



# Spatial support tools for the interactive development of planning strategies

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PhD research 2010-2014, 'Knowledge from Climate'

# Research question

- How to support stakeholders with the interpretation of detailed and complex spatial information?

## Map-reading



# Interaction

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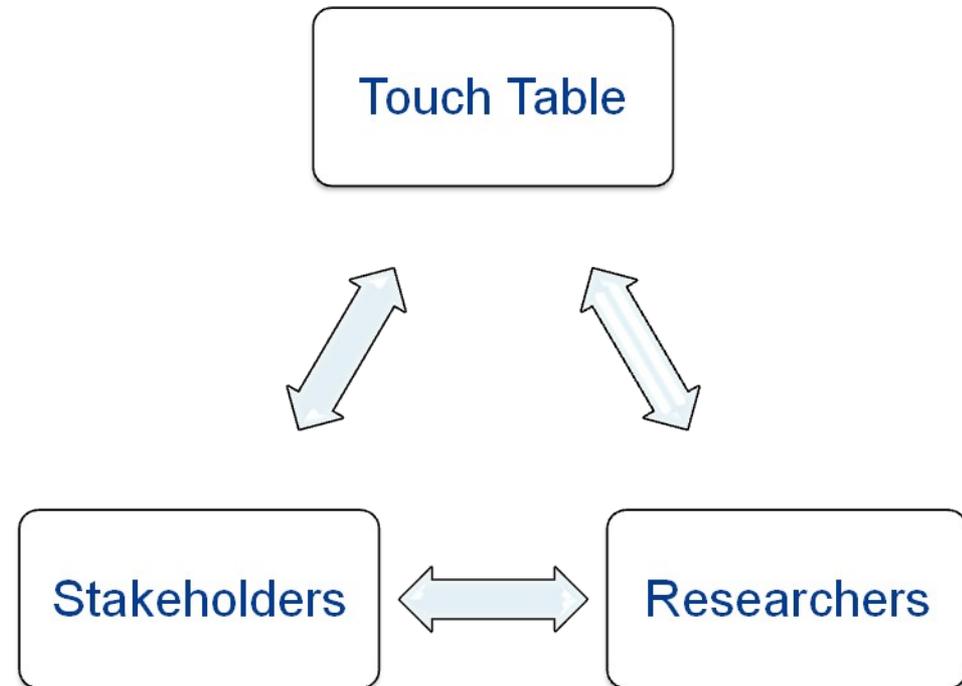
- Participation → involvement
- Knowledge exchange
- Combination of stakeholders and researchers
- Increases the understanding of underlying mechanisms
- Influence on data usage (zooming, swiping)

# Spatial Support Tools

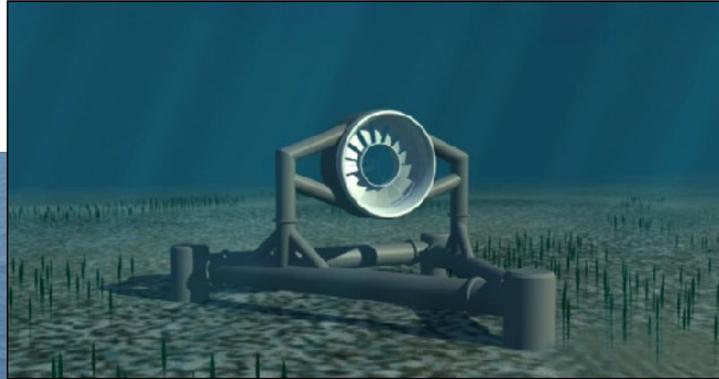
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- Transparent
- Designed based on stakeholder needs
- The amount of information that can be handled by stakeholders is limited
- Stimulate thinking
- Support communication
- Initiate discussion

# The workshop concept



# Planning for tidal devices around the Mull of Kintyre, Scotland



# Stakeholders

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- Tidal energy developers
- Fishing
- Commercial shipping
- Recreational shipping
- Tourism
- Environment
- Cultural Heritage

# Two Workshops in Campbeltown



## ■ *Local knowledge workshop* **May 3**

- Drawing
- Scoring

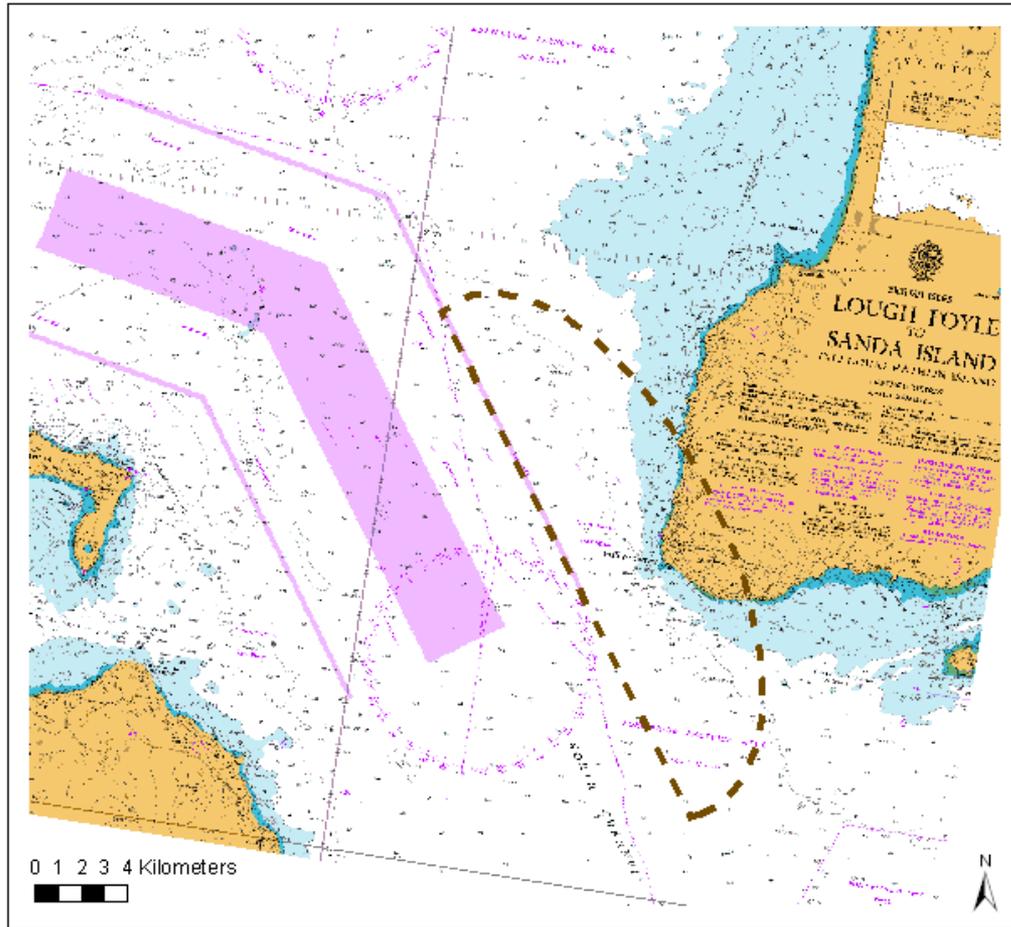
→ Tool: Valuation of objectives in value maps

## ■ *Negotiation workshop* **May 5**

- Allocation of devices

→ Tool: Negotiation support between (group) objectives in best/worst maps

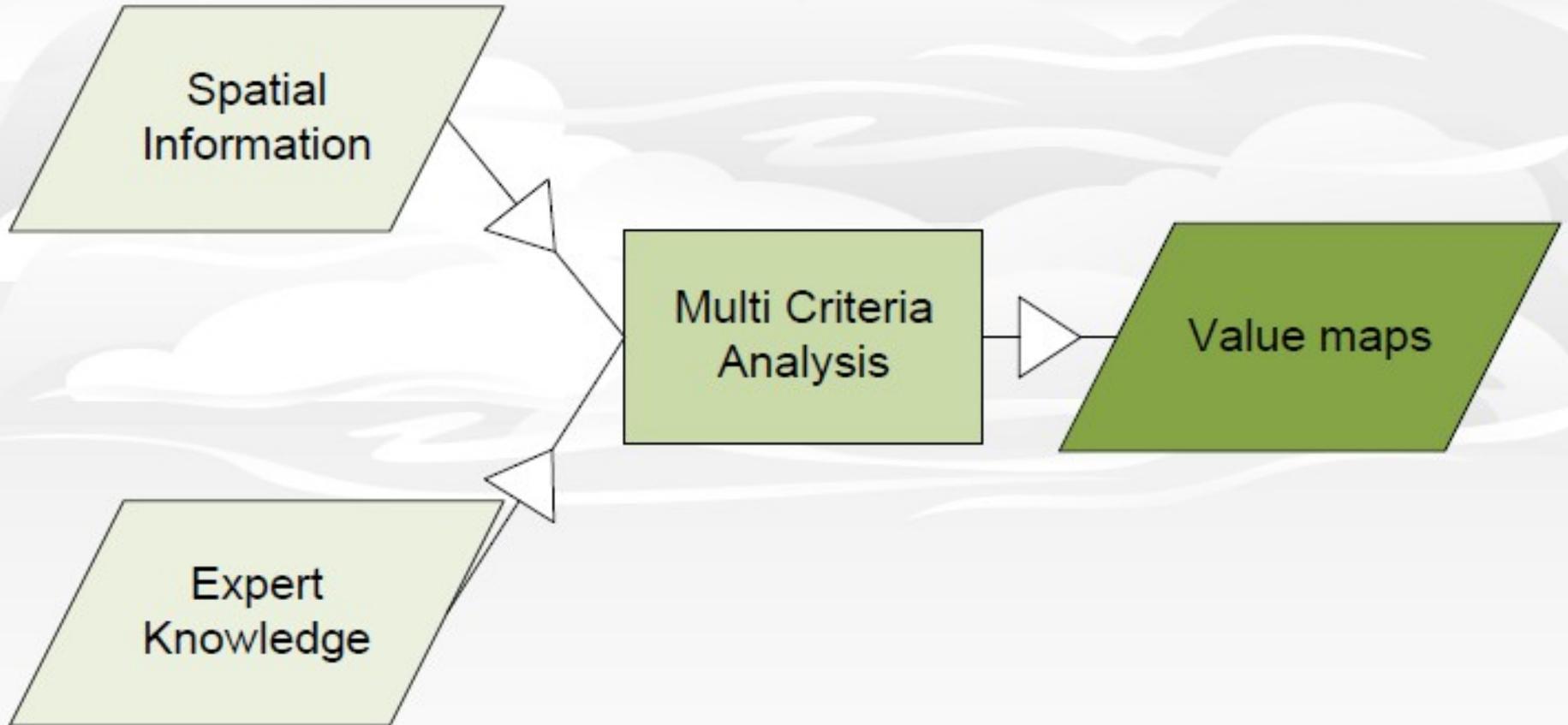
# Study area



## Legend

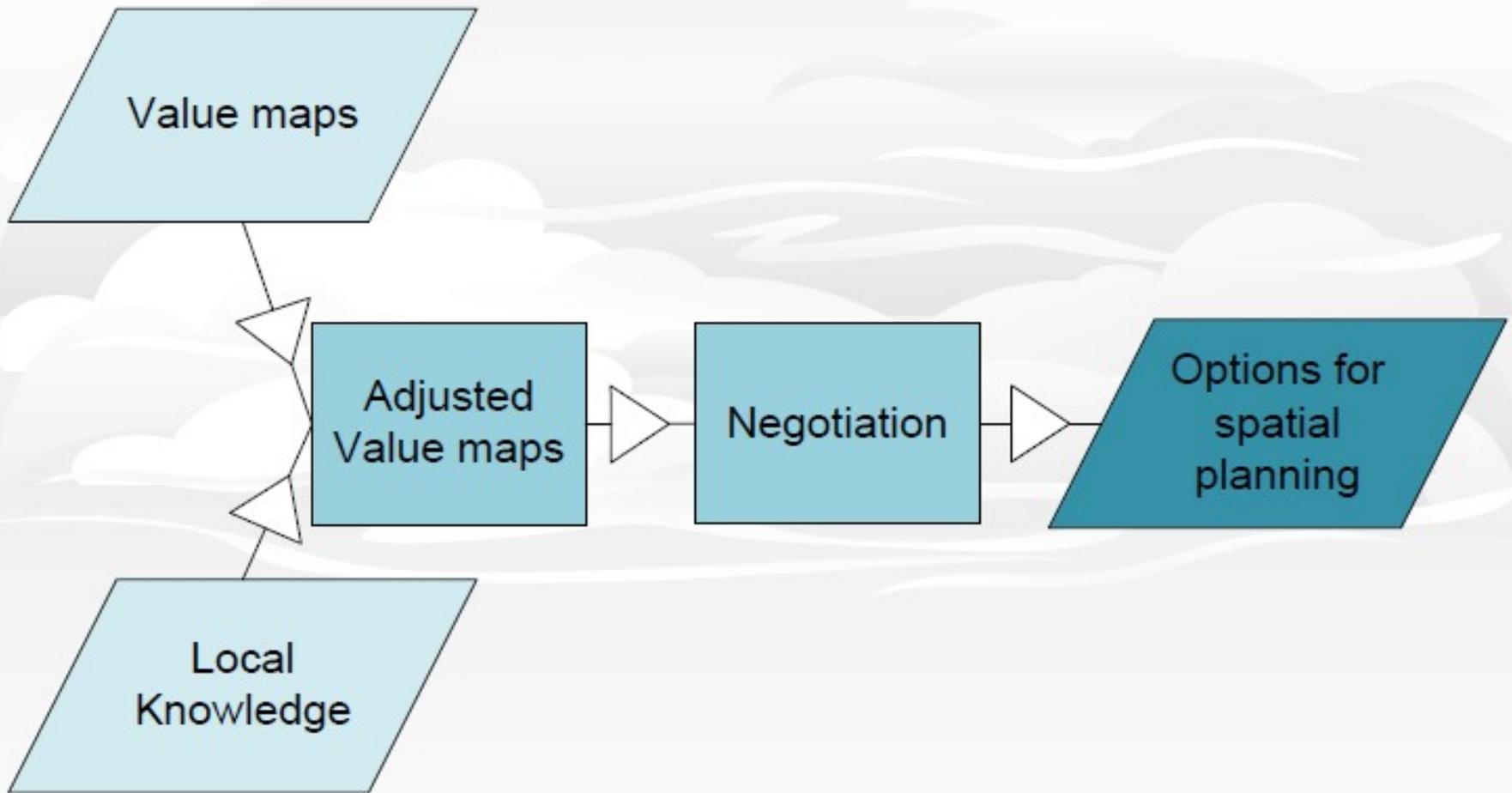
 Study Area

# Preparation



- Spatial information was converted to values of range 1-10
- Weighted for each stakeholder group

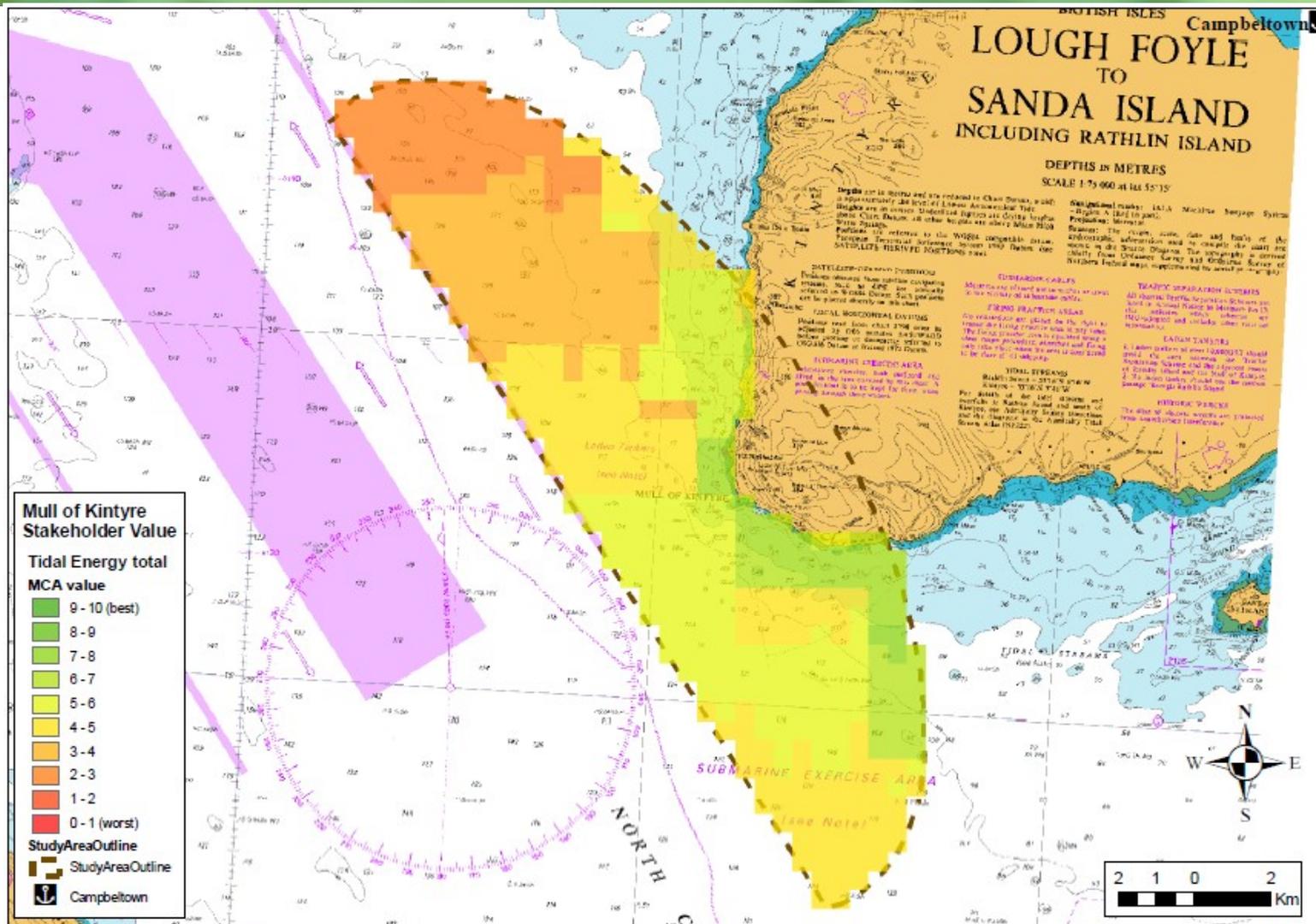
# Workshops



# Local Knowledge workshop



# Value map: Tidal Energy



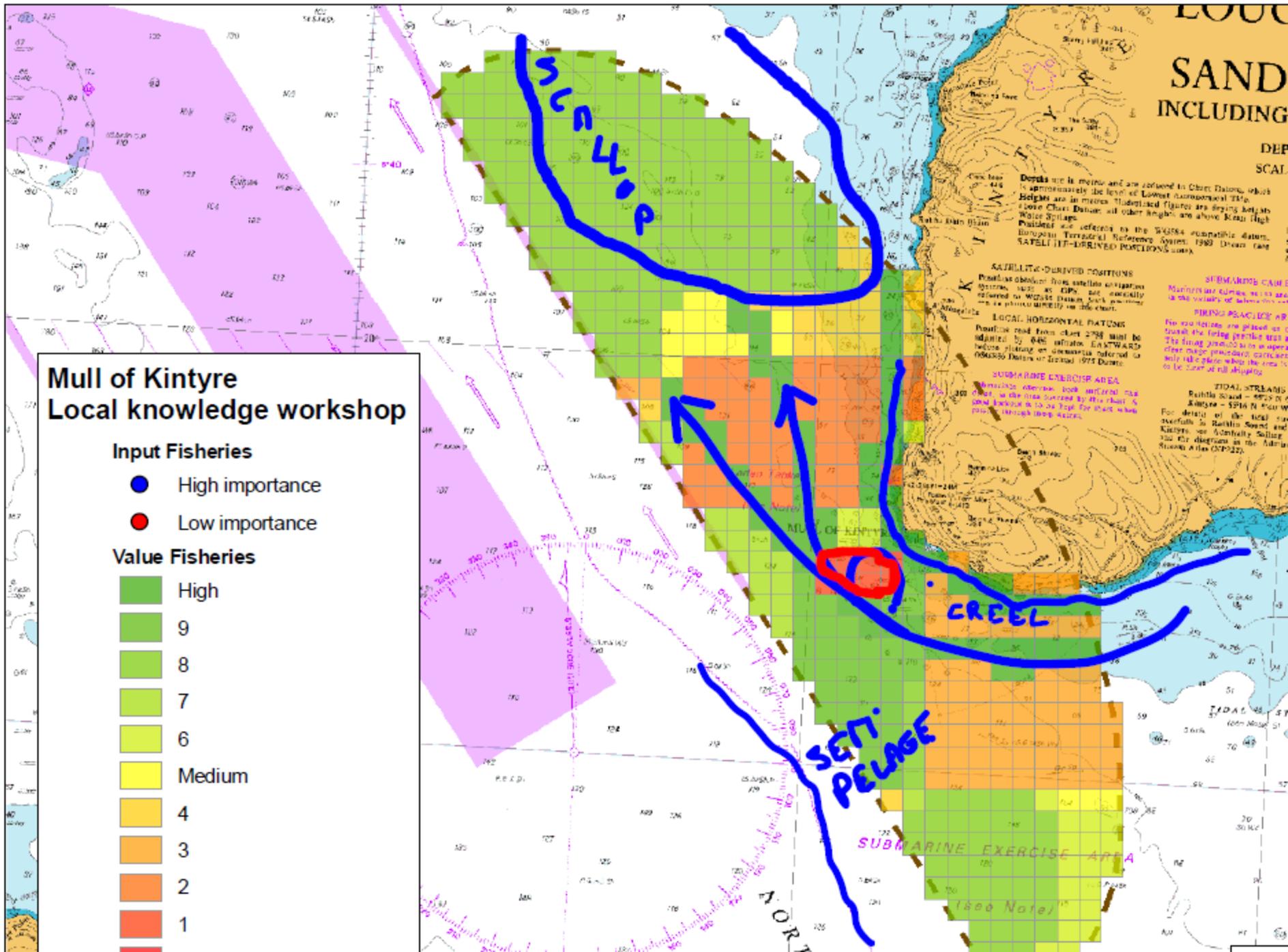
# Mull of Kintyre Local knowledge workshop

## Input Fisheries

- High importance
- Low importance

## Value Fisheries

- High
- 9
- 8
- 7
- 6
- Medium
- 4
- 3
- 2
- 1



**Derks** are in metres and are referred to Chart Datum, which is approximately the level of Lowest Astronomical Tide.  
**Height** are in metres. Indicated figures are drying heights above Chart Datum; all other heights are above Mean High Water Springs.  
**Positions** are referred to the WGS84 geomatic datum, European Terrestrial Reference System, 1989 Datum (see SATELLITE-DERIVED POSITIONS).

**SATELLITE-DERIVED POSITIONS**  
 Positions obtained from satellite navigation systems, such as GPS, are generally referred to WGS84 Datum, which is more precise than the datum used in this chart.

**LOCAL HORIZONTAL POSITIONS**  
 Positions read from charts 2798 must be adjusted by 0.45 minutes EASTWARD before plotting or comparison referred to Ordnance Datum or Revised 1975 Datum.

**SUBMARINE EXERCISE AREA**  
 Exercise area, both surface and subsurface, in the area covered by this chart. A small exercise is to be kept for which there is no through deep access.

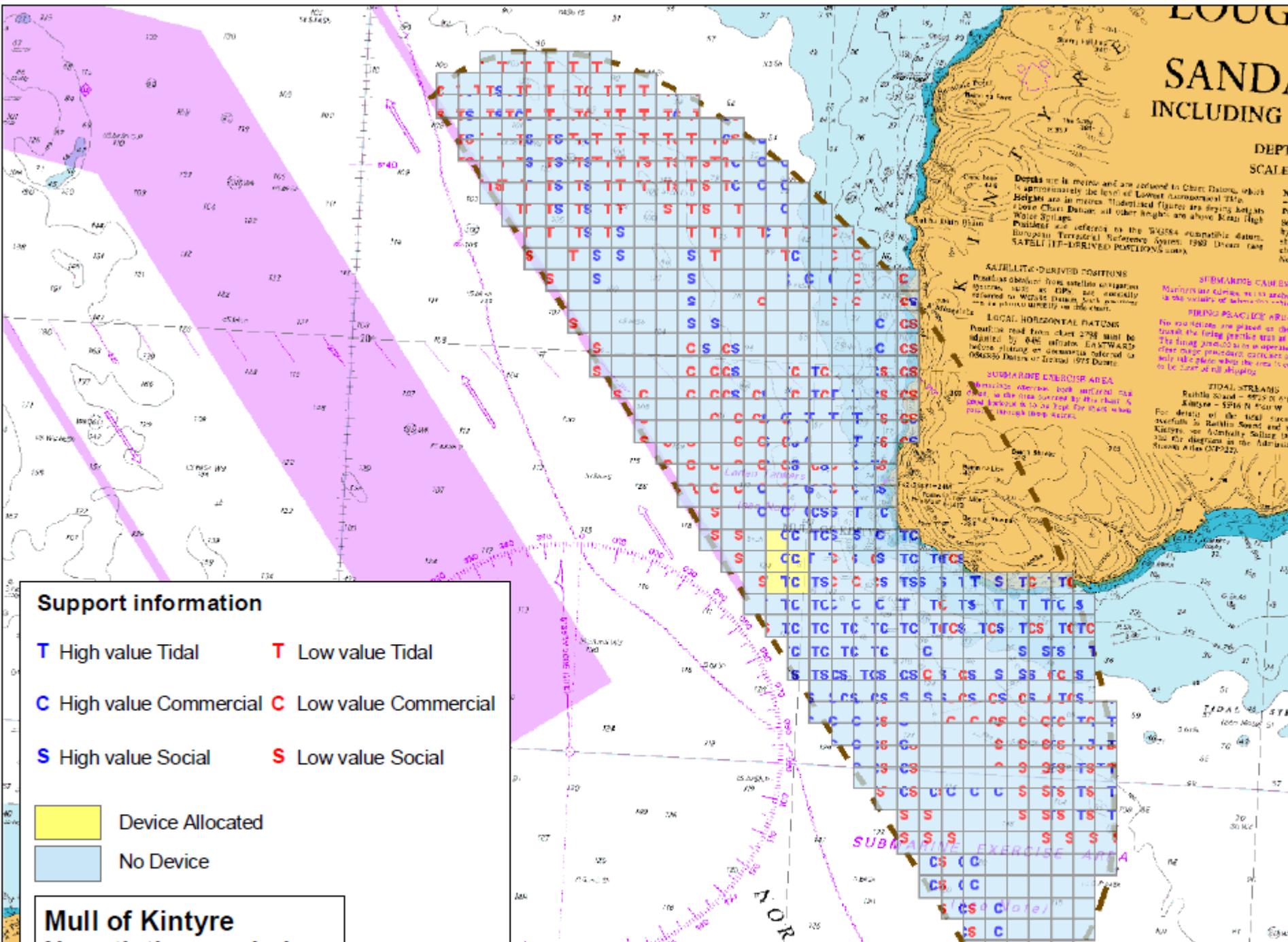
**SEISMIC CABLE**  
 Marine seismic cable, in use, in the vicinity of Mull of Kintyre.

**PIPING PRACTICE**  
 For 200 metres, one placed on each side of the fishing practice area. The fishing practice area is a separate area, the practice area, and will not be placed when the area is to be used at all heights.

**TIDAL STREAMS**  
 Roshil Road - 090° E of Mull of Kintyre - 5°16' N 5°00' W  
 For details of the tidal stream currents in Roshil Road and Kintyre, see Admiralty Sailing Chart No. 2798, in the Admiralty Sailing Atlas (2798/2).

# Negotiation workshop





**Support information**

- T** High value Tidal      **T** Low value Tidal
- C** High value Commercial   **C** Low value Commercial
- S** High value Social        **S** Low value Social

- Device Allocated
- No Device

**Mull of Kintyre  
Negotiation workshop**

**DEPT SCALE**

Depths are in metres and are referred to Chart Datum, which is approximately the level of Lowest Neap Spring Tide. Heights are in metres. Underlined figures are drying heights above Chart Datum; all other heights are above Mean High Water Springs. Underline also refers to the WGS84 compatible datum. European Terrestrial Reference System 1989 (mean sea level) (IT-RRRINED POSITIONS) (2011).

**SUBMERGED CAIRNS**  
Markings are colour-coded to indicate the nature of the structure.

**PIPING PLACED AROUND**  
No pipelanes are placed on the ground the being marked with a 'P'. The flag marking is to be operated clear of the ground; operators should only take place when the area is clear of all shipping.

**TIDAL STREAMS**  
Buoyline Speed - 0.25 m/s  
Kintyre - 0.25 m/s  
For details of the tidal currents, see the Admiralty Sailing Directions for the Mull of Kintyre and the Mull of Galloway (ADM 2022).

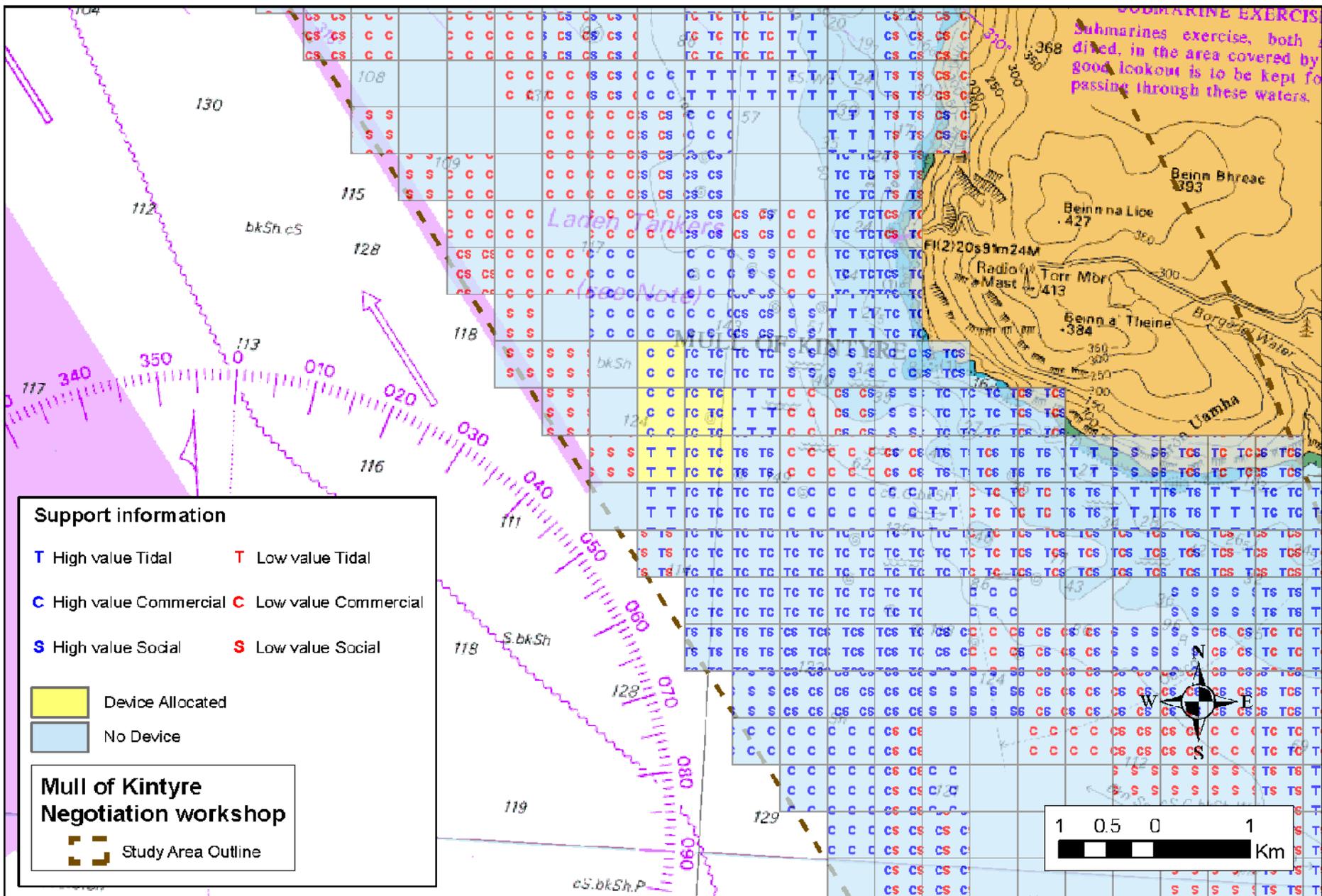
**SATELLITE-DERIVED POSITIONS**  
Positions obtained from satellite navigation systems, such as GPS, are normally referred to WGS84 datum. Such positions are not plotted directly on this chart.

**LOCAL HORIZONTAL DATUMS**  
Bearing read from chart 2758 must be adjusted by 0.45 minutes EASTWARD before plotting on positions referred to OSNEDD datum or datum 1975 datum.

**SUBMERGED CAIRNS AREA**  
Submerged cairns, look outwards the shore, in the area covered by the chart. A cairn is a small structure of stones or shells, used for marking a point through steep rocks.

SUBMERGED EXERCISE AREA

AORT



# Values per stakeholder

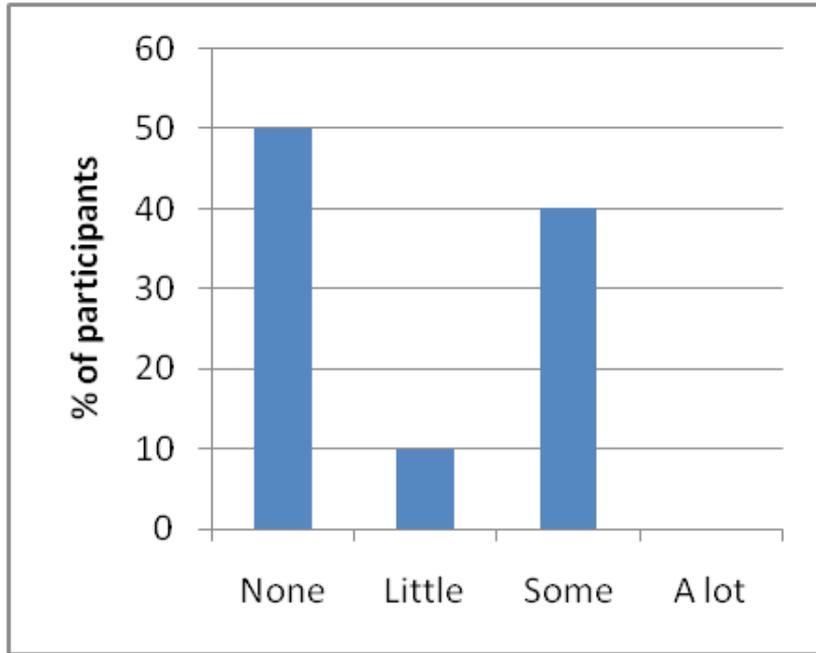


# Outcomes questionnaire

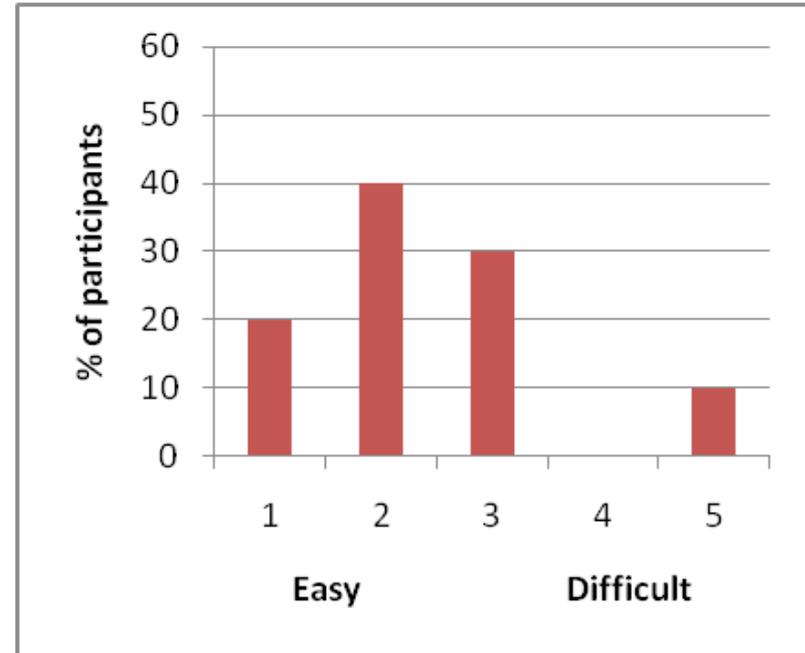
- The workshop did fulfill their expectations (sometimes even more)
- The combination of **stakeholders, researchers and the touch table** was found a useful source of information and helps to analyze the problem
- All respondents recommend the workshop concept to others

# Using the Touch Table

How much experience do you have with multimedia with 'Touch Functionality'?



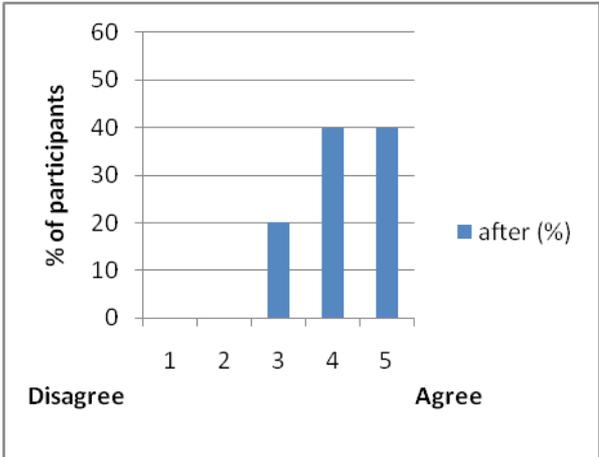
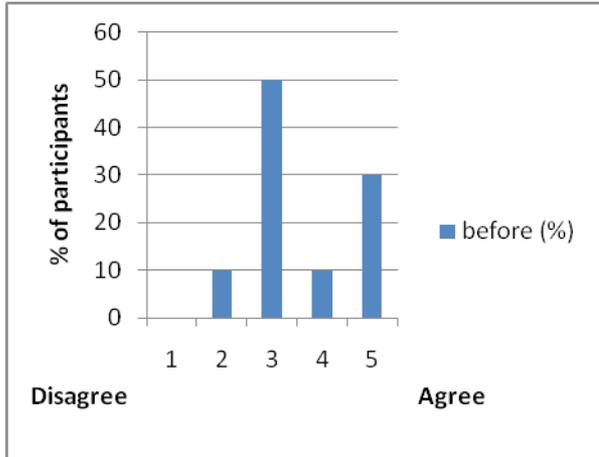
What did you think of the operation of the Touch Table?



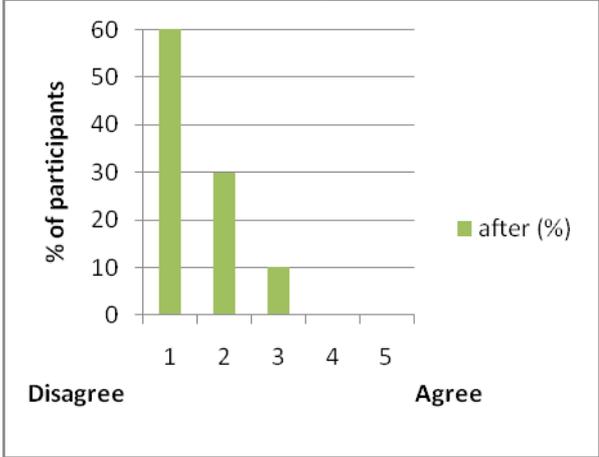
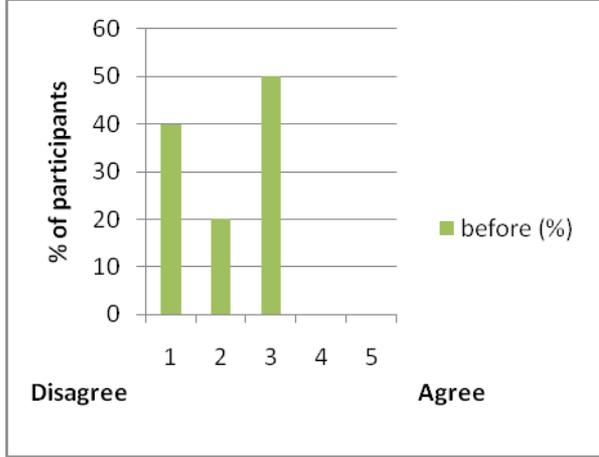
- Although little or no experience, most of the respondents found it fairly easy to use the touch table

# Change in opinions of stakeholders

## The interactivity of the Touch Table has a high added value



## The Touch Table is nothing more than a new gadget



# Added value of Touch Table

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- In- and Out zooming
- Transparency overlay with background maps
- Drawing
- Swiping
- Comparing different options

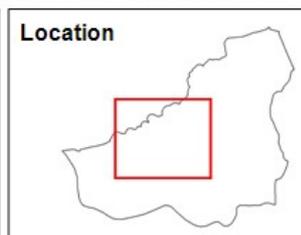
Points for improvement:

User-friendliness, accessibility of information

# Peat Meadow Area, the Netherlands



Land use		Support information	
	Nature	 High value Nature	 Low value Nature
	Extensive	 High value Extensive	 Low value Extensive
	Intensive	 High value Intensive	 Low value Intensive



# What tools are best suited to support spatial planning?

- Interactive spatial tools
  - Valuation maps
  - Negotiation
- Same tool can be used for different types of problems in different case studies

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