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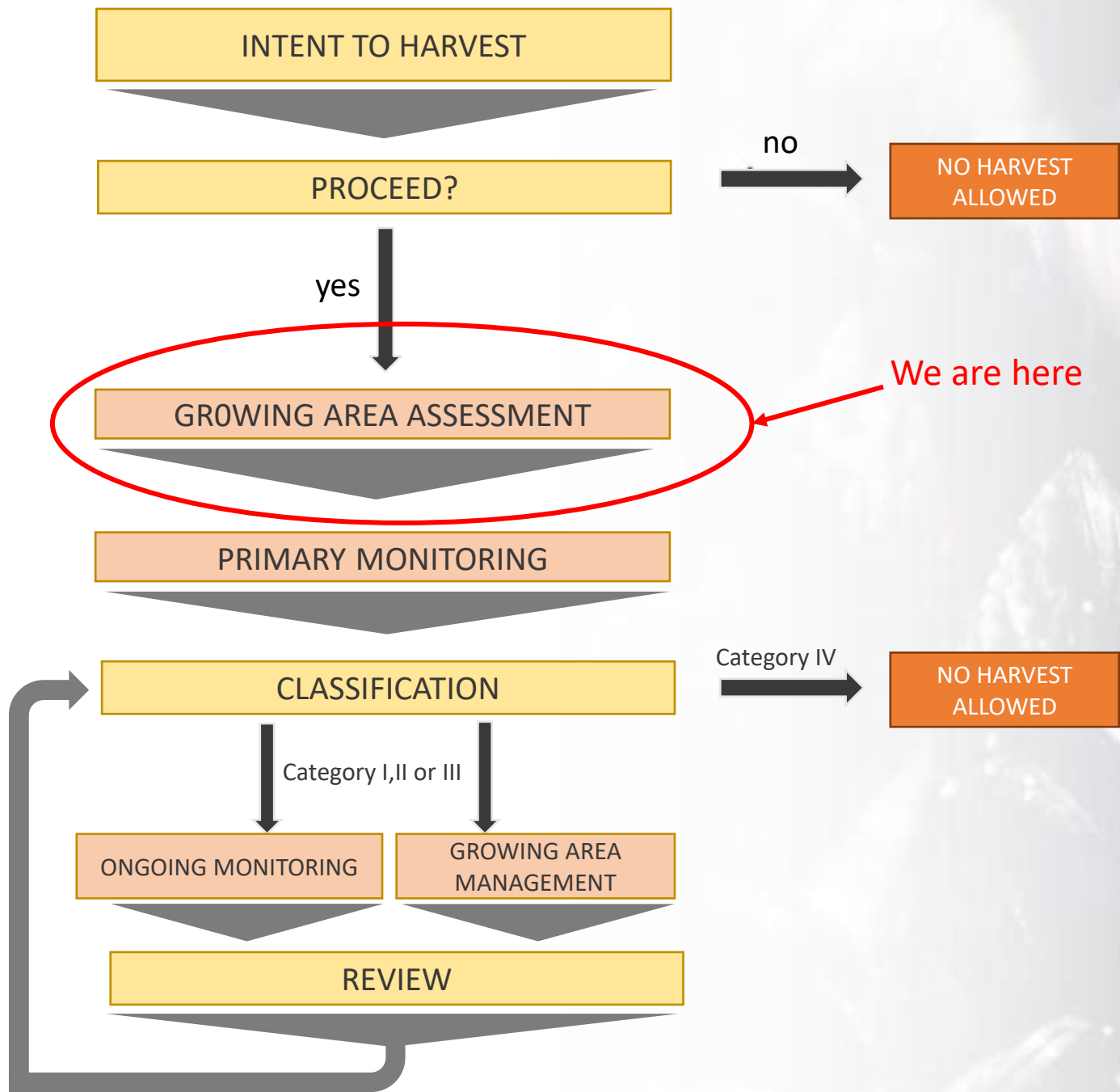


Cefas

VIRTUAL REGIONAL WORKSHOP ON BIVALVE MOLLUSCS SANITATION

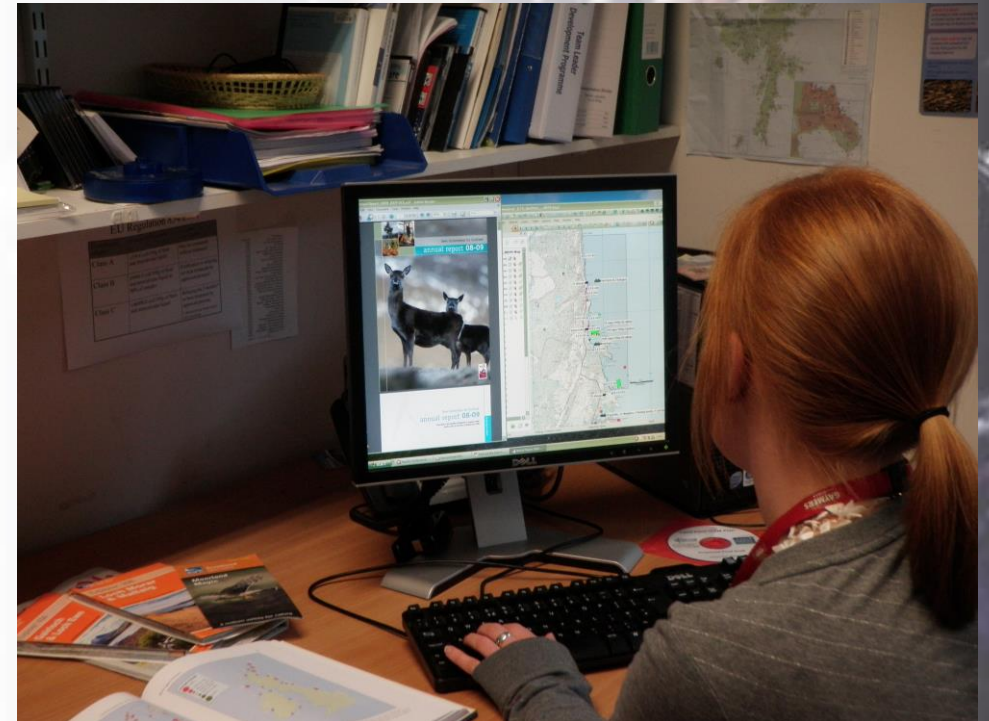
9, 10, 11 December 2020

Growing Area Assessments
Michelle Price-Hayward



Components of a Growing Area Assessment

- Additional data gathering
- Shoreline survey
- Indicator/hazard survey
- Data analysis and assessment
- Outcomes
 - Extent of classified growing area
 - Recommendations for primary monitoring
 - Risk management plan
 - Documentation



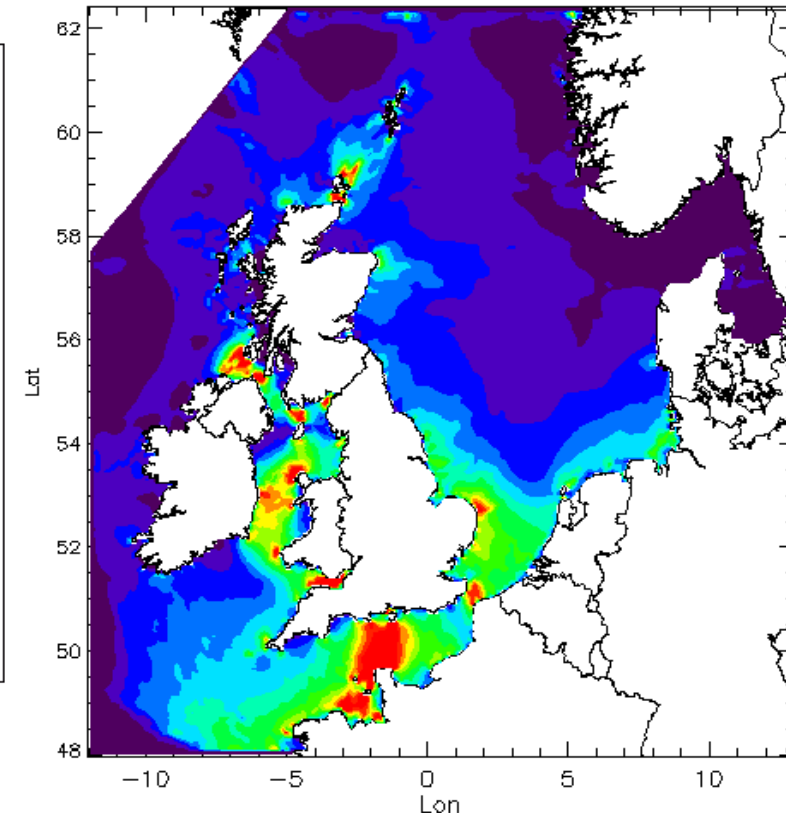
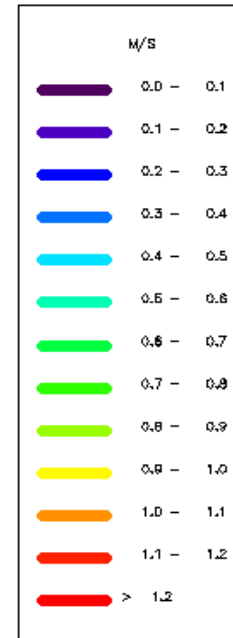
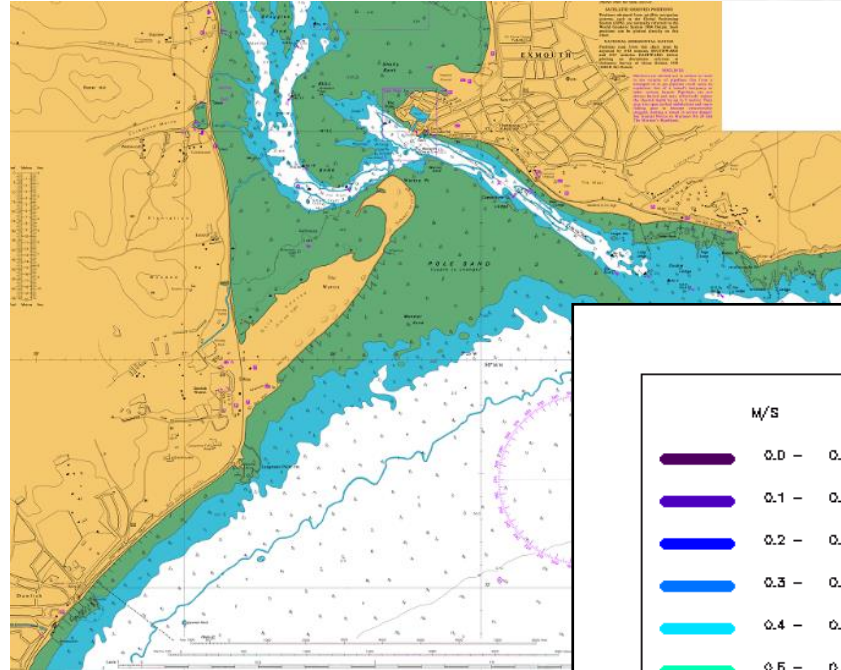
Data Gathering 1– Human Impacts

- Sources of contamination
 - Human sewage
 - Treatment works
 - Sewerage systems
 - Sludge handling
 - Direct defaecation
 - Shipping/boating
 - Land use
 - Mining and waste disposal
 - Livestock farming
 - Grazing
 - Animal slaughter facilities and wastes
 - Animal slurry spreading
 - Fertilizer application
 - External medical treatments
 - Other human activities
 - Industrial waste
 - Refuse sites



Data Gathering 2 - Environment

- Wild animals/birds
- Watercourses
- Geology
- Topography
- Hydrography
 - Depth areas
 - Tides
 - Water movement
- Meteorology
 - Rainfall
 - Wind
 - Severe storms
 - Solar radiation
- Seawater salinity and temperature



Shoreline Survey

PLAN

- Health and Safety
- Access
- Tides
- Daylight
- Weather
- Seasonality

CONDUCT

- Seek and record information
- Locate relevant features
- Confirm data gathering
- Fill in data gaps
- Note differences
- Photograph
- Measure



Indicator/Hazard Survey

General microbiological hazards

- Sample on at least 3 occasions
- At least 2 weeks apart
- Target sampling
- Where possible, at least one sample should coincide with shoreline survey

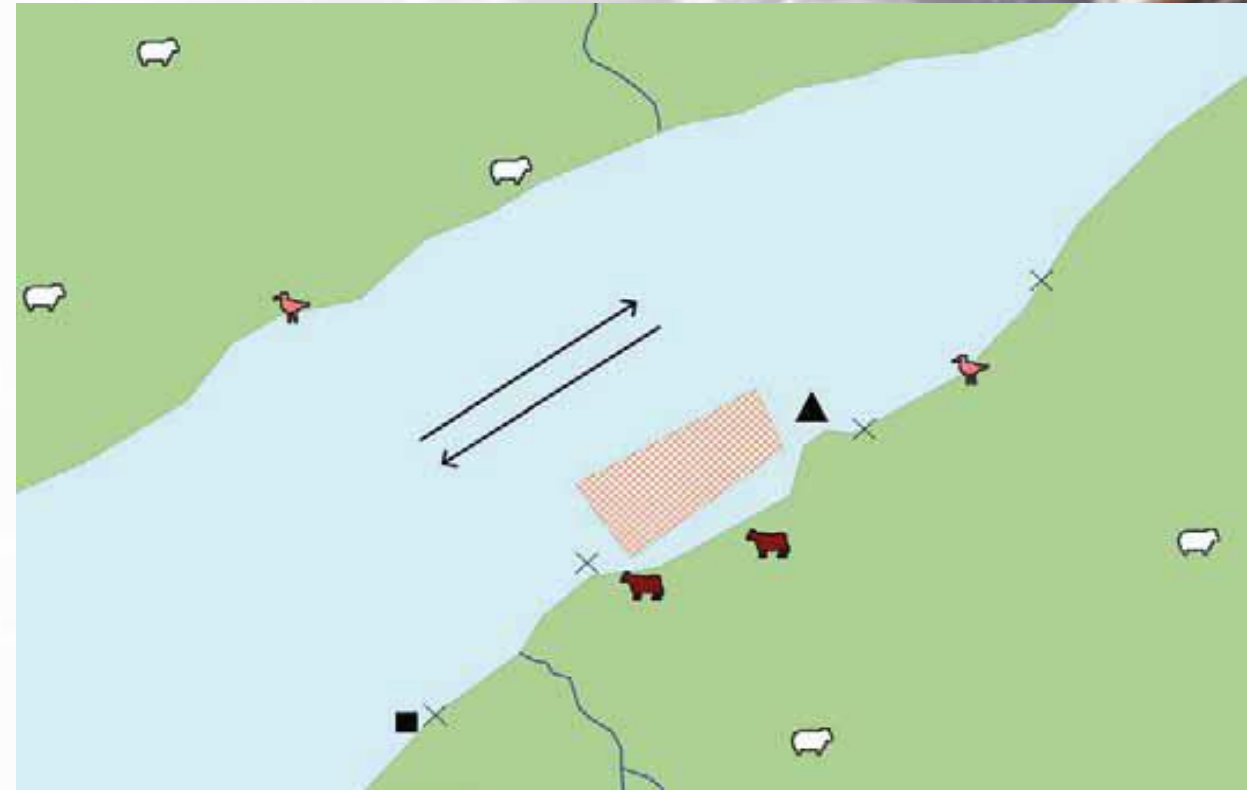
Assessing treatment efficiency of sewage works

- Paired samples
- Influent and effluent
- Average estimation



Data Analysis and Assessment

- Analytical approaches
 - Descriptive/Qualitative
 - Simplest means of assessment
 - Uses descriptive information
 - Relies on expert judgement
 - May be dictated by lack of data
 - Semi-quantitative
 - Uses ranking with loading score
 - Based on level of risk

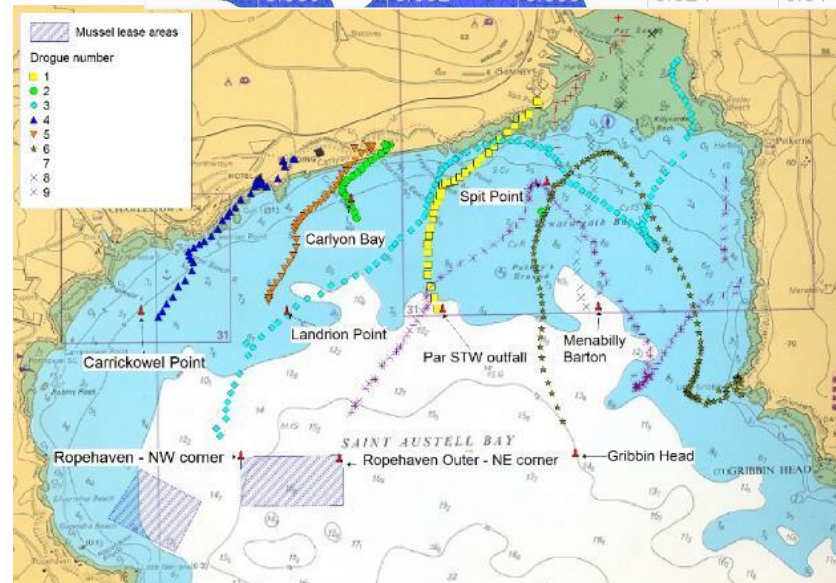
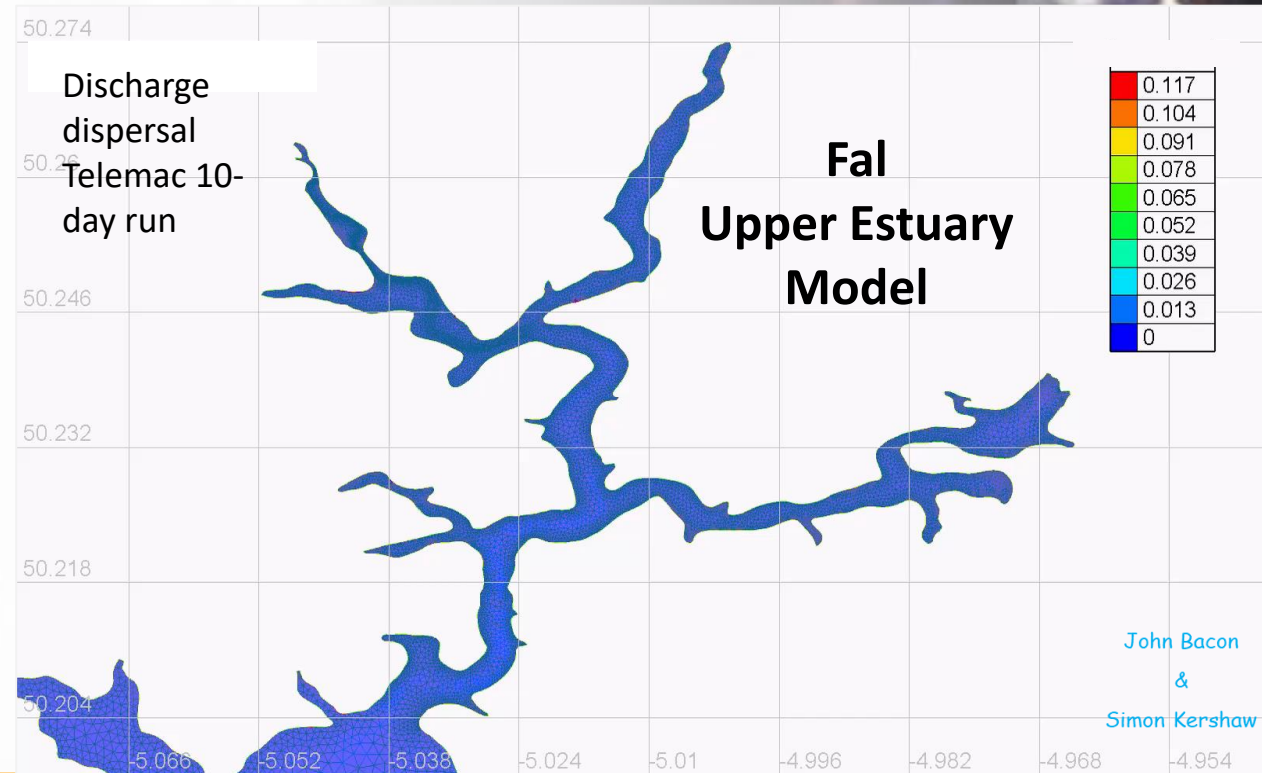


ASSESSMENT POINT 1

SOURCE	RELATIVE LOADING	OCCURRENCE	PROXIMITY	IMPACT
Continuous discharge	2	3	3	18
Intermittent discharge	3	1	5	15
Cattle farm 1	1	1	5	5
Cattle farm 2	1	2	4	8
Total				41

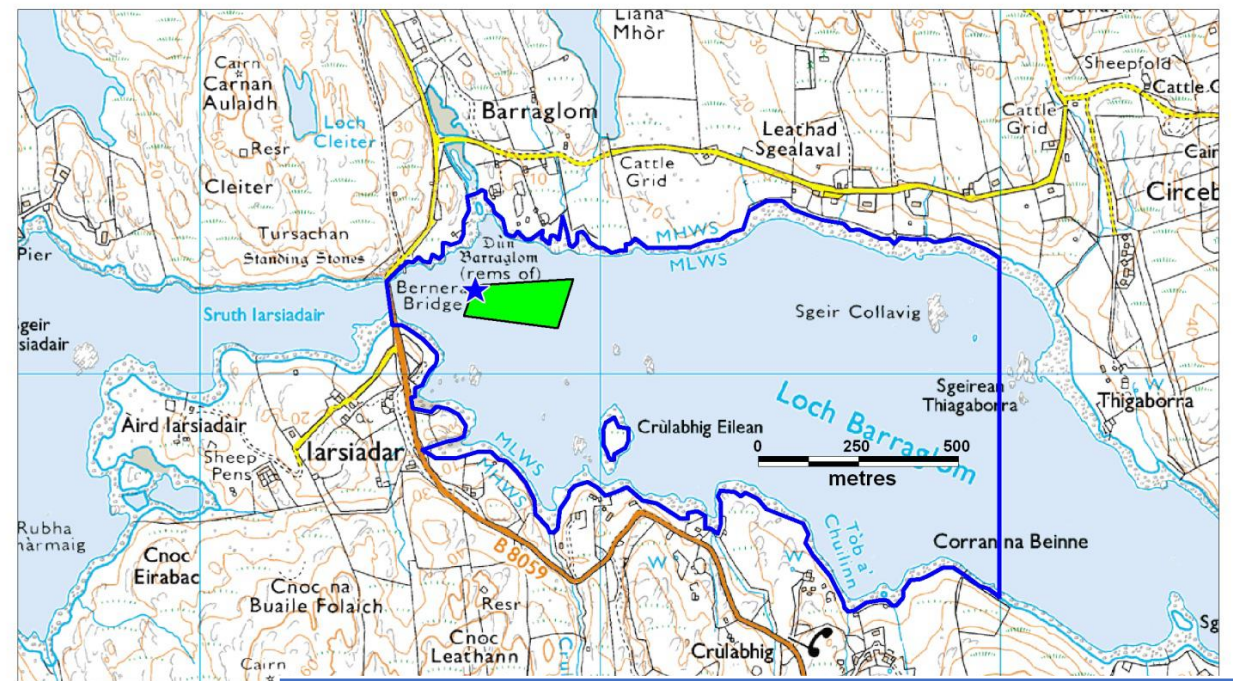
Quantitative Assessment

- Quantitative source estimation
 - Use common metric
 - Variability in hazard content, rate of input
 - Estimate uncertainties
- Quantitative transport estimation
 - Dilution calculations based on simple volume
 - Calculations of dilution based on salinity reduction
 - Tidal stream estimations
 - Tracer studies
 - Hydrodynamic modelling



Outcomes

- Extent of classified growing area
- Recommendations for primary monitoring
- Risk management planning
 - If conditional criteria apply
- Documentation



Recommendations

- ★ RMP
- ▭ Production area

Fishery

- ▭ Mussel lines

Example Sampling Plan

Growing Area	Broad Bay
Site Name	Smith Oyster Farm 1
Species	Pacific oyster (<i>C. gigas</i>)
Type of fishery	Aquaculture – intertidal racks
Method of sampling	Hand
Monitoring point	Sample Point A
Latitude	55.25819
Longitude	-4.86718
Tolerance	20 m
Depth	Not applicable
Frequency	Monthly
Authorised samplers	J. James, A. Norton
Growing area boundaries	Area bounded by a line drawn from 56.11290, -4.88736 to 54.99450, -4.85814 and extending to MHWS within the bay.