

# Heavily Modified Water Bodies



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# OUTLINE

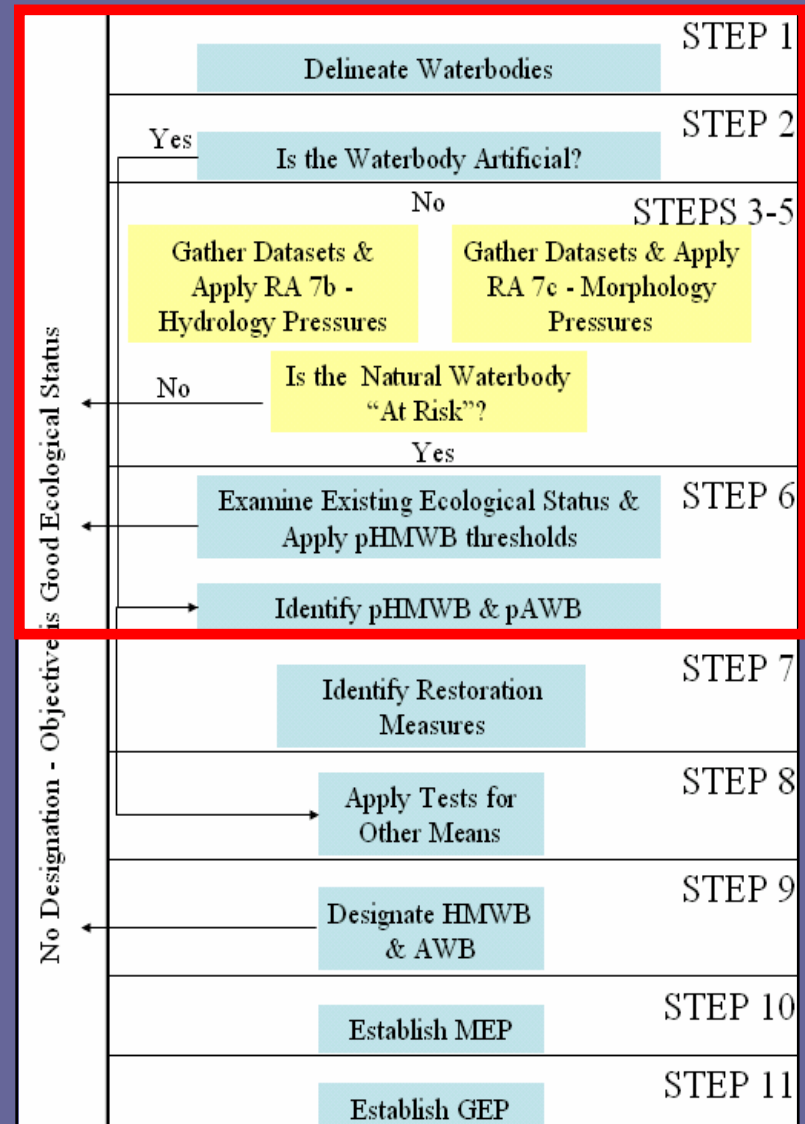
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- Outcome of Steps 1-6: Article 5 screening – pHMWBs
- Steps 7-11: approach
- Ports test case-
  - the designation tests
  - outcome
  - national application
- Next Steps

# OUTCOME OF STEPS 1-6

- 37 pHMWBs identified
  - Specified uses:

Ports	10
Drinking Water Supply	9
Power Generation	7
Flood Protection	5
Power Generation & drinking water supply	4
Other	2



## pHMWB EXAMPLES



Inniscarra, Co. Cork – Power Generation & Drinking Water Supply

## pHMWB EXAMPLES



### **Power Generation:**

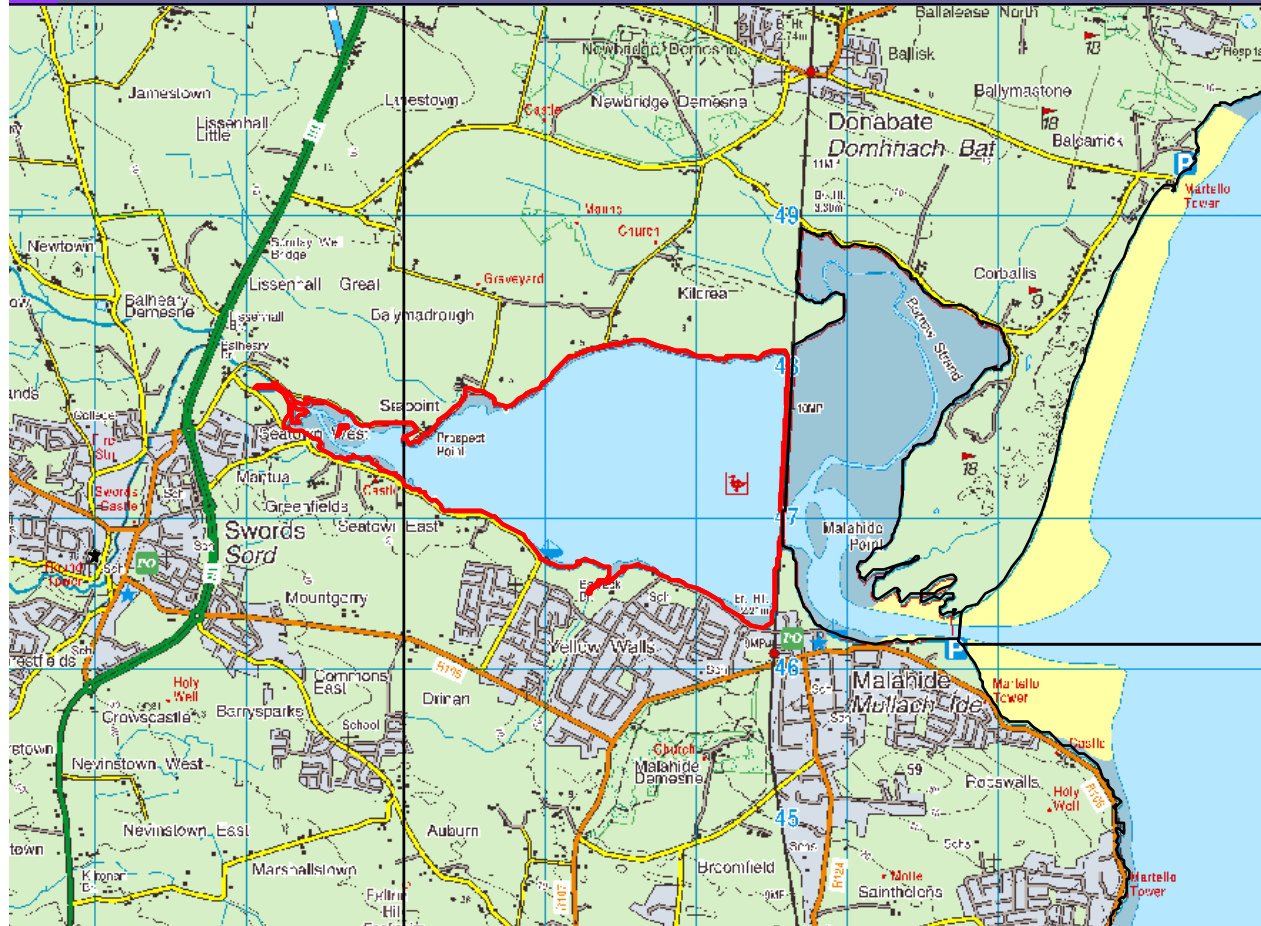
Lough Derg Lower-part of Ardnacrusha / Shannon Hydro Scheme, Co. Clare. (Shannon RBD)



### **Flood Protection:**

River Fergus Tidal Barrage, (Shannon RBD)

# pHMWB EXAMPLES



**Other sustainable  
human  
development activity:**  
Broadmeadow Water or  
Malahide Estuary  
(Eastern RBD)

## PORT-RELATED pHMWBs

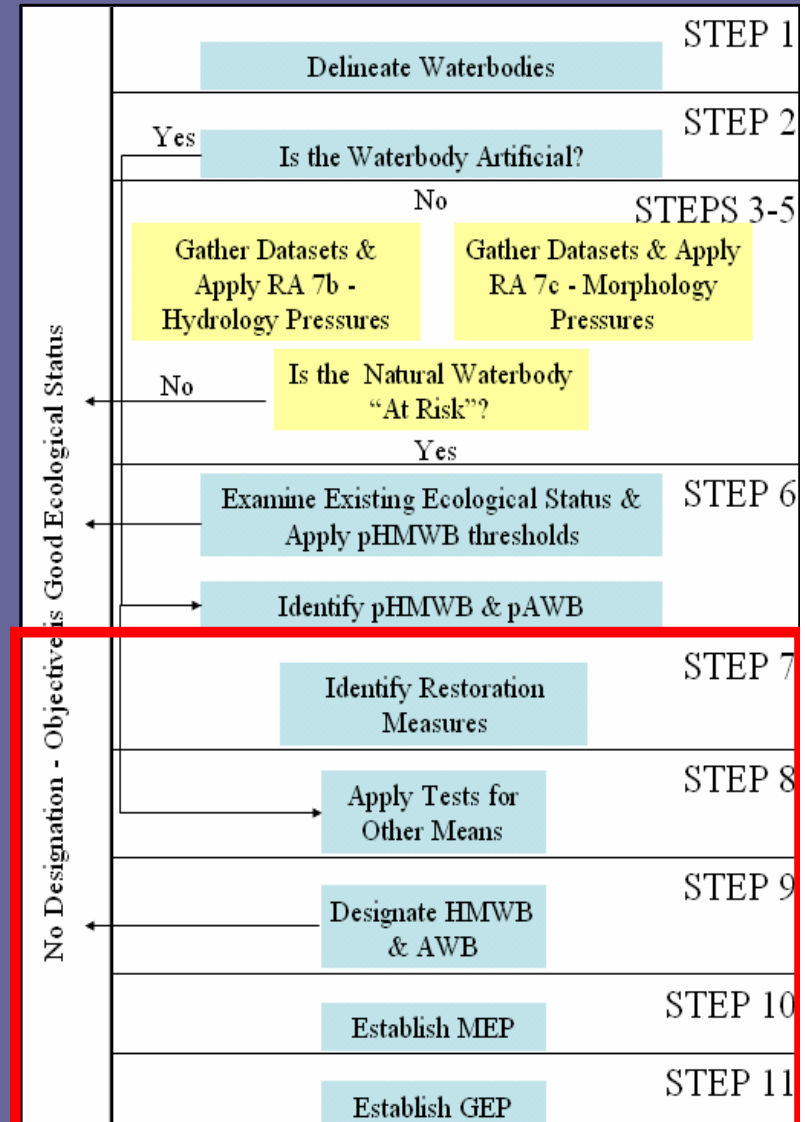
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- Screening of Ports for pHMWB identification:
  - Article 5 Morphological Risk Assessment (tonnage > 13,500)
  - expert opinion on shipping and dredging impacts (+/-)
- the screening exercise included the following port pHMWBs:

	Transitional	Coastal
Port of Cork & Ringaskiddy	2	1
Dublin Port	1	-
Waterford Port (& Belview)	1	-
New Ross Port	1	-
Limerick Port	1	-
Foynes Port	1	-
Rosslare Harbour	-	1
Killybegs	-	1

# STEPS 7 - 11

37 pHMWBs required examination under Steps 7-11



# NATIONAL STUDIES – POST ARTICLE 5

## National POMS Studies

Leading RBD	Measures & Standards Study Name
WRBD	1. On-site Wastewater Treatment Systems
	2. Forest and Water
ShRBD	3. Freshwater Morphology
SERBD	4. Setting Chemical Water Quality Standards
SWRBD	5. Industrial & Municipal Regulation
	6. Dangerous Substances
	7. Marine Morphology
	8. Heavily Modified Water Bodies & Artificial Water Bodies
	9. Water Balance Model for Setting Chemical Water Quality Standards
ERBD	10. Abstraction Pressures
	11. Groundwater Risk from Diffuse Mobile Organics
	12. Urban Pressures in rivers, transitional and ground waters
	13. Further Economic Characterisation

## HMWB & AWB POMS STUDY

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- Work Package 1: Literature Review and Bench Marking
  - Work Package 2: Data collection & selection of test cases
  - Work Package 3: Development of Protocols for Test Cases
  - Work Package 4: National Application
  - Work Package 5: Support MEP/GEP
  - Work Package 6: Further Characterisation of Canals
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- Steering Group: DEHLG, DCMNR, EPA, CFB, OPW, Waterways Ireland, EHS (NI), EA UK Hydromorphology Project, ESPO/ Port of Cork, Eurelectric/ ESB, SWRBD.

# HMWB & AWB POMS STUDY

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- Literature & Benchmarking Review: live document
- Data collection: pHMWBs grouped according to specified use
- Test Case selected for each specified use

	<b>Specified Use</b>	<b>Name of Test case</b>
1	Ports & related activities	Port of Cork (SWRBD)
2	Hydropower	Lough Derg Lower (Ardnacrusha) ( <u>ShRBD</u> )
3	Flood protection - urban	Fergus Tidal Barrage ( <u>ShRBD</u> )
4	Flood protection - rural	Feale & <u>Cashen</u> Estuaries ( <u>ShRBD</u> )
5	Drinking water - abstraction	Lough Salt (NWRBD)
6	Drinking water - impoundment	Vartry River Impoundments (ERBD)

# APPROACH: DESIGNATION TESTS

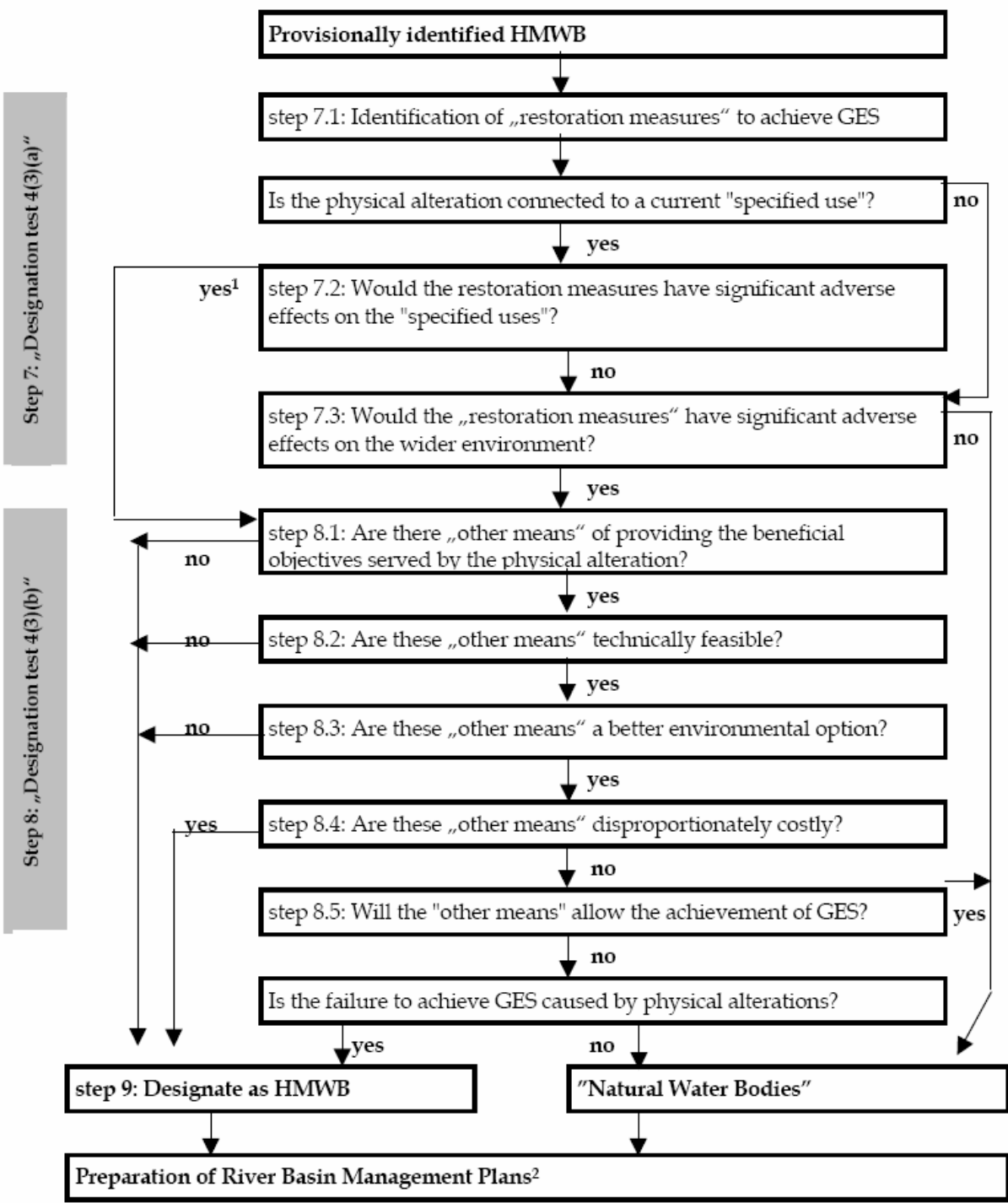
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## Step 7: Restoration Measures (RM) Test: (pHMWB only)

- 7.1 Identification of “restoration measures” to achieve GES.  
Is the physical alteration connected to a current “specified use”?
- 7.2 RM: Significant adverse effects on the “specified uses”?
- 7.3 RM: Significant adverse effects on the wider environment?

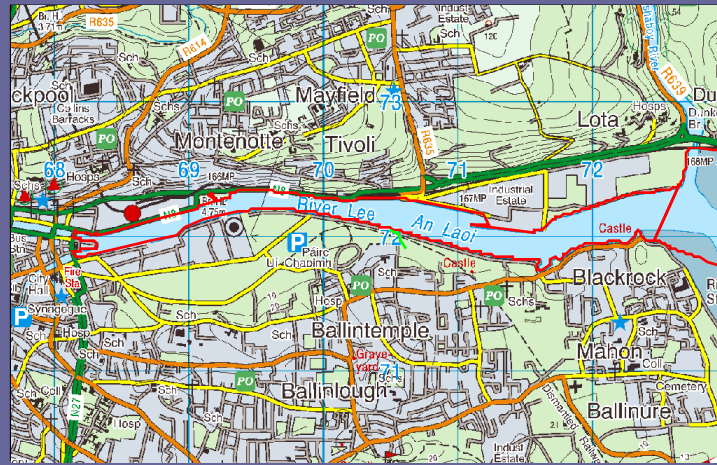
## Step 8: Alternative Means (AM) Test: (pHMWB and pAWB)

- 8.1 Are there “other means”?
- 8.2 Are other means technically feasible?
- 8.3 Are other means a better environmental option?
- 8.4 Are there means disproportionately costly?
- 8.5 Will the “other means” allow the achievement of GES?  
Is the failure to achieve GES caused by physical alterations?

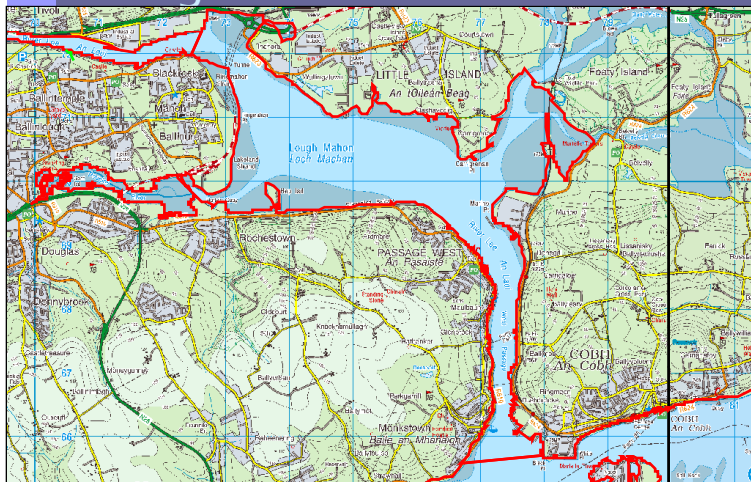


# PORT OF CORK – TEST CASE (3wbs)

Lee Estuary Lower – transitional wb

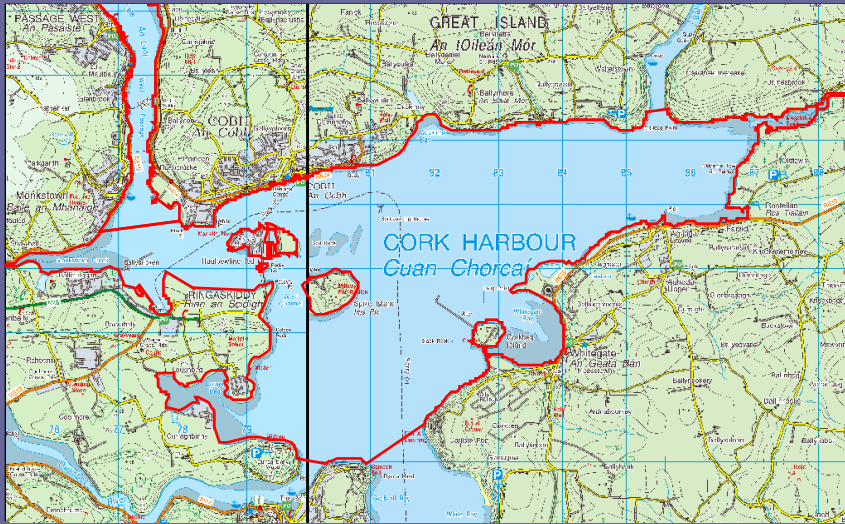


Lough Mahon – transitional wb



# PORT OF CORK – TEST CASE

Cork Harbour – coastal wb



# RESTORATION MEASURES TEST

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- **7.1:** Identify Restoration Measures for Good Ecological Status
  - Impacts:
    - Quay walls: hard engineered
    - Dredging: shipping channels and turning basins
    - Ship movement: hydrological impacts
  - Measures necessary to achieve Good Ecological Status:
    - Remove or soften the quay structures
    - Stop or change dredging practices
    - Stop or change ship movement

Case proceeds to step 7.2



## RESTORATION MEASURES TEST

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- **7.2:** Significant adverse effect on specified use?
  - Quays: essential for port functioning.
  - Dredging: any compromising of navigational parameters would raise safety issues.
  - Ship movement: essential for port functioning. Changes proposed.



The measures necessary for the achievement of GES, would have a significant adverse effect on the operation of the Port of Cork.

Case proceeds to Step 8.1: the alternative means test.

# RESTORATION MEASURES TEST

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- **7.3:** Significant adverse effect on wider environment?
  - Designated areas
  - Flood protection
  - Built heritage
  - Recreation & amenity
  - Employment & economy



The measures necessary for the achievement of GES, would have a significant adverse effect on the wider environment.

Case proceeds to Step 8.

# ALTERNATIVE MEANS TEST

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□ **8.1:** Are there other means?

- Displacement
- Replacement

There are no real alternative options through other modes or other locations.

**Designate as HMWB.**

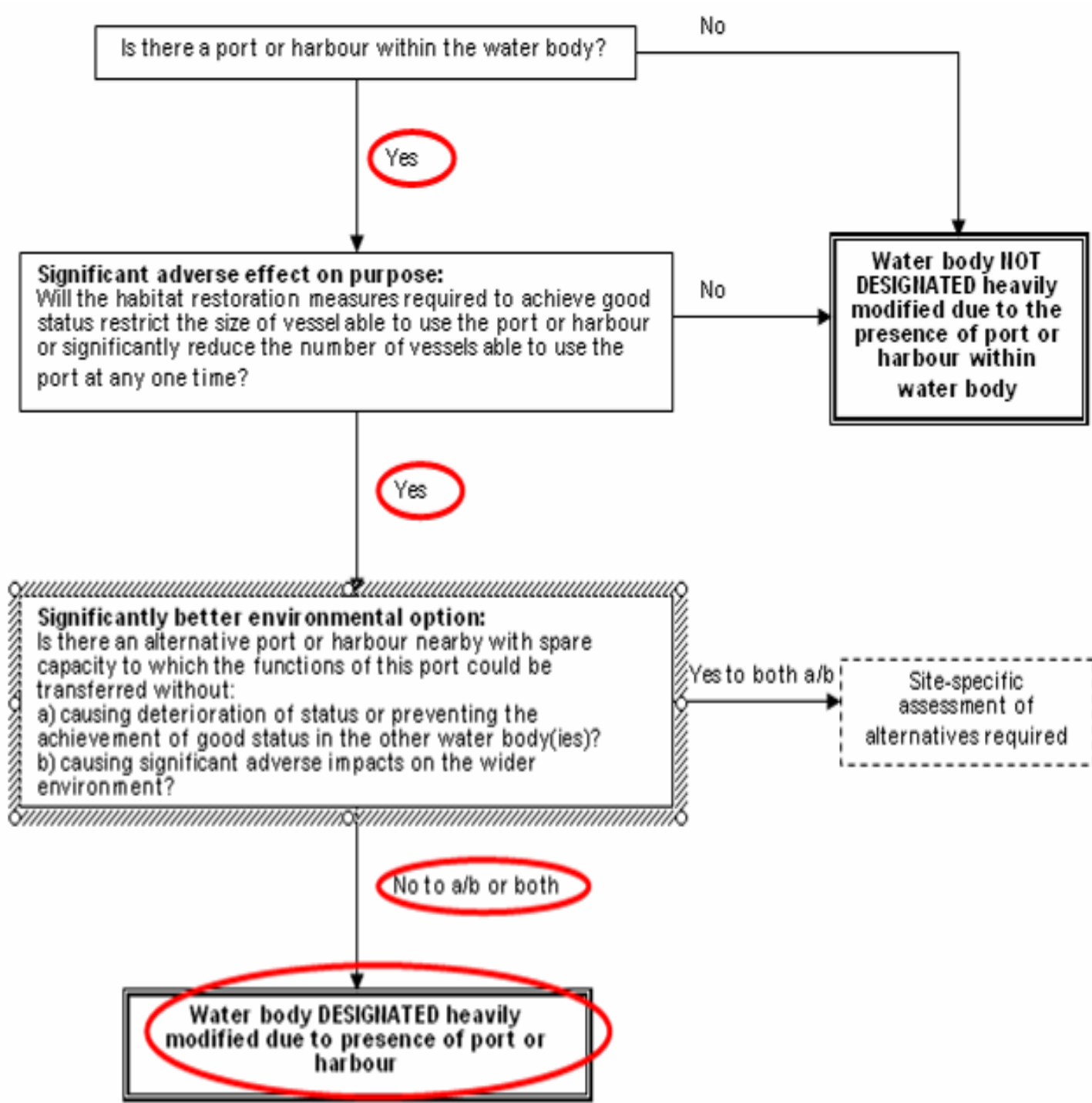
□ **8.2:** Other means technically feasible?

- Other ports: capacity issues. Vessel size.
- Other modes: no real alternatives.

□ **8.3:** Other means better environmental option? No.

□ **8.4:** Other means Disproportionately costly? Not explored.

**UK TAG  
DECISION  
TREE –  
COMPARISON**



# NATIONAL APPLICATION

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vi) *Proposal on HMWB designation associated with other ports:* It is proposed that the decision to designate HMWBs related with Port of Cork is transferable to other identified pHMWB cases associated with port and related activities. This proposal was approved by the HMWB & AWB POMS Study Steering Group in October 2007.

	<b>Transitional</b>	<b>Coastal</b>
<b>Port of Cork &amp; Ringaskiddy</b>	<b>2</b>	<b>1</b>
<b>Dublin Port</b>	<b>1</b>	<b>-</b>
<b>Waterford Port (&amp; Belview)</b>	<b>1</b>	<b>-</b>
<b>New Ross Port</b>	<b>1</b>	<b>-</b>
<b>Limerick Port</b>	<b>1</b>	<b>-</b>
<b>Foynes Port</b>	<b>1</b>	<b>-</b>
<b>Rosslare Harbour</b>	<b>-</b>	<b>1</b>
<b>Killybegs</b>	<b>-</b>	<b>1</b>

Designate all.

Final designation:

Final RBMP, 2009

## SUPPORT MEP GEP

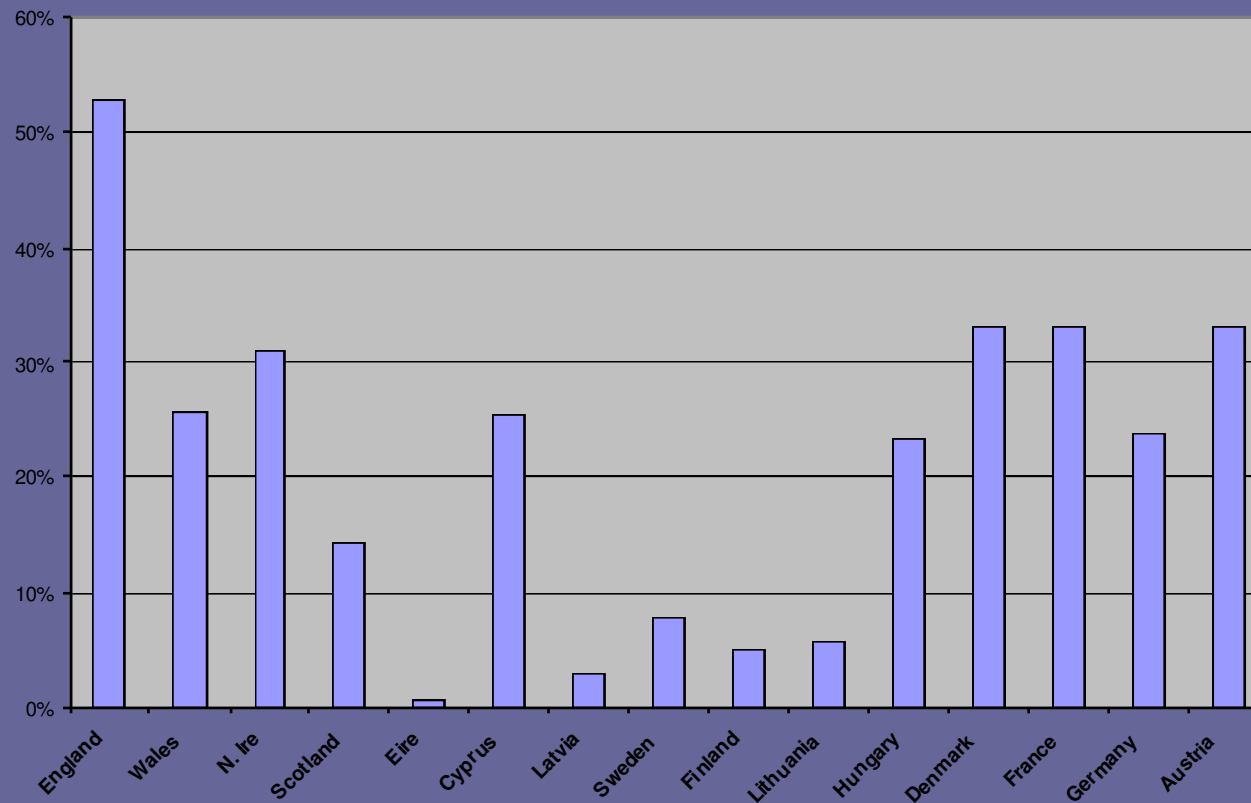
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- ❑ For designated HMWBs, an alternative objective of Good Ecological Potential (GEP) must be reached by 2015.
- ❑ Good physico-chemical status must be reached
- ❑ Establishing MEP & Setting GEP
  - 2 approaches to establishing MEP & GEP are provided
    - ❑ Original approach: deviation from Good Ecological Status
    - ❑ Pragmatic approach: mitigation measures-based - likely to be used for cycle 1
  - SWRBD Study to support the EPA in this task



# NEXT STEPS

- Harmonisation:
  - NI used a rapid designation approach developed by SEPA UK TAG
  - For ports, candidature for pHMWB was based on presence absence and followed by expert review.



Article 5  
% of total  
number of water  
bodies identified as  
pHMWB

# NEXT STEPS

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- ❑ Stakeholder briefings
- ❑ Additional cases
  - Freshwater Morphology POMS Study (ShRBD)
  - Marine Morphology POMS Study (SWRBD)
  - Abstractions POMS Study (ERBD)
  - Article 5 omissions e.g. for hydropower, Erne from Belleek to Cliff Hydro





thank you