Coastal and Transitional Waters Risk Assessment Summary

1. Background

The Water Framework Directive (WFD) aims to take a holistic view of all activities in the aquatic environment, whereas previous EC legislation has been directed at controlling specific discharges or activities in the marine environment. To facilitate this approach, the emphasis has been placed on measuring the biological status of organisms rather than physiochemical parameters in discharges or receiving waters.

Ecological status takes account of the biology, hydromorphology and physiochemistry, and is classified as high, good, moderate, poor or bad. The aim of WFD is to achieve at least good ecological status by 2015 and to ensure that there is no downward movement between classes. The WFD also aims to link the ecological status to anthropogenic pressures so that management and monitoring programs can be focused. Thus, the pressures on the marine environment are also monitored.

The approach taken in Northern Ireland is similar to that taken in England and Wales, and Scotland, and follows UKTAG[1] guidance on risk assessment for all surface water categories, and specifically in Transitional and Coastal (TraC) waters. However, in Northern Ireland coastal waters there is more impact information available and more emphasis has been placed on impact information than on pressure information in risk assessment.

2. Approach to Analysis of Data

The characterisation process of WFD requires an assessment of both pressure and impact information. It can be difficult to link pressure information to impacts in coastal waters as the likelihood of an input (pressure) causing an effect (impact) depends largely on the dispersive capacity of the water body in question. For this reason, it is more accurate to assess 'impact' information, when available, to determine a risk, than to determine impact indirectly from pressure information. However, there are categories of risk where impact information is not available. In these cases, the water body has been classified using an assessment of the available pressure information and expert judgement. Thus, water bodies can be classified as 'at risk' (1a) or 'not at risk' (2b) only if suitable data are available, there is confidence in the assessment method and there is confidence in how that assessment method relates to ecological quality.

A number of pressures have been identified by UKTAG under which risk assessment should be made. These are:

- Nutrients, eutrophication and organic enrichment (trophic status)
- Toxic (Hazardous) substances
- Alien Species, in the pressure category 'Other human pressures'
- Point source consented discharges

[1] http://www.wfduk.org/tag_guidance/Article_05/Folder.2004-02-16.5332/TAG2003 WP 7f %2803%29/view

- Hydromorphology – fishing, aquaculture, dredged areas, dredge disposal, land reclamation, shoreline reinforcement, barriers, abstraction.
- Protected areas – shellfish waters, bathing waters, Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

Often there are no reliable assessment methods for these pressures or it is uncertain how the methods relate to ecological status. A number of projects are ongoing to build new methodologies which will allow accurate assessment of the relationship between pressures and ecological status.

An impact approach has been adopted for the assessment of trophic status. The OSPAR Comprehensive procedure has already established a framework to identify eutrophication which closely aligns with the DEFRA (2002) criteria to identify sensitive areas under the Urban Waste Water Treatment Directive (UWWTD). This was used to determine the risk categories.

These criteria are based upon 3 categories as follows:
Category 1: Nutrient inputs, concentrations and ratios
Category 2: Phytoplankton biomass and macroalgae
Category 3: DO, fauna, toxic algae

These criteria have been applied to the data and related to risk assessment under the WFD to both transitional and coastal waters as follows:

Category 1	**Category 2**	**Category 3**	**OSPAR**	**NI WFD RA**
-	-	-	Non-problem area	2b
+	-	-	Potential problem area	2a
+	+	+/-	Problem area	1a

Two impact approaches have been used to assess the level of risk associated with hazardous substances in transitional and coastal waters. Firstly, a measure of imposex in Dog Whelks caused by Tributyl Tin (TBT) has been used. Secondly, concentrations of trace metals, Polychlorinated Biphenyls (PCBs) and Polycyclic Aromatic Hydrocarbons (PAHs) in sediments have been compared to background reference concentrations (BRCs), environmental assessment concentrations (EACs) and proposed EQSs (Environmental Quality Standards).

Point source consented discharges to transitional and coastal waters were assessed according to the methodology reported elsewhere.[2]

The pressures assessed for hydromorphology are as follows: dredging, dredge spoil disposal, land reclamation, shoreline reinforcement, aggregate extraction, fishing,

[2] http://www.ehsni.gov.uk/pubs/publications/RA_PointSource.pdf

aquaculture, water flow regulation, and water abstraction. These were assessed using the UKTAG guidance[3] whereby an activity which affects :

>15% impact to water body area – 1b 'Probably at risk'
< 15% impact to water body area – 2a 'Probably not at risk'
No pressure in water body – 2b 'Not at risk'

Protected areas include those designated under the Shellfish Waters Directive (79/923/EEC), Bathing Water Directive (76/160/EEC), Birds Directive (79/409/EEC) and Habitats Directive (92/43/EEC).

Water bodies at which there is a SAC or SPA have been classified as 2a 'probably not at risk' unless there is evidence to show that the SAC or SPA is at less than favourable condition which results in a 1a 'at risk' classification.

Designated shellfish waters and bathing waters have been assessed using the following criteria:

- Fail mandatory standards – 1a 'at risk'
- Pass mandatory standards, but fail guideline standards – 2a ' probably not at risk'
- Pass guideline standards – 2b 'not at risk'

The whole water body within which the Protected Area falls is classified the same as the Protected Area.

3. Data Gaps and Future Work

Further work has been identified under NS Share to assess pressures and the types of change to ecosystem elements that may be caused by the pressures identified.

[3] http://www.wfduk.org/tag_guidance/Article_05/Folder.2004-02-16.5332/TAG2003WP7c %2801%29 Draft guidance on morphological pressures %28P2.v3-26.01.04%29/view