# Offshore Colocation Forum

Plenary #14

2 July 2025

THE CROWN ESTATE

# Agenda

| Item | Owner | Duration |
|---|---|---|
| **1. Welcome** | Adrian Topham | 5 mins |
| **2. H&S moment** | Charles Green | 5 mins |
| **3. Matters arising** | Ben Frei | 10 mins |
| **4. Overlaps - Lessons Learned** | Helen Hallsworth / Adrian Topham | 30 mins |
| **5. Project Colocate** | Project team | 30 mins |
| **6. Project Anemone** | Adrian Topham | 20 mins |
| **7. 2025 Planning & Discussion** | Adrian Topham / All | 15 mins |
| **8. AOB**<br>- Actions review | Adrian Topham<br>Ben Frei | 5 mins |

# 2. Health & Safety moment

# North Sea Collision 10 March 2025

- The Solong cargo vessel hit a US-flagged tanker, the Stena Immaculate, carrying jet fuel for the American military, which was anchored while waiting for space at a port in the Humber, having travelled from the Peloponnese region of Greece.
- The Solong was sailing from Grangemouth in Scotland to Rotterdam in the Netherlands at a speed of about 16 knots, equivalent to 18mph, when it collided with the tanker.
- Both vessels caught fire after several explosions and 36 crew were rescued, including Americans onboard the Stena Immaculate and members of the Russian and Filipino crew of the Solong.
- Extensive searches were carried out by HM Coastguard to locate the missing crew member, of the Solong , Mark Angelo Pernia, now presumed deceased. The family are being supported by specialist trained officers.

## North Sea collision: Russian container ship captain charged with manslaught

### Vladimir Motin was in charge of the Solong when it hit a tanker off East Yorkshire coast, leaving one man dead

Smoke billowing from the Solong off the East Yorkshire coast on Tuesday. Photograph: Da Kitwood/AP

# ….collision 10 March 2025

- In a statement, the tanker's owners, Crowley, said 17,515 of 220,000 barrels of Jet-A1 fuel had been lost "due to the impact and fire".
- Arrested and charged with gross negligence manslaughter, Solong's Master, a 59-year-old Russian national, Vladimir Motin, was that vessel's only watchkeeper during the hours leading up to the incident and is scheduled to stand trial in January 2026.
- Crowley said staff ensured "fire monitors were active in order to provide boundary cooling water to the adjacent cargo tanks".
- "Their heroic action limited damage to only the cargo tanks impacted," added Cal Hayden, the company's vice president.
- The Marine Accident Investigation Branch (MAIB) is **trying to establish** the cause of the crash and published an interim report in April 2025. Initial focus of report:
- Watchkeeping is a necessary and vital function of what an officer of the watch (OOW) must perform. Crew members, too, understand that the safety of their vessel and crew mates is paramount when required to support the OOW in these essential safety duties.

- MAIB has suggested that fatigue management, a well-understood concern in the maritime industry, will be investigated

# HSE Warns of rising risk of offshore collision

**Department name:** Energy Division

**Bulletin number:** ED01-2025
**Issue date:** 03/25
**Target audience:**

- Offshore installation duty holders, owners and operators of offshore vessels, windfarm operators, principal contractors, contractors.

**Issue**

- HSE has identified a rise in the number of incidents of attendant ships colliding with offshore oil and gas and renewable energy structures. Failure of navigational watch processes and systems, is resulting in collisions or risk of collisions.

**Incidents are occurring because:**

- personnel who are responsible for watchkeeping and the safe navigation of a vessel are being distracted with non-navigational tasks
- situational awareness is not being maintained at all times
- there is insufficient communication between all members of a bridge team

- duty holders and vessel operators should have in place processes and systems, as part of a wider safe system of work, to ensure that, during connected activities, vessels are operated in a way that ensures, so far as is reasonably practicable, the safety of people on nearby installations.

# 3. Matters arising

# Matters arising

| ID | Action | Due date | Owner | Status | Commentary |
|---|---|---|---|---|---|
| | OWIC to continue to engage offshore wind developers on their awareness around colocation with the view to hold a webinar alongside TCE | | TCE/OWIC | Ongoing | Included as part of 2025 planning |
| | TCE to engage with NECCUS and other trade bodies involved in the Forum to deliver Phase 1 of Project Anemone | TBC | TCE | Complete | Update to be provided as part of plenary #14 presentation |
| | Secretariat to develop risk assurance / insurance questionnaire to be circulated with offshore wind and CCS developers ahead of next Plenary | Dec 2024 | TCE | Paused | Included as part of 2025 planning |
| | TCE to explore how it can quantify / categorise decarbonisation contribution of colocation. | N/A | TCE | Paused | |
| 13.1 | Feed back to the University of Aberdeen regarding the requirement for additional granularity around timescales, to enable differentiating planned versus operational wind in colocation scenarios | 30 April 2025 | TCE | Complete | |
| 13.2 | The full findings will be presented to the Forum at the next plenary (Project Colocate) | TBC by mid-May | UoA | Ongoing | Report to be shared post-plenary |
| 13.3 | Gain an initial understanding of colocation insurance work already underway | 15 May 2025 | OWIC | Ongoing | |
| 13.4 | Write up the different possible 2025 Forum objectives as discussed above and circulate these to the Forum members | 30 May 2025 | TCE | Ongoing | To be discussed during forum |
| 13.5 | Schedule next Plenary | 15 May 2025 | TCE | Complete | |
| 13.6 | Follow up with OEUK regarding their involvement in project Anemone and to confirm final scope | 9 May 2025 | TCE | Complete | |

# 4. Overlaps - Lessons Learned

# TCE Overlaps Meetings

- Between carbon capture & storage and offshore wind (generation & transmission) sectors
  - create awareness and provide a safe space for discussion of concerns, challenges and opportunities

- To develop relationships to enable collaboration and colocation
  - resulting in:
    - Increased awareness of each sectors aims & requirements
    - Familiarity with TCE's role in spatial management & Colocation Forum
    - Build relationships between specific overlaps
    - Encourage cooperation between organisations & sectors

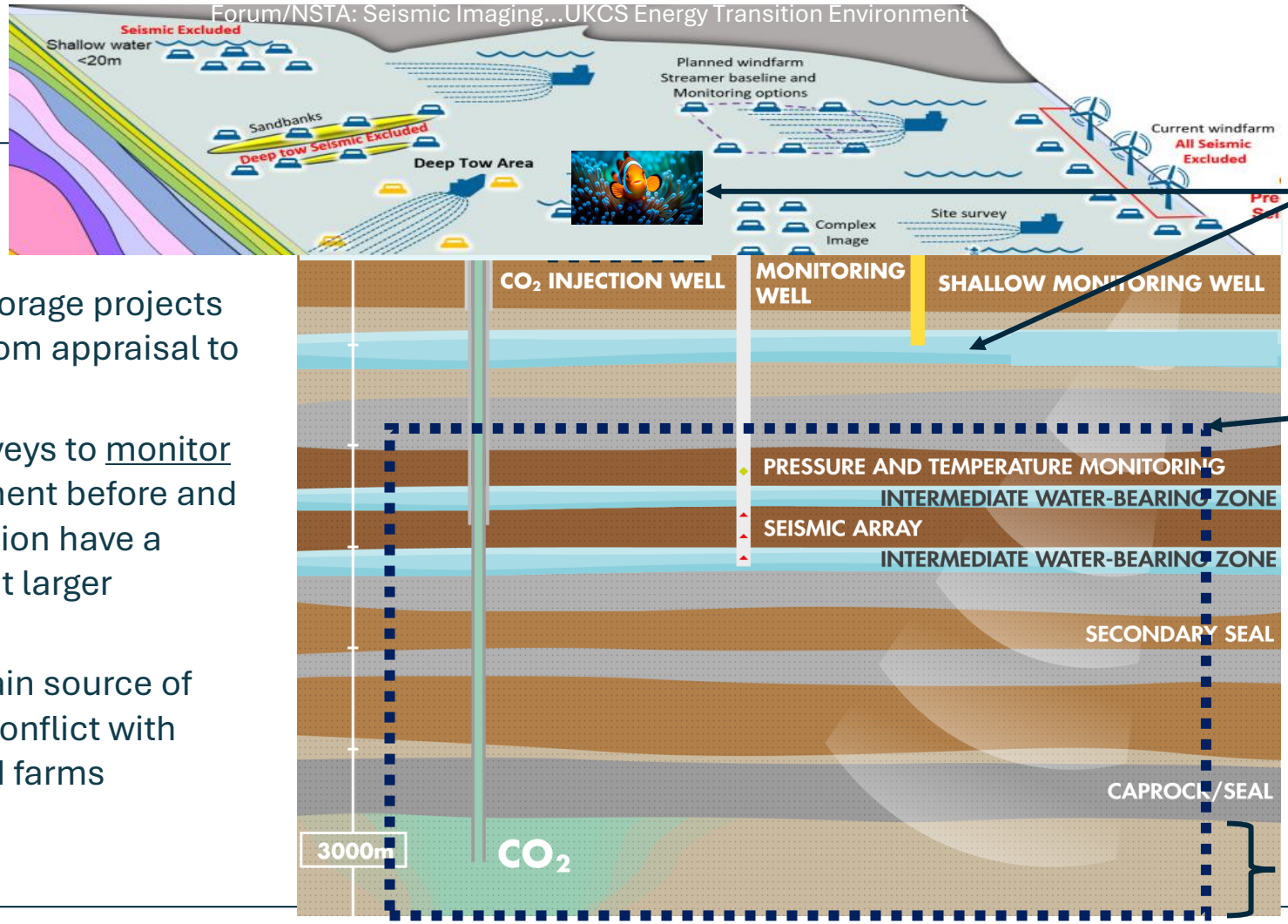
# Lessons Learned

- Outcome has been greater clarification about:
  - CCS appraisal location and timing versus subsequent operation
  - Offshore wind generation and transmission operations and maintenance schedules
  - Clarity on CCS infrastructure locations and needs
  - CCS monitoring purpose and needs
  - Reducing concerns about storage containment (but still more to explain)
  - Identifying opportunities for shared services
  - Agreeing effective management of operations (SIMOPS) to ensure safety and operational integrity for both sectors operating in the same or adjacent areas

- Greater understanding and interest between sectors

# Understanding the store & the complex

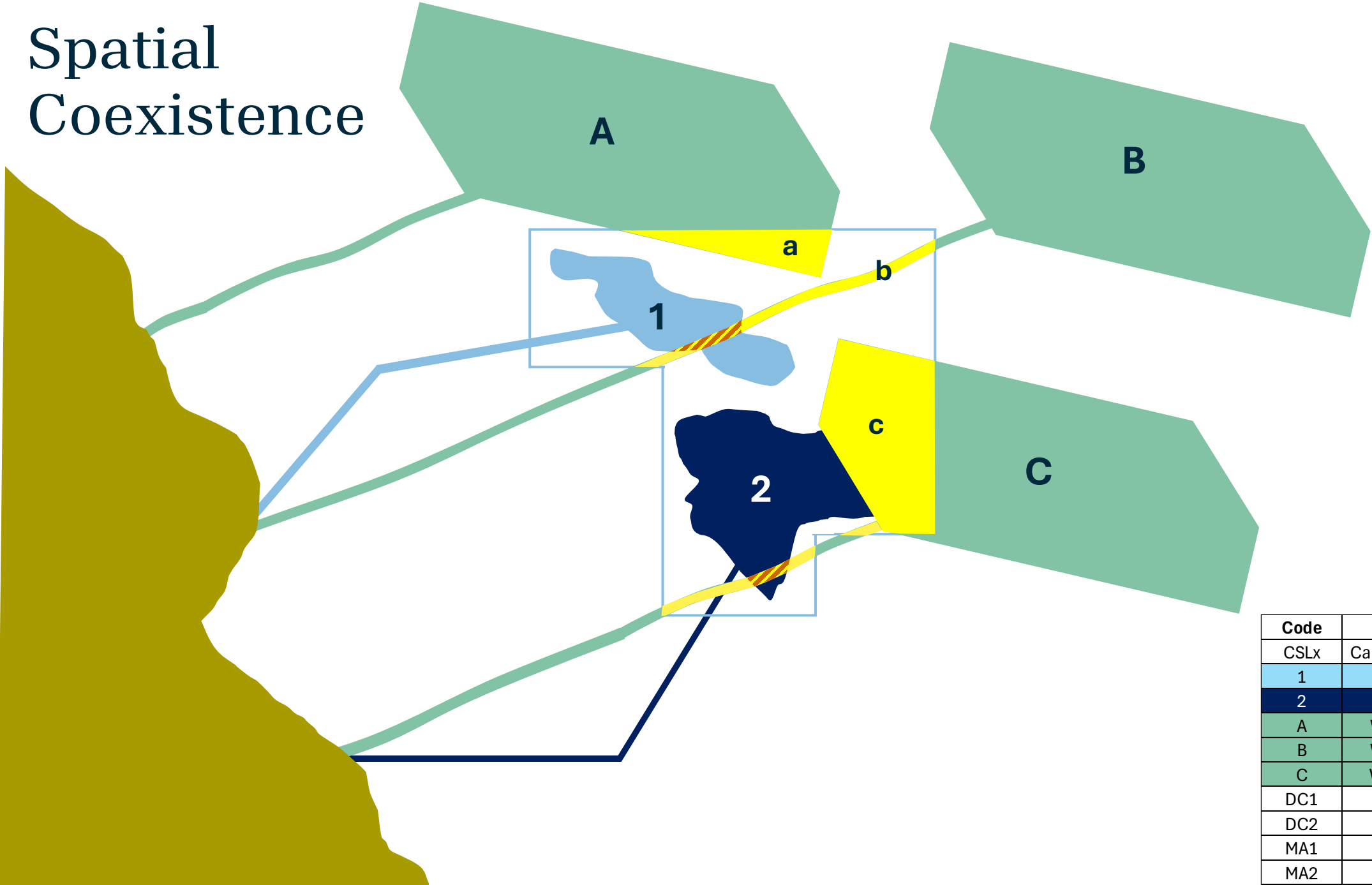
## Carbon Storage Monitoring – why




Footprint of carbon storage projects changes drastically from appraisal to operation:

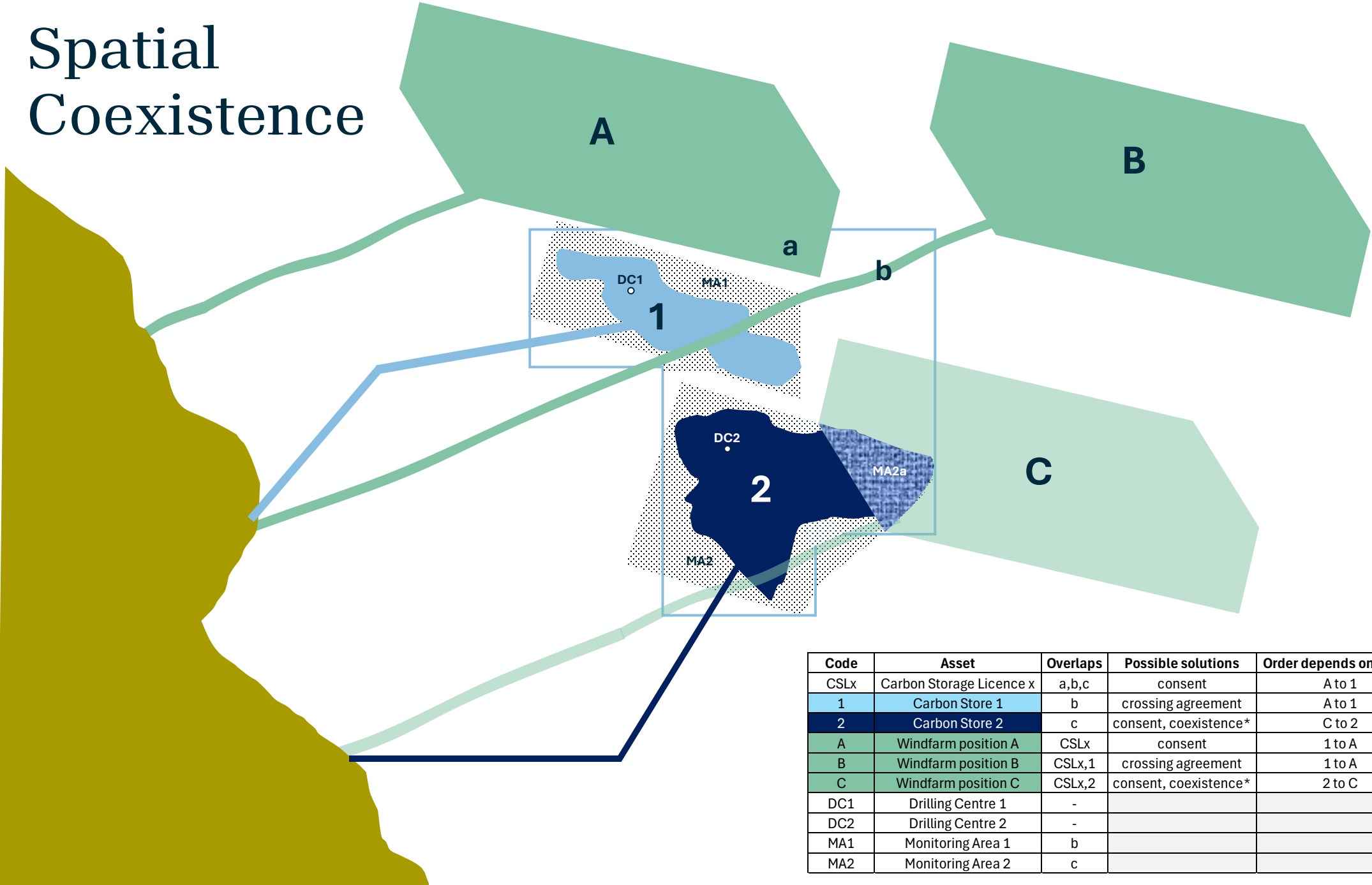
- Offshore surveys to monitor the development before and during operation have a temporary but larger footprint
- This is the main source of co-location conflict with offshore wind farms

# Spatial Coexistence



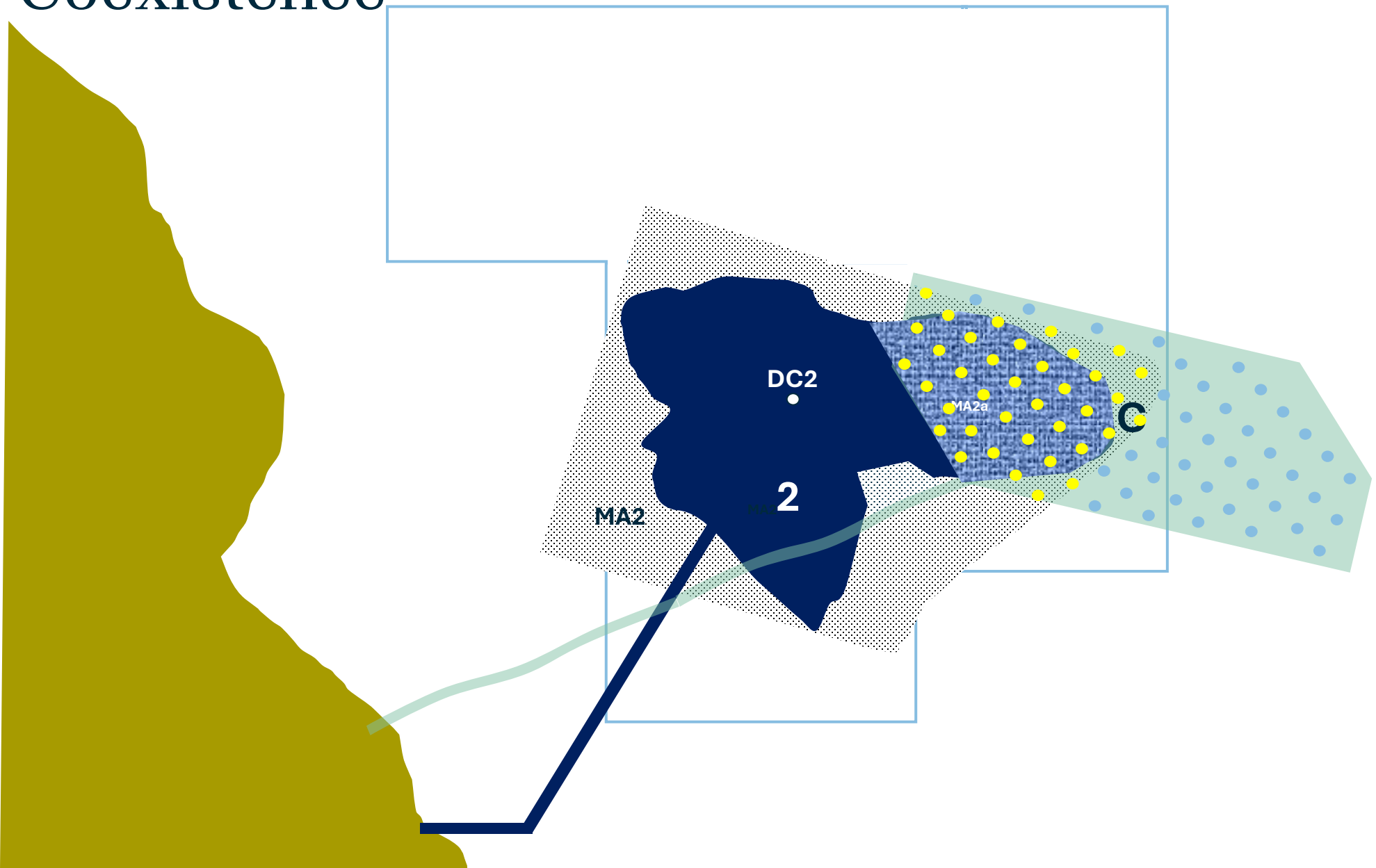

| Code | Asset | Overlaps |
|---|---|---|
| CSLx | Carbon Storage Licence x | a,b,c |
| 1 | Carbon Store 1 | b |
| 2 | Carbon Store 2 | c |
| A | Windfarm position A | CSLx |
| B | Windfarm position B | CSLx,1 |
| C | Windfarm position C | CSLx,2 |
| DC1 | Drilling Centre 1 | - |
| DC2 | Drilling Centre 2 | - |
| MA1 | Monitoring Area 1 | b |
| MA2 | Monitoring Area 2 | c |

# Spatial Coexistence

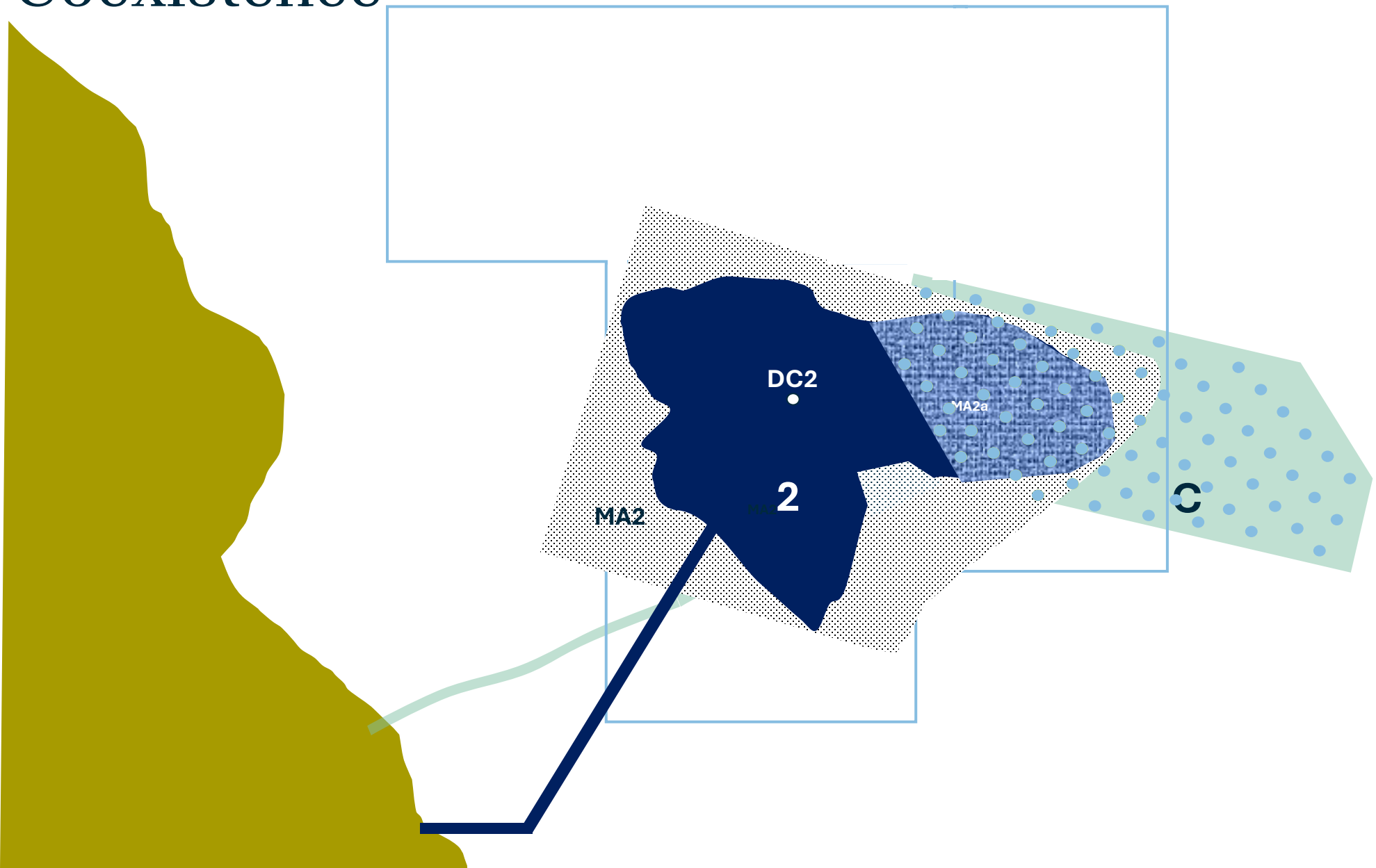



| Code | Asset | Overlaps | Possible solutions | Order depends on timing | Notes |
|---|---|---|---|---|---|
| CSLx | Carbon Storage Licence x | a,b,c | consent | A to 1 | |
| 1 | Carbon Store 1 | b | crossing agreement | A to 1 | |
| 2 | Carbon Store 2 | c | consent, coexistence* | C to 2 | *if MA2 is possible |
| A | Windfarm position A | CSLx | consent | 1 to A | |
| B | Windfarm position B | CSLx,1 | crossing agreement | 1 to A | |
| C | Windfarm position C | CSLx,2 | consent, coexistence* | 2 to C | *if MA2 is possible |
| DC1 | Drilling Centre 1 | - | | | b must avoid DC1 or vice-versa |
| DC2 | Drilling Centre 2 | - | | | C must avoid DC2 or vice-versa |
| MA1 | Monitoring Area 1 | b | | | must avoid c |
| MA2 | Monitoring Area 2 | c | | | must be compatible with c |

# Temporal Coexistence



# Temporal Coexistence



# NSTA carbon storage licensing – Southern North Sea


Overlap situation in the SNS, does not necessarily create coexistence or colocation problems, depends

a) where the storage reservoirs are in the licenced areas,
b) whether it is a wind generation or wind transmission overlap,
c) whether the wind assets or carbon storage assets are in place first and
d) the type of monitoring needed for the carbon store

**Carbon Storage Licences issued**

**Track 1 & 2 Projects:**
CS001 – ECC Endurance (BP)*
CS005 – Viking (Harbour Energy)
CS006 – ECC Extension (BP)
CS007 – ECC Extension (BP)

**Carbon Storage Licence Round 1:**
CS008 – Hewett (ENI)+
CS009 – Leman (Perenco)
CS017 – Amethyst (Perenco)*+
CS018 – West Sole (Perenco)+
CS019 – Camelot (Synergia Energy)
CS020 – BC05 Tellus (Neptune Energy/ENI)
CS021 – Bunter BC13 (Perenco)
CS022 – Caister (Neptune Energy/ENI)
CS023 – Vulcan (Harbour Energy/BP)
CS024 – Audrey (Harbour Energy/BP)+
CS025 – BC42 (BP)
CS026 – Sean (Shell)*
CS027 – Indefatigable (Shell)
CS028 – Sapphire (Shell)*+

Rights granted by TCE
* CSL overlaps with OSW
+ CSL overlaps with OFTO assets

# Lessons Learned

- List of commonly expressed issues:
  - Opportunities
  - Commercial challenges
  - Technical challenges
- Being addressed by:
  - Colocation Forum
  - NSTA Taskforces
  - Developers
  - Universities
  - Suppliers

| Raised by: | OSW | CCS | Both |
|---|---|---|---|
| Shared monitoring | | | |
| Shared power | | | |
| Shared maintenance | | | |
| Helicopter & vessel access | | | |
| Exclusivity | | | |
| Indemnity protection | | | |
| Pipeline landing on coast | | | |
| Choice of appraisal location | | | |
| Induced seismicity | | | |
| CO2 leakage | | | |
| Appraisal activity simops | | | |
| Infrastructure location | | | |
| Brine displacement | | | |
| CO2 plume migration | | | |
| Legacy wells | | | |

# List of commonly expressed issues

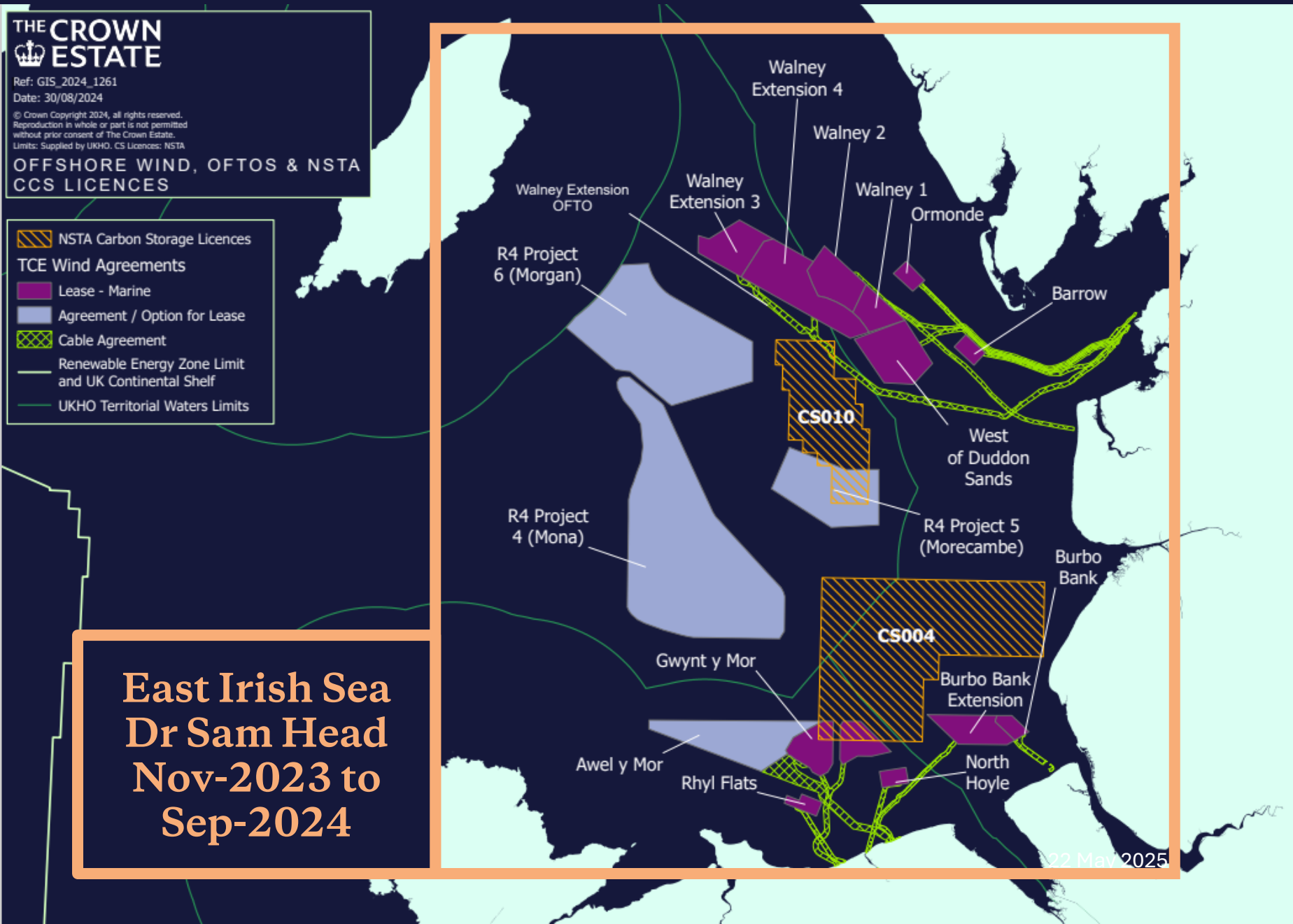
| Raised by: | OSW | CCS | Both | Description |
|---|---|---|---|---|
| Shared monitoring | | | | Use of existing fibre optic cables for acoustic sensing |
| Shared power | | | | Use of renewable electricity for decarbonised power |
| Shared maintenance | | | | Consecutive use of vessels |
| Helicopter & vessel access | | | | Statutory safety zones |
| Exclusivity | | | | Impediment to colocation |
| Indemnity protection | | | | Infrastructure damage risks |
| Pipeline landing on coast | | | | Locations relative to wind infrastructure |
| Choice of appraisal location | | | | Why position needed so close to wind infrastructure? |
| Induced seismicity | | | | Impact on wind infrastructure |
| CO2 leakage | | | | Release into biosphere, atmosphere |
| Appraisal activity simops | | | | Impact on wind maintenance operations |
| Infrastructure location | | | | Number & location of well infrastructure, pipelines |
| Brine displacement | | | | Where will the brine go? |
| CO2 plume migration | | | | Impact on wind infrastructure |
| Legacy wells | | | | Release into geosphere, biosphere, atmosphere |

# 5. Project Colocate

# Aims & objectives

| | |
|---|---|
| (1) Define Potential areas for OSW and CS | • Identify areas of colocation with offshore seabed and subsurface users, highlighting areas of multiple potential future uses in prospective areas |
| (2) Design colocation monitoring plans | • Storage risk assessment, including integrity of legacy boreholes and other infrastructure – "What monitoring data is required?" |
| (3) Explore the viability of colocation projects | • Produce a series of scenarios where multiple sector future use is possible<br>• Evaluate and rank specific proposals |

# NSTA carbon storage licensing – East Irish Sea



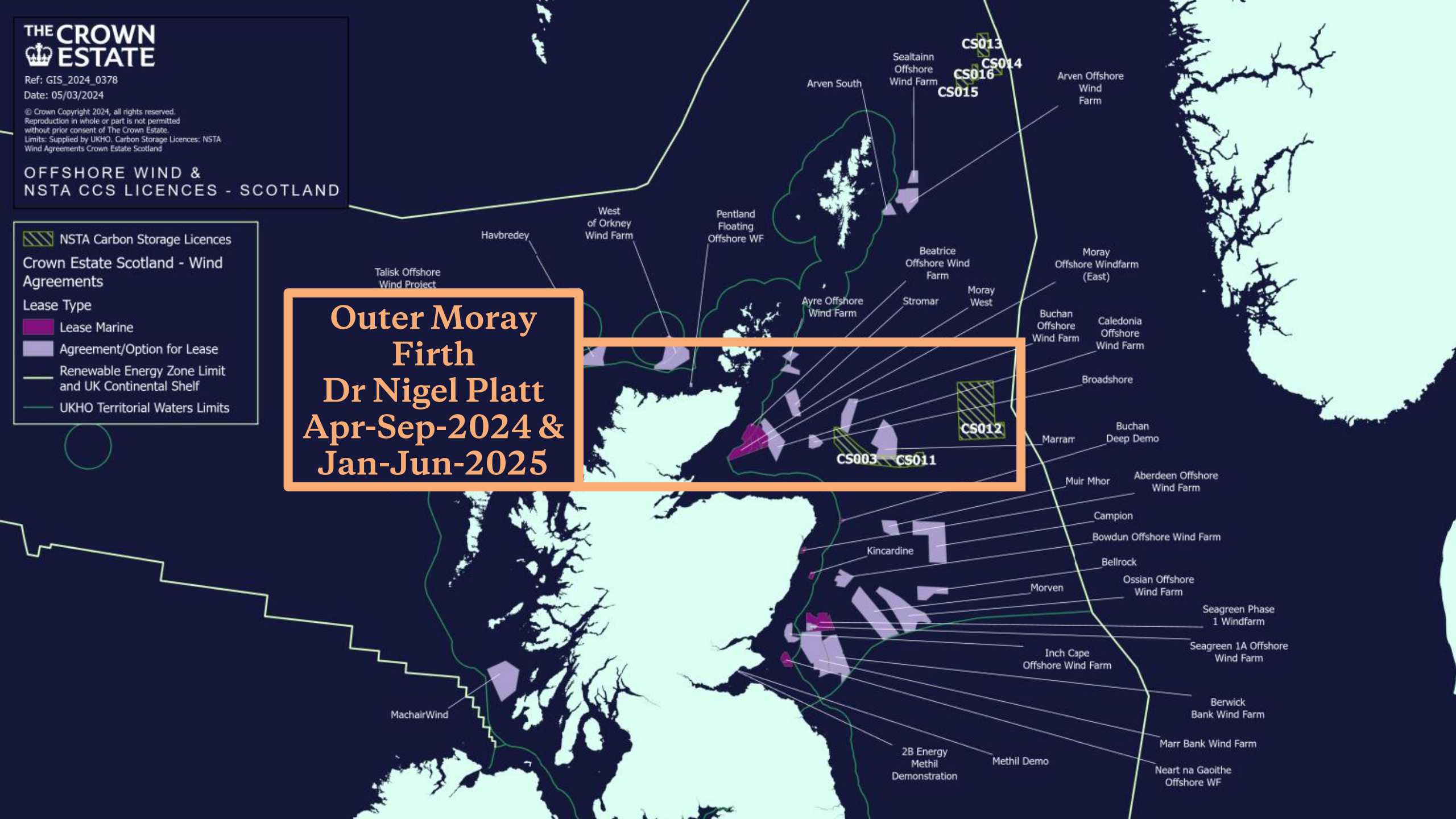

**East Irish Sea**
**Dr Sam Head**
**Nov-2023 to Sep-2024**

**Carbon Storage Licences issued**

**Track 1 & 2 Projects:**
CS004 - HyNet (Eni)*

**Carbon Storage Licence Round 1:**
CS010 - Morecambe (Spirit Energy)*+

Rights granted by TCE
* CSL overlaps with OSW
+ CSL overlaps with OFTO assets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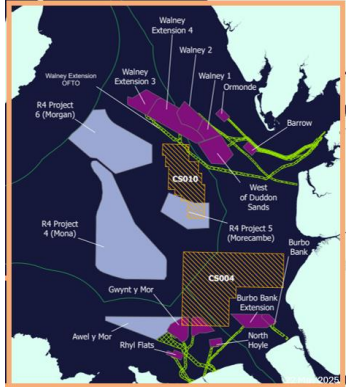
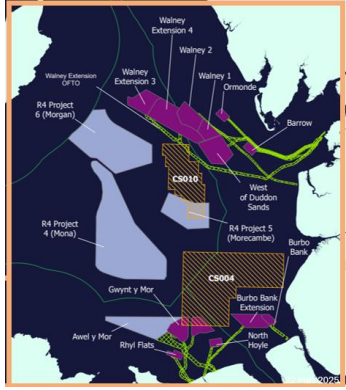
NSTA CCS LICENCES - SCOTLAND
NSTA Carbon Storage Licences
Crown Estate Scotland - Wind Agreements
Lease Type
Lease Marine
Agreement/Option for Lease
Renewable Energy Zone Limit and UK Continental Shelf
UKHO Territorial Waters Limits
Outer Moray Firth
Dr Nigel Platt
Apr-Sep-2024 &
Jan-Jun-2025
CS013
CS014
CS016
CS015
Sealtainn Offshore Wind Farm
Arven South
Arven Offshore Wind Farm
West of Orkney Wind Farm
Pentland Floating Offshore WF
Havbredey
Talisk Offshore Wind Project
Beatrice Offshore Wind Farm
Moray Offshore Windfarm (East)
Ayre Offshore Wind Farm
Stromar
Moray West
Buchan Offshore Wind Farm
Caledonia Offshore Wind Farm
Broadshore
CS012
CS003
CS011
Marram
Buchan Deep Demo
Muir Mhor
Aberdeen Offshore Wind Farm
Campion
Bowdun Offshore Wind Farm
Kincardine
Bellrock
Morven
Ossian Offshore Wind Farm
Seagreen Phase 1 Windfarm
Seagreen 1A Offshore Wind Farm
Inch Cape Offshore Wind Farm
Berwick Bank Wind Farm
Marr Bank Wind Farm
Neart na Gaoithe Offshore WF
MachairWind
2B Energy Methil Demonstration
Methil Demo

# Project Colocate: East Irish Sea Conclusions




- Geological risks vary regionally but not hugely – similar MMV techniques recommended and therefore colocation risks
- Many recommended MMV technologies well-based or require vessels – colocation problems
- Alternative technologies - Nothing quite as comprehensive as 3D seismic (where it is well suited)
- But seismic costly in marginal industry, not always geologically suitable, not feasible with OW
- Other geophysical technologies have valuable applications (where detectable) but have limitations (gravity, OBS, Spotlight?)
- Nonetheless, may be used to complement, support and verify each other and create a comprehensive portfolio
- Alternatives are increasingly colocation feasible due to ROV deployment, but vessel still required

# Project Colocate: East Irish Sea Conclusions



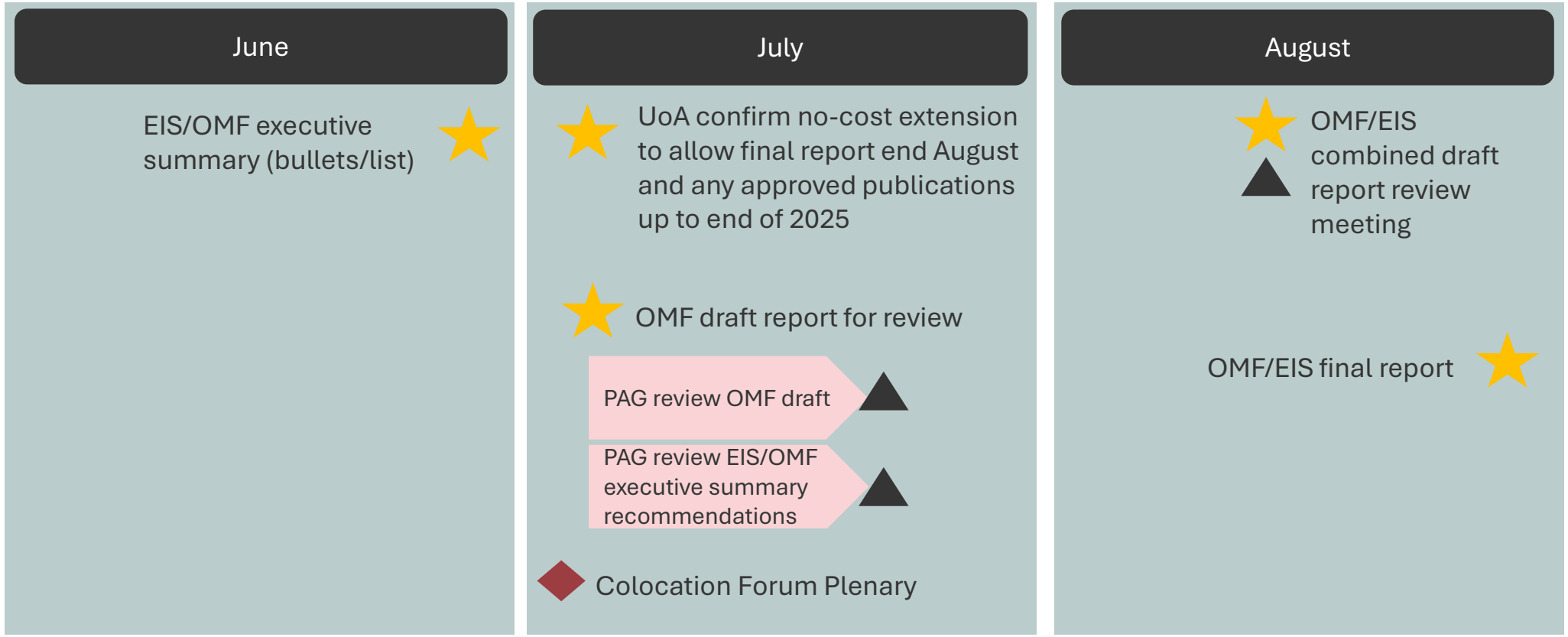

- Colocation problems with drilling-rig access and Well-based MMV/contingencies are more difficult to solve without OW compromise & planning - need to cater for wells (injection, monitoring, legacy risk, remediation) options:
  - Reduce area (through-going access corridors)
  - Widen turbine spacing (how wide is safe enough?)
  - Agreements to accept risks and liabilities?
- Case-by-case basis / site-specific (Risks, MMV suitability, colocation problems & solutions)
- Timing of development and degree of spatial overlap for each party is very important when considering colocation options
- There are MMV options with limited equipment & ROV deployment that make colocation likely feasible (providing vessel-access risks and safety distances are defined and limits standardised) – but well-access is difficult to solve without colocation compromise or avoidance


# Project Colocate: Outer Moray Firth Conclusions

- Carbon storage at Acorn and East Mey has been evaluated for over a decade, showing both areas as attractive for storage and close to a CO2-compliant pipeline from the abandoned Miller oilfield.
- Following technical studies, Acorn's initial plans were revised to focus on the depleted Goldeneye gas field. This shift also resulted in reduced overlap with the planned MarramWind windfarm.
- New oil and gas licences, however, are adjacent to Acorn and overlap with progressing windfarms. The East Mey licence area was revised to exclude producing oilfields while still overlapping with significant oil prospects.
- No windfarm proposals exist yet in East Mey, but nearby projects suggest future interest. New oil and gas drilling should be avoided in CCS reservoirs to prevent complications in managing carbon stores.
- The North Sea industry offers extensive experience in marine seismic surveying for tracking subsurface fluids, which can be adapted for monitoring CO2 injection. Alternative technologies are being considered for CCS monitoring, drawing lessons from the Sleipner CCS project offshore Norway, with promising new recording technologies like fibre-optic cables showing potential.

# Forward Plan

University of Aberdeen
Project Advisory Group
Colocation Forum



# 6. Project Anemone

Source: Freepik

# Anemone specification

- Investigate the operational challenges and opportunities presented by colocation through engaging with relevant stakeholders, with the aims of:
  - Providing developers with best-practice guidance for simultaneous operations
  - Helping wider marine stakeholders understand the risks and mitigations
  - Influence the policy and regulation needed to support colocation

- Project objectives:
  - Map regulatory and consenting
  - Identify and prioritise opportunities and challenges
  - Identify actions

# Project Anemone outline

| | Stage 1 – information gathering | Stage 2 – identify and prioritise opportunities and challenges | Stage 3 – create short list and guidance document |
|---|---|---|---|
| Activities | • Development of a communications and engagement plan<br>• Preliminary individual sessions with developers and operators to gain a current understanding of the regulatory and consenting processes and opportunities and challenges | • Hold a combined developers and operators workshop to develop long and short list of opportunities and challenges of colocation<br>• Anonymise findings and confirm these with individual sessions and secondary workshop | • Analyse information gathered during workshops to create a short list of opportunities and challenges<br>• Development of activities to realise potential opportunities and mitigate challenges<br>• Draft a guidance document for the short list |
| Outputs | Report setting out current understanding regarding regulatory and consenting processes, and the opportunities and challenges | Report setting out regulatory and consenting process, as well as a long list of opportunities and challenges of colocation | Report setting out prioritised list of activities required to realise the opportunities and overcome the challenges.<br>A guidance document ready for consultation with a prioritised short list of opportunities and challenges |

# Stakeholder groups & expected discussion topics

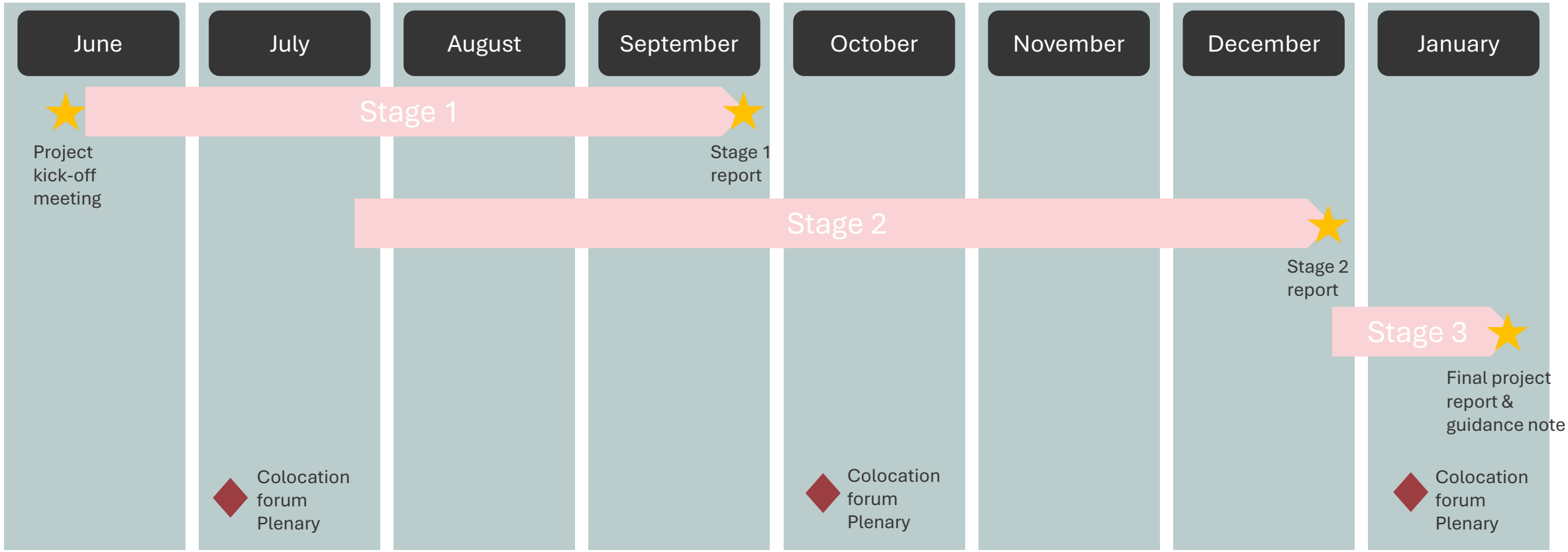
| Stakeholder Group | Expected topics related to each group |
|---|---|
| Industry associations | CCS sector risks and probabilities (leakage) |
| | OSW sector risks and probabilities (helicopter access) |
| Offshore wind developers & operators | Construction access impact |
| | Intervention access impact |
| | Shared service opportunity (power, data, maintenance) |
| | Collaborative design of multiple energy vectors |
| CCS developers & operators | Appraisal access impact |
| | Construction and Operational access impact |
| | Intervention access impact |
| | Shared service opportunity (power, data, maintenance) |
| O&G developers & operators | As per CCS above plus |
| | Decommissioning/repurposing of O&G infrastructure |
| Regulators | Changes to monitoring plan (monitoring footprint) |
| | Changes to Corrective Measures Plan (intervention footprint) |
| Seabed owners | Spatial prioritisation of each sector |
| | Temporal prioritisation of each sector (agreements) |

# Project Anemone deliverables

Key deliverables for Project Anemone include:

- Stakeholder Engagement and Communications plan
- Questionnaire for 1:1 conversations with operators and developers
- 2 end-of-stage reports
- Operators and developers workshop
- A final project deliverable consisting of a short-list of opportunities and challenges from Stages 1 and 2 will require mutual agreement based on importance weighting. A further guidance note will give details of the short-listed items. Due to the emerging nature of the coexistence of the three energy vectors (OSW, CCS, O&G) this document will be recommended good practice at this stage.
- This final deliverable will be published by the Sponsors through the Colocation Forum and OEUK publications and fully available at no further charge in the public domain. Future use of the intellectual property contained within the project documents will be available to all of the Parties.

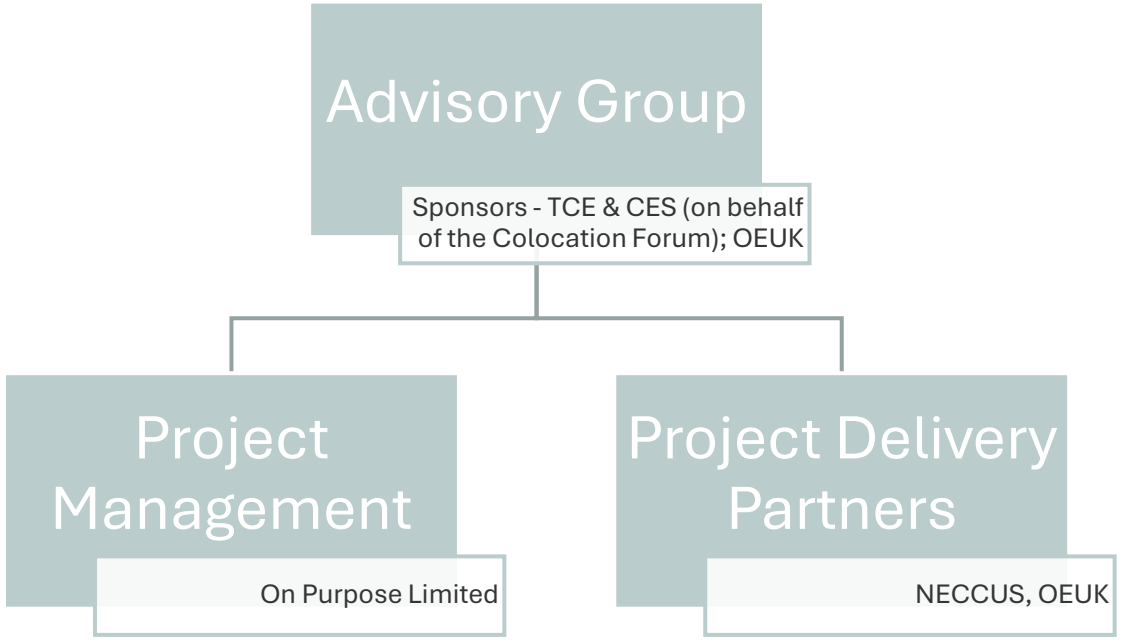
# Indicative timeline




*timelines subject to change

# Governance

- Steered by the Project Advisory Group, made up with members from OEUK, CES and TCE.
- Fortnightly project check-ins
- Monthly Project Advisory Group meetings to receive an update on project progress
- Forum briefings on stage 1 outputs at Autumn plenary; to receive the final project report at January 2026 plenary



# Next steps

- ✓Finalise joint agreements
- ✓Agree PAG attendees
- ✓Set-up project documentation and shared online workspaces as part of project initiation

# 7. 2025 Planning

# 2025-2026 Plan

| Project | Commentary | Close out date |
|---|---|---|
| Colocate | • Project completed, with report to be shared with Forum Autumn | August 2025 |
| Anemone | • Project kick-off meeting carried out in June 2025<br>• Project to be carried out in three stages across 2025/early 2026 | January 2026 |
| Risk assurance | • Kick-off planned for Winter 2025/2026<br>• To be led by Helen Hallsworth | TBC |
| Developer event | • Joint developer event to be held | TBC (Jan – Mar 2026) |
| Comms plan | • To guide sharing of project information with industry<br>• Aim is to raise profile of the Forum | TBC |
| Technological innovation | • To build upon list of commonly expressed issues | TBC |

# AOB

# AOB

- Actions review
- Meeting time