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## MaRS Aims & Objectives

- To provide information to support marine assessment within The Crown Estate
- Support our strategic role
- Shift towards proactive analysis
- Enable long-term sustainable decisions to be made





# MaRS

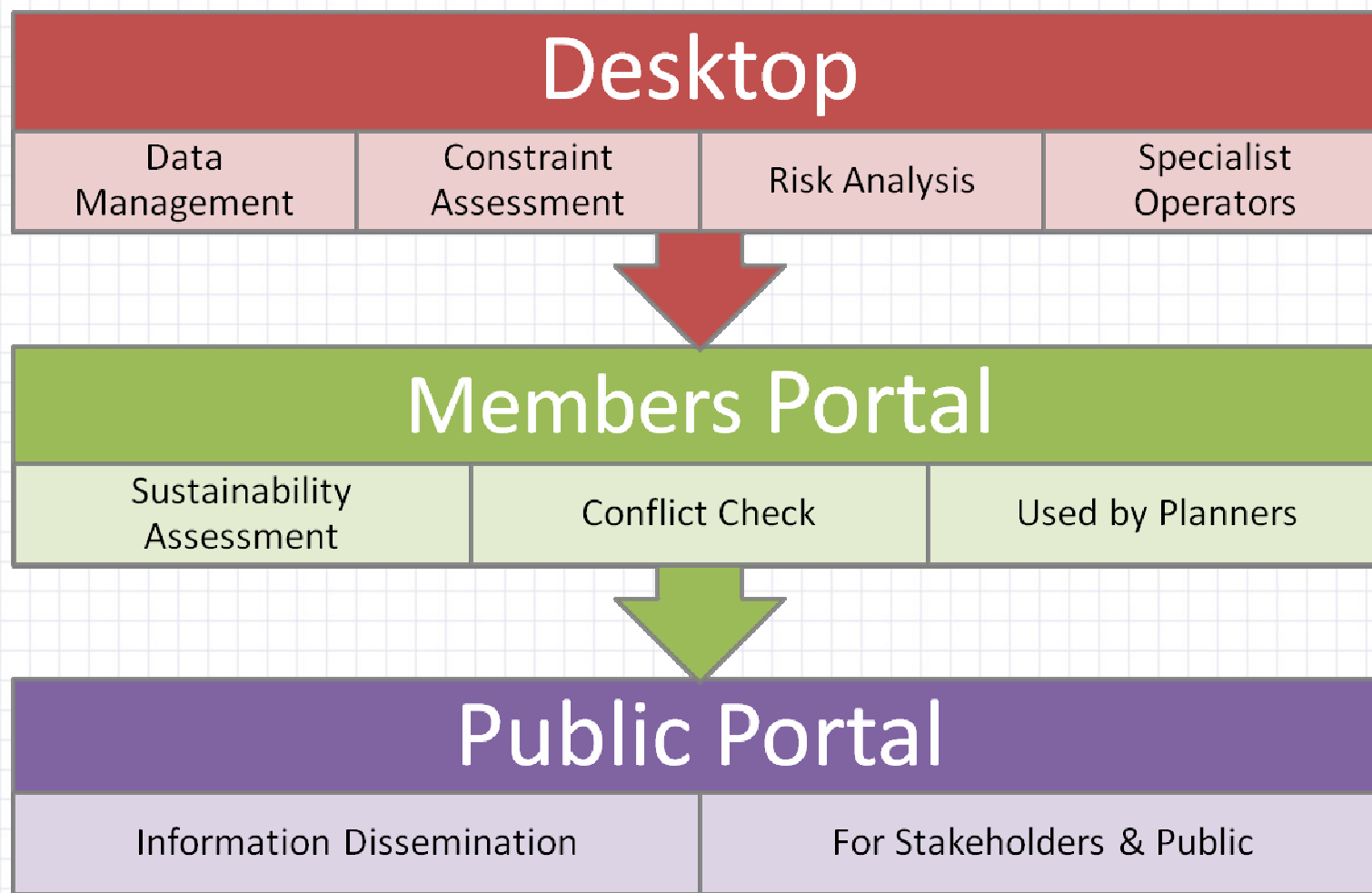
Marine Resource System

## Potential Uses

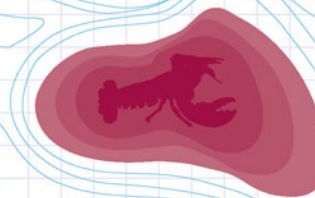
- Analysis to support 9 business sectors within The Crown Estate
- Proactive proposal assessment
- Assist with wider needs?
  - Marine planning?
  - Environmental protection?
  - Natural resources?
  - Coastal?
  - Onshore?



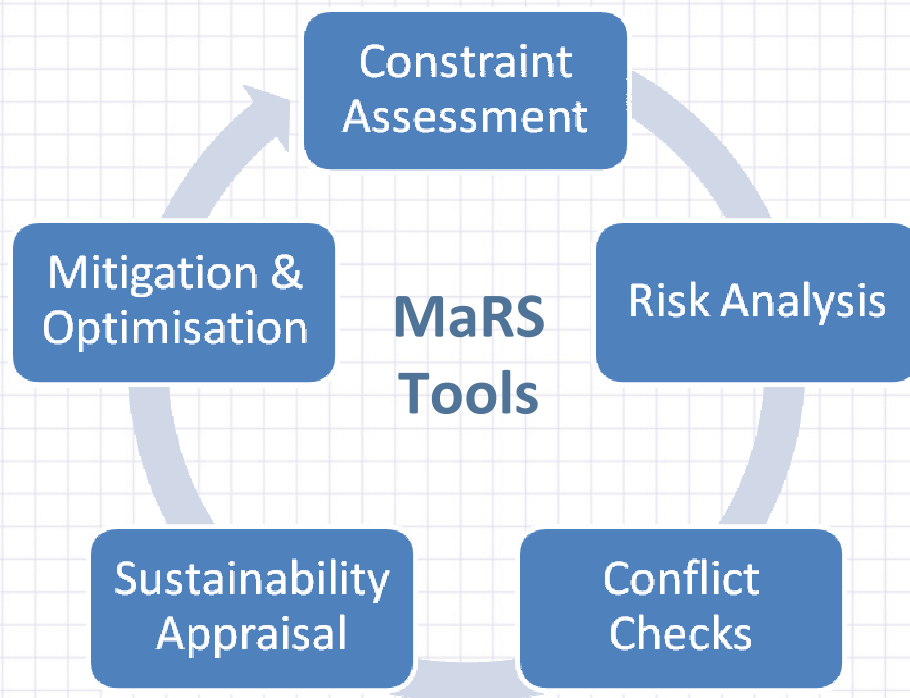
**THE CROWN  
ESTATE**



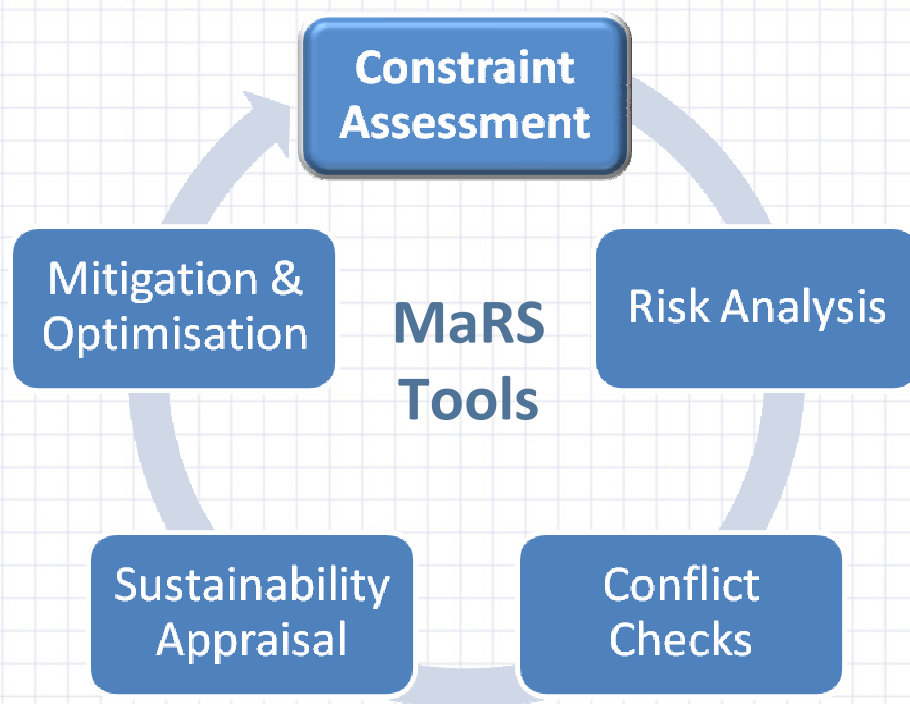




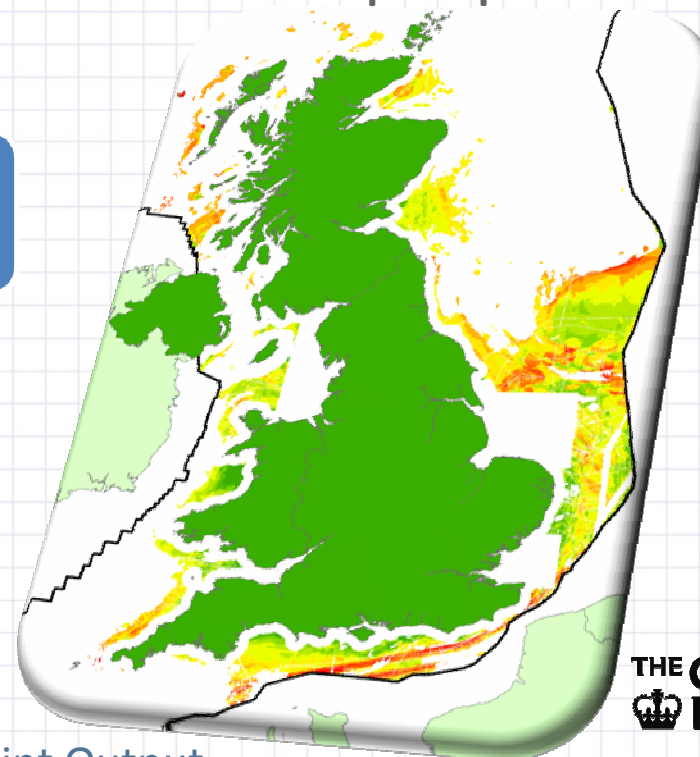
## System Functionality



## System Functionality



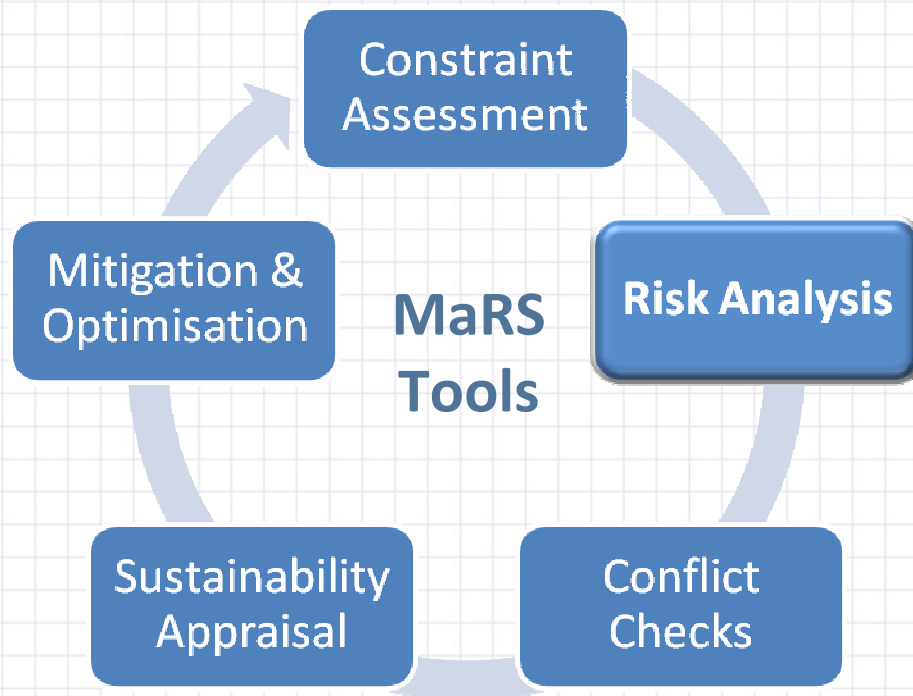
- Multi-Criteria Analysis
- Driven by Policy
- Heat Map Output



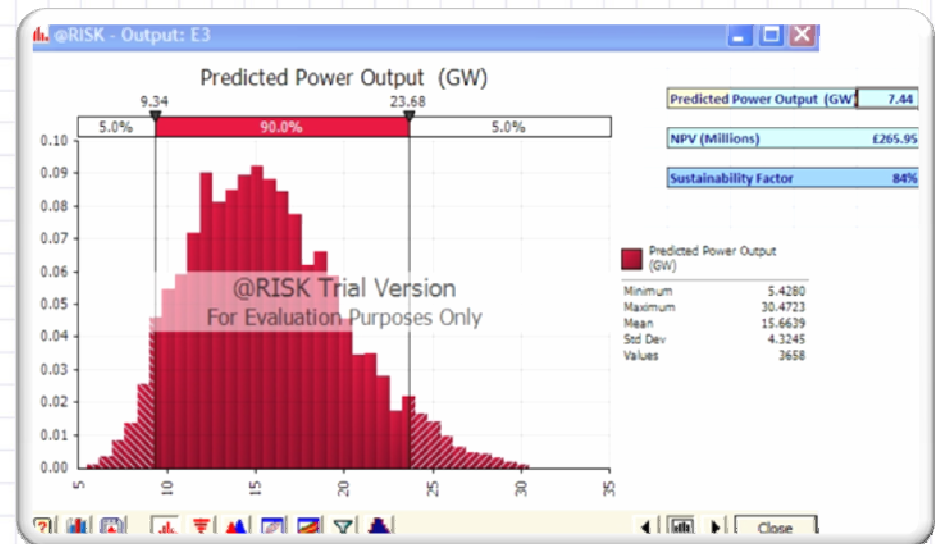
Constraint Output



## System Functionality



- @Risk Software
- Data Quality, Coverage & Analysis
- Financial Risk Assessment



Financial Analysis Results

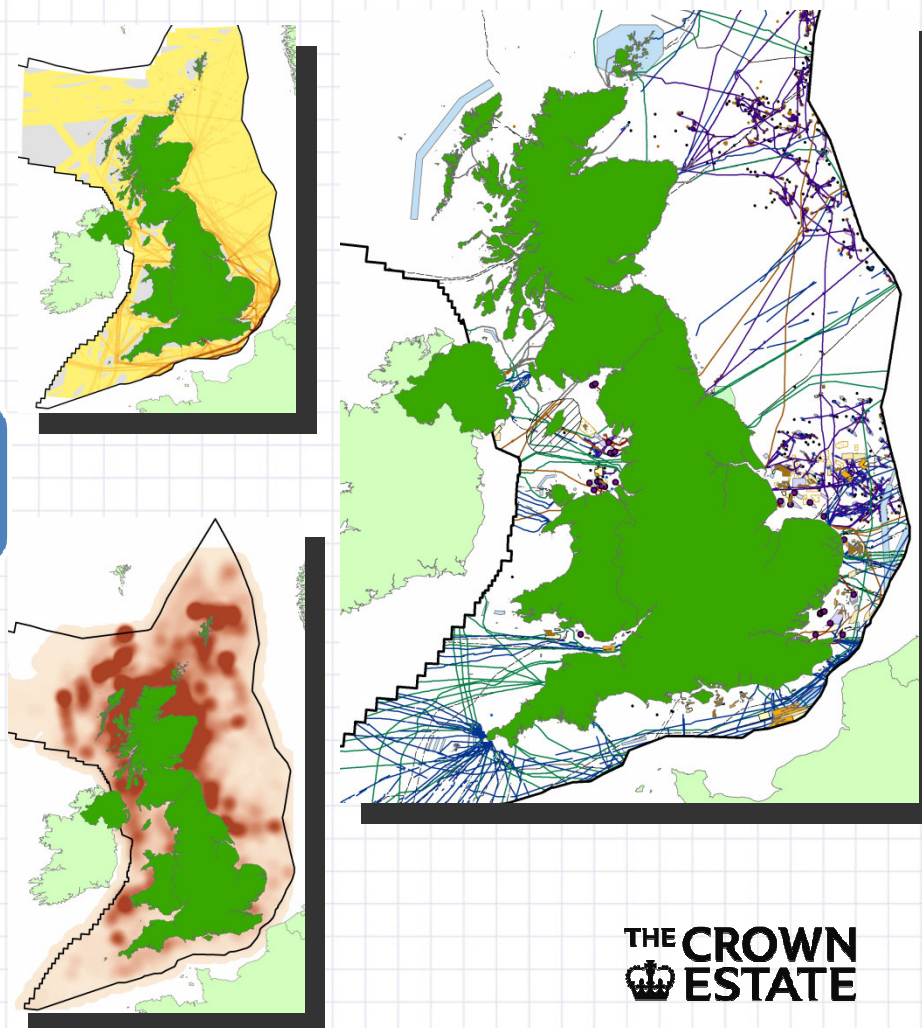
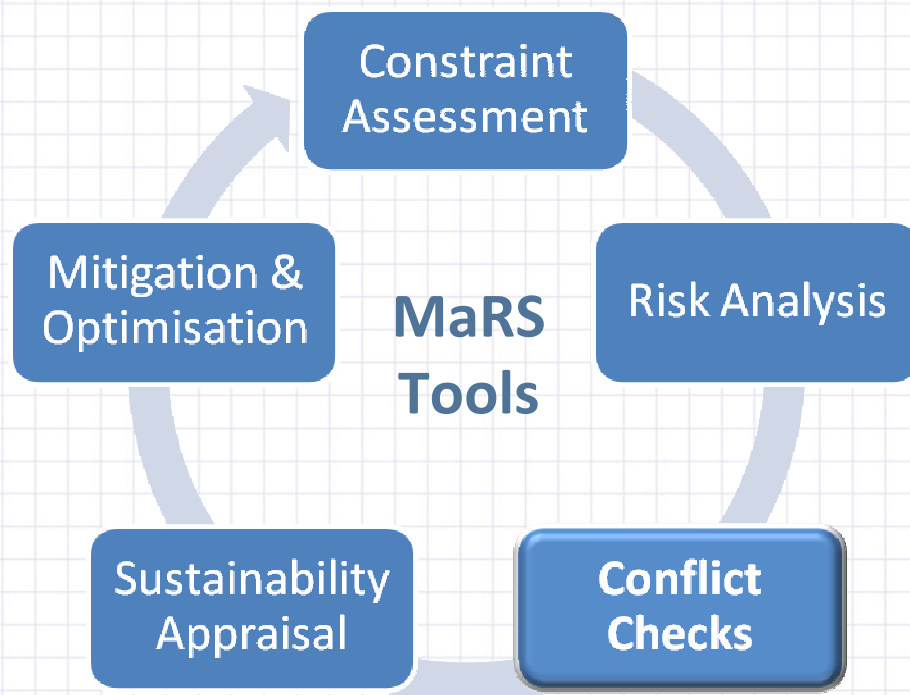


# MaRS

Marine Resource System

Intersection & Interaction Datasets

## System Functionality



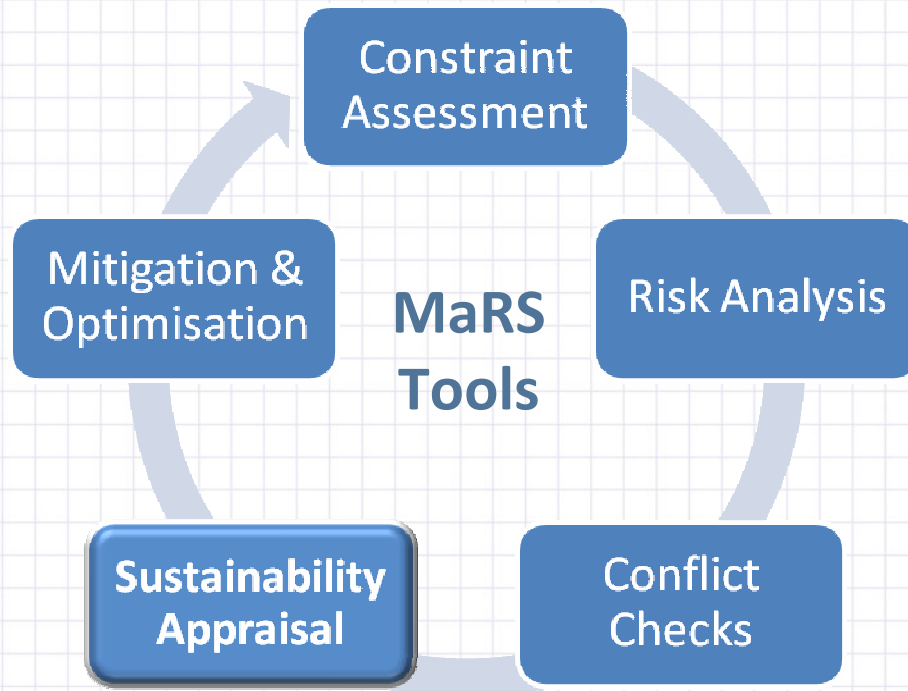
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**MaRS**

Marine Resource System

## System Functionality



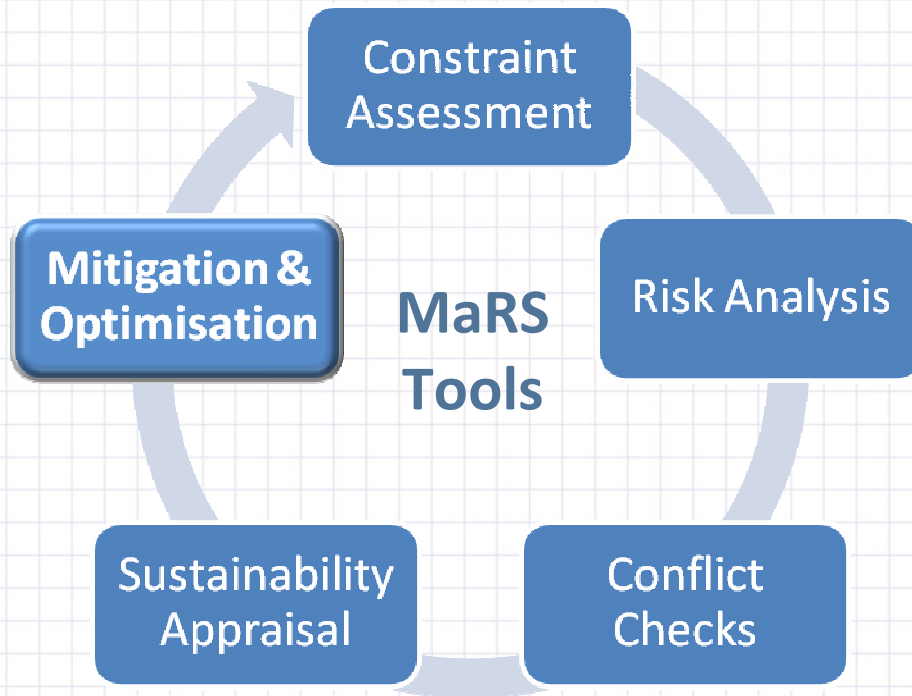
## Aspiration for Sustainability

- Manage according to Shared UK Principles of Sustainable Development
- Compare Marine Estate Activities with each other
- Assess the impact on an individual activity on the entire portfolio
- Track change in sustainability over time

# MaRS

Marine Resource System

## System Functionality



- Can the proposal be improved?
- Iterative process combining all elements of functionality



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**MaRS**

Marine Resource System

## Shared UK Principles of Sustainable Development

### **Living Within Environmental Limits**

Respecting the limits of the planet's environment, resources and biodiversity - to improve our environment and ensure that the natural resources needed for life are unimpaired and remain so for future generations.

### **Ensuring a Strong, Healthy & Just Society**

Meeting the diverse needs of all people in existing and future communities, promoting personal well-being, social cohesion and inclusion, and creating equal opportunity for all.

### **Achieving a Sustainable Economy**

Building a strong, stable and sustainable economy which provides prosperity and opportunities for all, and in which environmental and social costs fall on those who impose them (Polluter Pays), and efficient resource use is incentivised.

### **Using Sound Science Responsibly**

Ensuring policy is developed and implemented on the basis of strong scientific evidence, whilst taking into account scientific uncertainty (through the Precautionary Principle) as well as public attitudes and values.

### **Promoting Good Governance**

Actively promoting effective, participative systems of governance in all levels of society - engaging people's creativity, energy, and diversity.

## Shared Principles of Sustainability

- Sustainability assessment is in its infancy (no agreed approach)
- There are common principles
  - conservation of biodiversity and ecological integrity;
  - ensuring appropriate valuation, appreciation and restoration of nature;
  - integration of environmental, social, human and economic goals in policies and activities;
  - no net loss of human or natural capital;
  - dealing transparently and systemically with risk, uncertainty and irreversibility;
  - ensuring inter-generational equity;
  - equal opportunity and community participation;
  - a commitment to best practice;
  - the principle of continuous improvement.



## Key Features of Sustainability Assessment within MaRS

- Our process is designed to reflect sustainability principles as well as:
  - Items monitored, measured and described should be relevant to the Marine Estate
  - Scientifically sound and statistically valid
  - Comparable over time and space
  - Supported by available data
  - Understandable



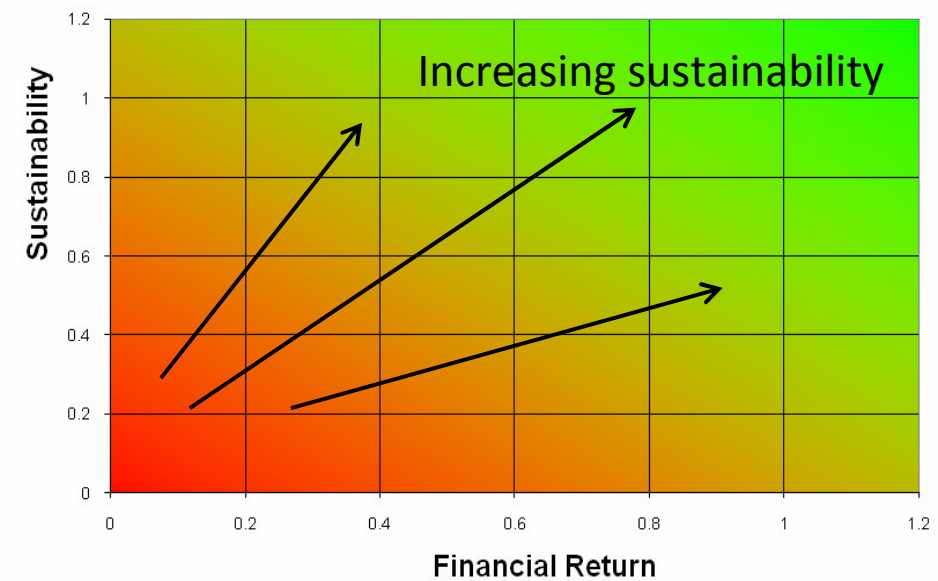




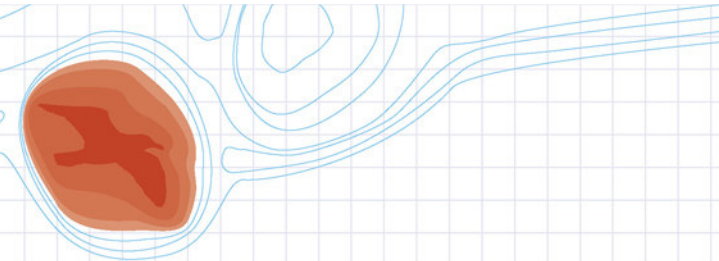
## Reality for Sustainability

- Sustainability will be traded with financial return (as required by The Crown Estate Act)
- Acceptable values?
- No-go zones?
- Need to incorporate risk-based approach
- 4 Step Process
  - Objectives, Indicators, Measures, Metrics

### Sustainability Assessment Diagram (SAD)



Objectives	Indicators
<ul style="list-style-type: none"> <li>Ensure ecosystem integrity over the long term.</li> </ul>	<ol style="list-style-type: none"> <li>Effective monitoring and management of the marine environment.</li> <li>Impact on habitats and species.</li> </ol>
<ul style="list-style-type: none"> <li>Mitigate the impact of climate change.</li> </ul>	<ol style="list-style-type: none"> <li>Greenhouse gases emitted and displaced.</li> </ol>
<ul style="list-style-type: none"> <li>Adapt sensitively and appropriately to the effects of climate change.</li> </ul>	<ol style="list-style-type: none"> <li>Adaptation-specific undertakings.</li> </ol>
<ul style="list-style-type: none"> <li>Promote and support a dynamic and sustainable marine economy.</li> </ul>	<ol style="list-style-type: none"> <li>Employment generated.</li> <li>Value added.</li> <li>Durability.</li> </ol>
<ul style="list-style-type: none"> <li>Respect the right of future generations to the use of present resources.</li> </ul>	<ol style="list-style-type: none"> <li>Use of non-renewable resources.</li> </ol>
<ul style="list-style-type: none"> <li>Enhance community well-being.</li> </ul>	<ol style="list-style-type: none"> <li>Security of energy supply.</li> <li>Education and understanding.</li> <li>Net social benefits.</li> </ol>
<ul style="list-style-type: none"> <li>Enjoy the support, trust and enthusiasm of local communities.</li> </ul>	<ol style="list-style-type: none"> <li>Public acceptability.</li> </ol>



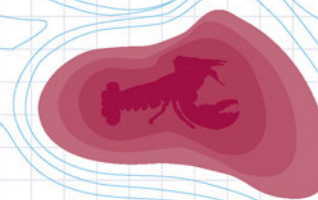
	Indicator		Measures
2.	Impact on habitats and species.	2.1	Effects of noise.
		2.2	Incidence of pollution.
		2.3	Physical damage to features and biotopes.
		2.4	Recovery of marine and coastal habitats and communities.

	Measures	Metrics
2.1	Effects of noise.	Behavioural and physiological effects on coastal and marine mammals, birds and fish associated with construction and operational noise.
2.2	Incidence of pollution.	Number and severity of polluting incidents per year.
2.3	Physical damage to features and biotopes.	Observed damage to the seabed, the coastline and to benthic and coastal communities.
		Evidence of displacement and barrier effects, collision risks and lighting trauma.
2.4	Recovery of marine and coastal habitats and communities.	Evidence of recovery of marine and coastal habitats and communities.
		Rate of colonisation and recovery of <i>Sabellaria spinulosa</i> .
		Life history traits of marine invertebrates.

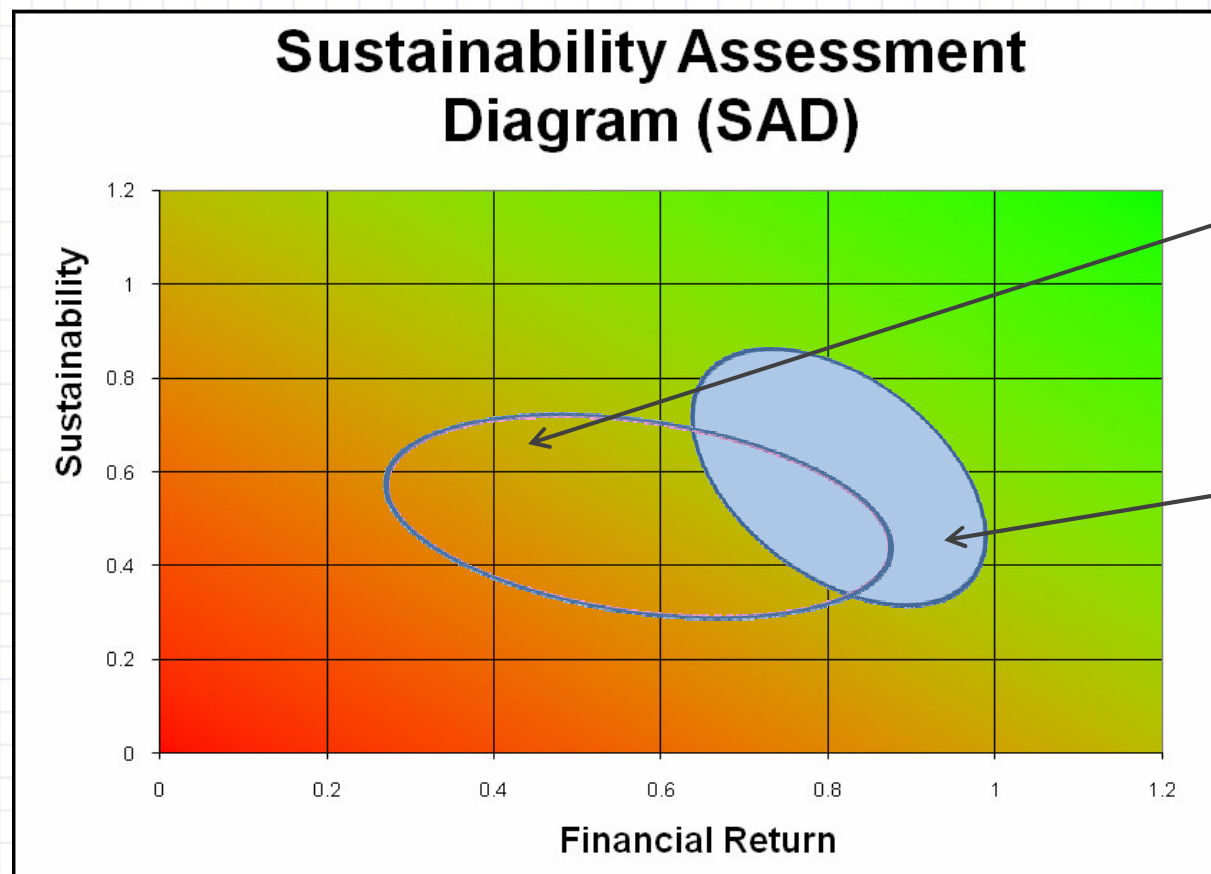


# MaRS

Marine Resource System



Metrics	Wind	W&T	CCS	Aggs	Aqua
Multi-stakeholder monitoring programme in place and functioning.					
Incidents of irreparable or temporary damage to protected areas and historic environments.					
Behavioural and physiological effects on marine mammals, birds and fish associated with construction and operational noise.					
Number and severity of incidents of polluting incidents per year.					
Evidence of displacement and barrier effects, collision risk and lighting trauma.					
Evidence of recovery of marine and coastal habitats and communities.					
Rate of recolonisation and recovery of <i>Sabellaria spinulosa</i> .					
Volume of marine gas oil (or marine diesel oil) used annually.					
Life cycle volume of CO <sub>2</sub> emissions annualised by length of lease.					
Volume of CO <sub>2</sub> displaced and stored annually as a proportion of UK CO <sub>2</sub> emissions.					



Now

2020

## Conclusions

- There is no agreed universal method for calculating sustainability however there are shared principles
- It is not possible to quantify many of the metrics that we would like to calculate sustainability
- This is a bigger problem in the marine environment due to gaps in data & knowledge





## Any Questions?

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