Sweden – Criteria and procedures for designation of HMWB's

- More or less follows the EU-guideline
- 4 main groups of pressures:
  - Hydropower
  - Historic lowering of lake levels
  - Harbours
  - Other pressures, often in agriculture, that can be added together as percent of a river stretch or an area
- Aiming for a "70 % impacted length/area", but with exceptions
- One type of exception: if HMWB designation risks obstructing other prioritisations such as the Baltic Sea Action Plan or national environmental objectives strategy

Sweden – Status of national HMWB guidelines

- A translated and somewhat shortened version of the EU-guidance has been made available on the SEPA website
- Additional draft national guidelines will be sent out for consultation shortly
- During ongoing work SEPA will make an effort to follow up on possible needs for modified or even new criteria
- At this stage the guidelines have no particular official status, but could be compared with information on a website
- When criteria and methods have been more elaborated it is likely that guidelines will be consolidated and become status of a “handbook”

Hydromorphological alteration – mitigation measures and GES vs GEP

Our understanding:

- Restauration (GES) measures can consist of one measure or several measures together
- Mitigation (GEP) measures can consist of some, but not all, of the GES measures + other measures
- Crucial issue: which measures (alone or together) have a significant adverse effect on the uses?
- These measures aren't feasible even if they are only mitigating measures that won't lead to GES (provided that WB is a HMWB)
- Thus, a HMWB designation obstructs not only GES measures, but **all** measures that lead to a significant adverse effect on the uses

Significant adverse effect on the specific use – how to quantify, specify and limit this?

- tentative use of existing national legislation => formally 5-20 % reduction of production may be reasonable, without claims of economic compensation – legal practice has not yet been analyzed
- Hypothesis: Mitigation measures included in PoM will imply a high benefit to society, thus pushing legal practice in a direction more in line with GEP or even GES

Classification of potential

EU-guidance

Guidance document no 4:

> The closest comparable natural surface water body is used as a reference for biological and physico-chemical quality elements

CIS ECOSTAT:

> All mitigation measures or all significant ecological measures are being used as a tool to establish the expected environmental state (condition).

Classification of potential

Each impact is unique

The effects of a hydromorphological modification will be unique for each water body

No national assessment methods for classification of potential.

The relevant quality factors and the boundary of different classes has to be established for each water body

Classification of potential

Swedish approach – two main approaches + expert judgement

1. Swedish assessment methods for classification of status are used for parameters/elements that are not affected by the modification

2. The “measure approach” (ECOSTAT) is used for parameters that have been affected by the modification

When using the “measure approach” expert judgement can be used

Classification of potential

Expert judgement

Classify as many parameters as possible with the two methods followed by One out all out

When high uncertainty use expert judgement

Classification of potential

Artificial water bodies

There are no reference values for Artificial water bodies

The potential is classified in the same way as for heavily modified water bodies

Expert judgement will here be even more important

Hydromorphological quality for lakes

Quality elements	Parameter
Continuity	Artificial migration obstacles
Hydrological regime	Amplitude of regulation
	Watercourse changes
Morphological conditions	Land use in the local environment
	Land use in sub basin
	Debris of dead wood
	Changed water level
	Ditches/km

Hydromorphological quality for rivers

Quality elements	Parameter
Continuity	Artificial migration obstacles
	Degree of fragmentation
	Barrier-effects
Hydrological regime	Degree of regulation
	Changed average high water flow rate
	Changed average low water flow rate

Hydromorphological quality for rivers

Quality elements	Parameter
Morphological conditions	Degree of canalization
	Proportion of cleansed stretches
	Viaducts/km
	Land use in the local environment
	Land use in sub-basin
	Debris of dead wood
	Ditches/km

River continuity

- Artificial migration obstacles:
  - HES: No migration obstacles in or below WB
  - GES: migration obstacles below, but not in or in connection with WB
  - MES: Migration obstacles below, in or in connection with WB

River continuity

- Degree of fragmentation (1 – [longest stretch without artificial, definitive migration obstacles/length of water course]) x 100
  - HES: No migration obstacles in main water course or tributaries
  - GES: Migration obstacles in tributaries
  - MES: ≤ 25 % degree of fragmentation

River continuity

- Barrier effects = (1 - [stretch up to first migration obstacle/total length of water course]) x 100

  - HES: No migration obstacles
  - GES: ≤ 25 % barrier effect
  - MES: 25-50 % barrier effect

Hydromorphological status classification system vs criteria to identify WB's that have substantially changed character

- In Sweden – in principal, two different systems
- Hydromorphological status classification = impacts
- Criteria for preliminary identification = pressures
- In practice – some criteria coincide
- HYMO status criteria, so far an untested structure
- HYMO identification criteria – tested in some water courses

Sector specific examples - transport

- So far only large harbours
- Impact is too small to influence rather large coastal WB's
- Complicated to change coastal water bodies
- When needed in a few cases – a preliminary subdivision of coastal WB
- Harbour area around 70 % of the area of new WB
- Smallest area of new WB 1 km^2

Sector specific examples - hydropower

- 3 m regulation amplitude
- 20 % change of mean maximum flow
- 20 % reduction of mean minimum flow
- 20 % flow regulation (capacity to store annual flow)
- Water course that has changed into a lake (as defined in VISS – water information system Sweden)
- Stretches with permanently no water or a minimum flow level
- Stretches with occasional zero flow or minimum flow
- Second option: 80 % of total hight has been exploited (not suitable for small WB:s)

Sector specific examples - agriculture

- Not yet finally decided
- Often connection with eutrophication problems – high priority in Sweden => suggests restrictive policy on HMWB's
- Possibly a prolonged process where natural WB is assumed until possible impact on eutrophication and subsequent mitigation measures have been investigated
- If neglectable connection with eutrophication and/or costs>benefits ok to identify as prel. HMWB if 70 % of area or length is impacted

New modifications under article 4.7

- Still no tests have been performed
- Swedish law is constructed in a manner that does not make article 4.7 operational until objectives have been decided
- Environmental courts decide on permits. Water authorities decide on exemptions under article 4.7. The interaction between these two processes has not been specified in the law, thus unclear how it will function in practice