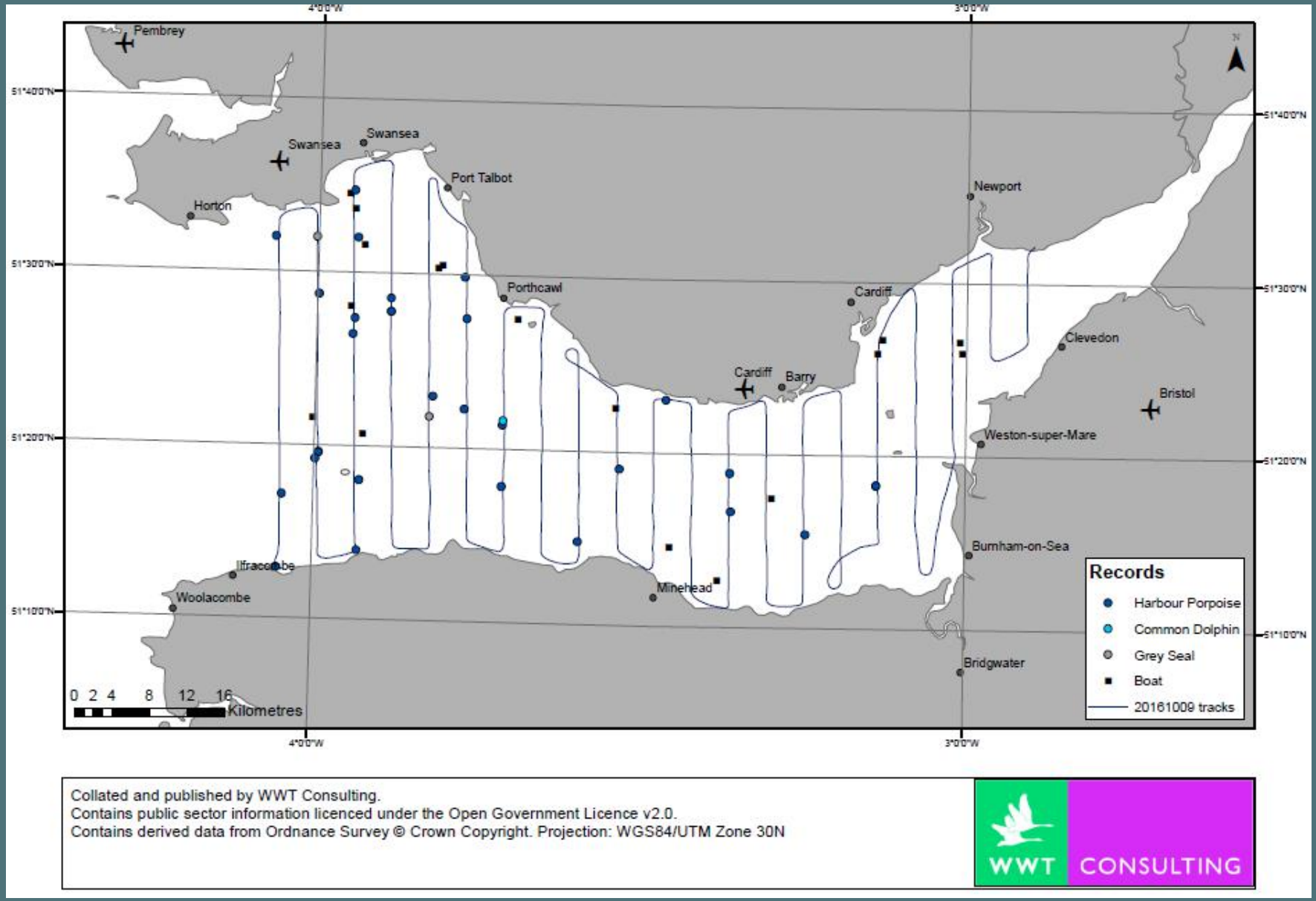


Figure 3.5.2 Location of sightings of dye-marked Shelduck during winter 2015-2016.

Marine Mammals – Aerial Survey October 2016



WWT CONSULTING

Managed realignment – Wallasea
Photo credit: RSPB

Managed realignment – Wallasea
Photo credit: RSPB

Thank you for listening!

http://www.tidallagoonpower.com/