Aquaculture Modelling - Update





Presentation Structure

- Outline the objectives of Screening and Risk Identification.
- Some important points about the example report.
- Review the structure and content of the example report.
- Screening models update.
- Questions and feedback on example report.
- Update on NewDepomod. Questions.
- Summary of key points, next steps.



Screening & Risk Assessment Objectives - 1

Dispersion & Erosion Capacity Maps

Indicative
Sediment &
Bath Medicine
Maps

Screening Modelling & Risk Identification

Results For Proposed Site & Other Relevant Sites/Sources

Indicative
Sediment &
Bath Medicine
Simple Analysis



Screening & Risk Assessment Objectives - 2

Identify
Features Which
May Be At Risk:
Table/Maps

Summarise
Proposal Waste
Dispersion
Suitability

Recommend Modelling Method & Model Size

Applicant
Submits
Method
Statement
Following
Screening

Screening Modelling & Risk Identification

Report
Reviewed
Following
Stakeholder
Meeting

First Report Informs Stakeholder Meeting



Example Report: Important Points

Fictional Sites
With 3500t In A
Range Of
Locations

Precautionary
Approach To
Sediment And
Bath Modelling

Indicative &
Predicted
Spread Of
Material, Not
Real

Promote a
Common
Understanding
Of The
Situation

More Detailed
Modelling
Carried Out By
Applicant

Example Report

Output Used To Generate List of Features At Risk Of Impact



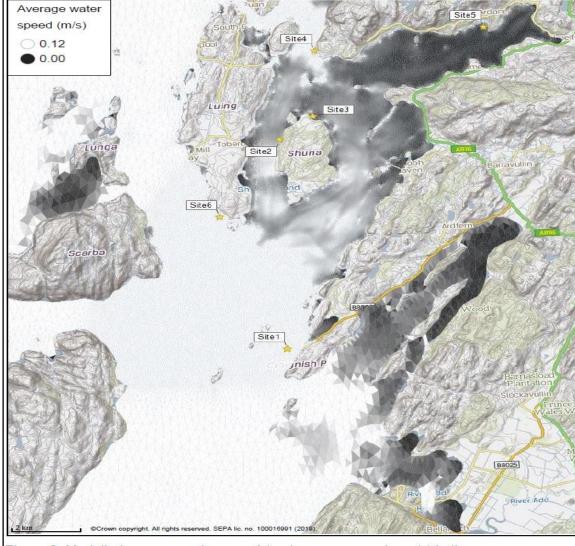


Figure 2: Modelled average water speed (metres per second – m/s) in the sea area surrounding the proposed site (Site1).

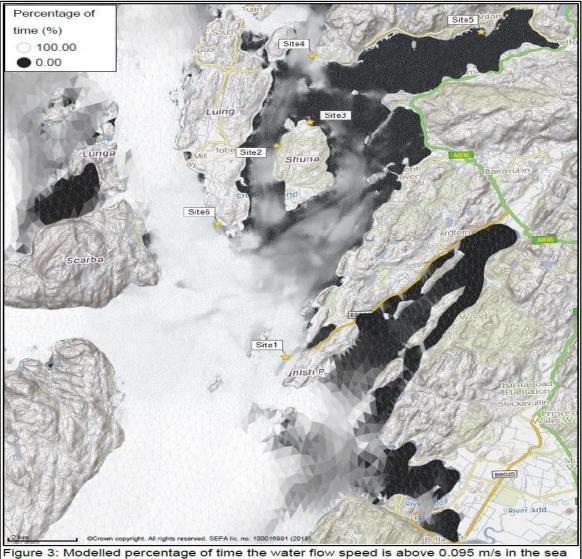


Figure 3: Modelled percentage of time the water flow speed is above 0.095 m/s in the se area surrounding the proposed site (Site1).





Figure 4: Modelled average sediment intensity over one month for the proposed site only (Site 1).

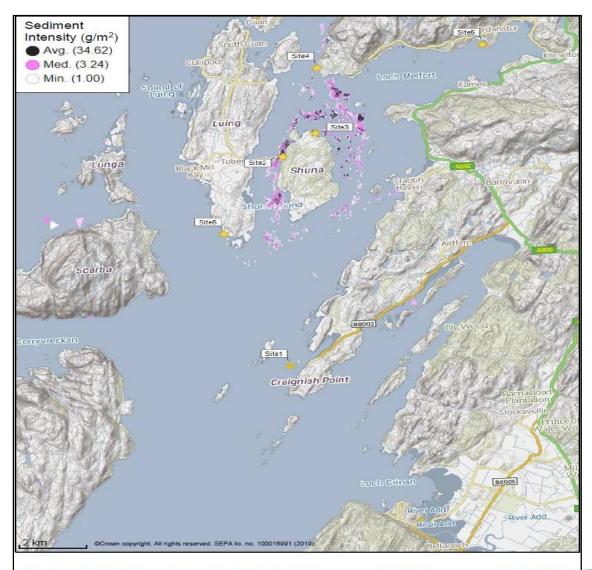


Figure 5: Modelled average sediment intensity over one month for the proposed site (Site1 and other relevant sites.



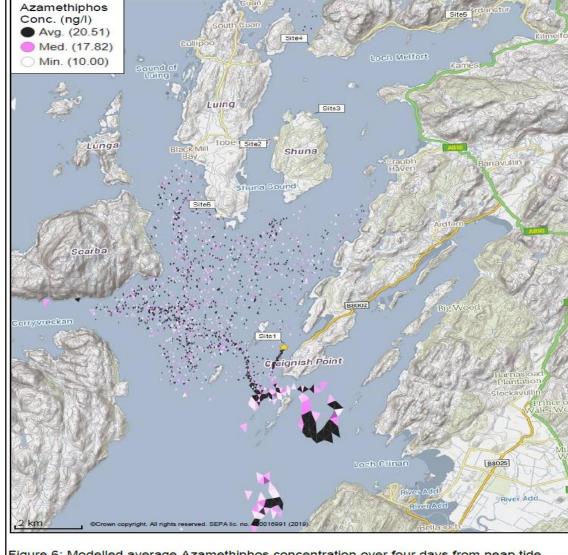


Figure 6: Modelled average Azamethiphos concentration over four days from neap tide release for the proposed site only (Site1).

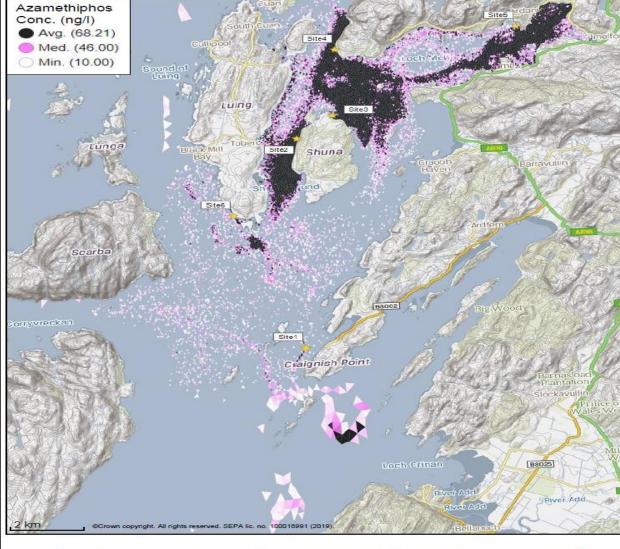


Figure 7: Modelled average Azamethiphos concentration over four days from neap tide release for the proposed site (Site1) and other relevant sites.



Simple Sediment Analysis

Table 1: Sediment impact information for each site.

Site Name	Average Impact (g/m²)	Impact Area (km²)	Median Impact (g/m²)	Max weight Of Fish (tonnes)
Site1	1.74	0.39	1.41	3500
Site2	9.58	1.11	3.16	3500
Site3	50.03	0.67	4.82	3500
Site4	17.50	1.46	2.51	3500
Site5	2751.51	0.02	555.68	3500
Site6	1.78	0.53	1.65	3500

- The total area of sediment impact from the six sites modelled is estimated to be 3.41 square kilometres (km²).
- As shown in Figure 5, the average and median impacts over this area are 34.62 and 3.24 g/m² respectively.
- The total weight of fish that generates this modelled impact is 21000 tonnes.



Simple Bath Medicine Analysis

Table 2: Azamethiphos impact information for each site.

Site Name	Average Impact (ng/l)	Impact Area (km²)	Median Impact (ng/l)	Weight Of Fish (tonnes)
Site1	20.51	9.03	17.82	3500
Site2	110.13	5.42	43.19	3500
Site3	83.68	7.57	51.77	3500
Site4	64.74	9.23	35.98	3500
Site5	93.67	6.50	59.88	3500
Site6	20.24	12.87	17.89	3500

- The total area of AZA impact from all sites modelled is estimated to be 42.25 square kilometres (km²).
- As shown in Figure 5, the average and median concentrations over this area are 68.21 and 46.00 ng/l respectively.
- The total weight of fish that generates this modelled impact is 21000 tonnes.



Risk Identification

Table 3: Table of identified features

No.	Feature Name	Feature Type	Location (Easting, Northing)	Brief Reason For Identification
1	Marine Feature One	MPA	(172877, 702836)	At risk from sediment impact.
2	Marine Feature Two	PMF: Species Name	(174557, 700252)	At risk from bath medicine impact.
3	Marine Feature Three	SAC	(178531, 707216)	At risk from sediment and bath medicine impact.

May Include Maps

Additional Comments

Modelling Output Requirements



Conclusion Of Screening Modelling & Risk I.D.

Screening Modelling Conclusions Risk Identification Conclusions

Recommendation: Site Suitability

Promote a
Common
Understanding
Of The
Situation

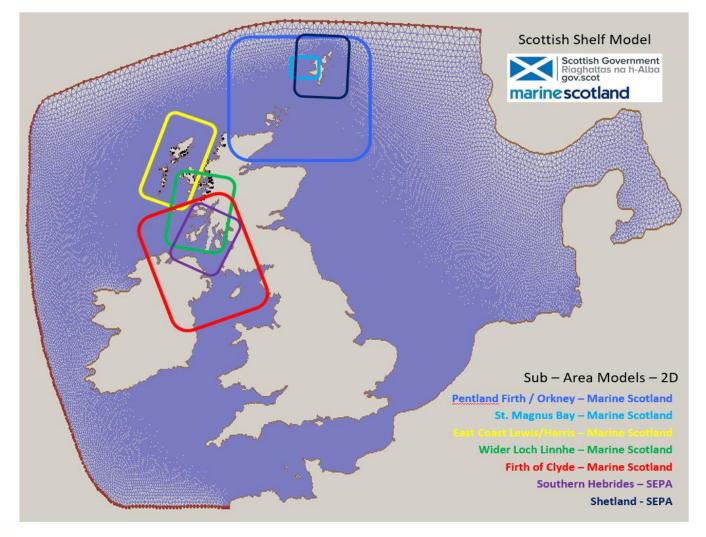
Possible to Comment on Additional Information

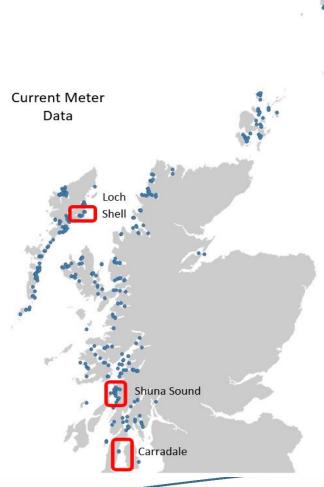
Report

Recommendation: Further Modelling

Scottish Environment Protection Agency

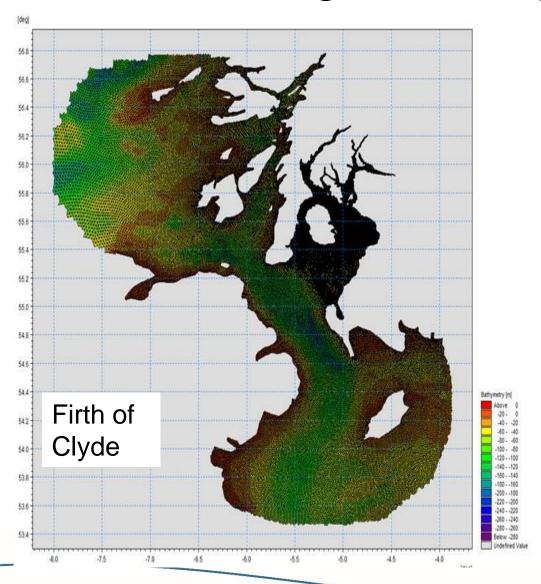


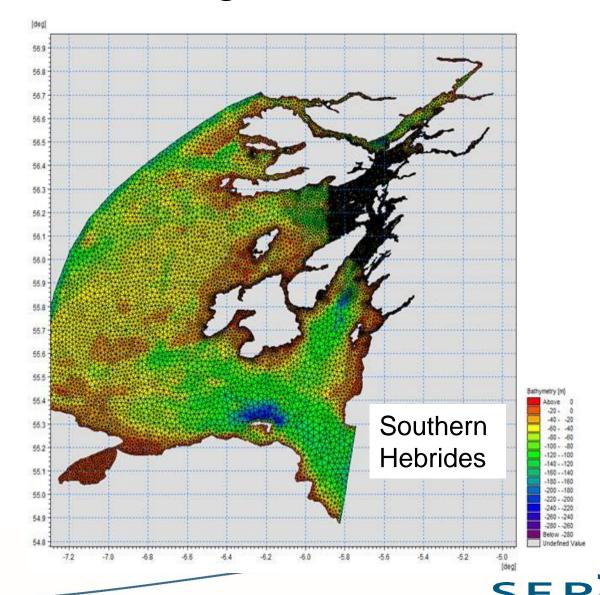




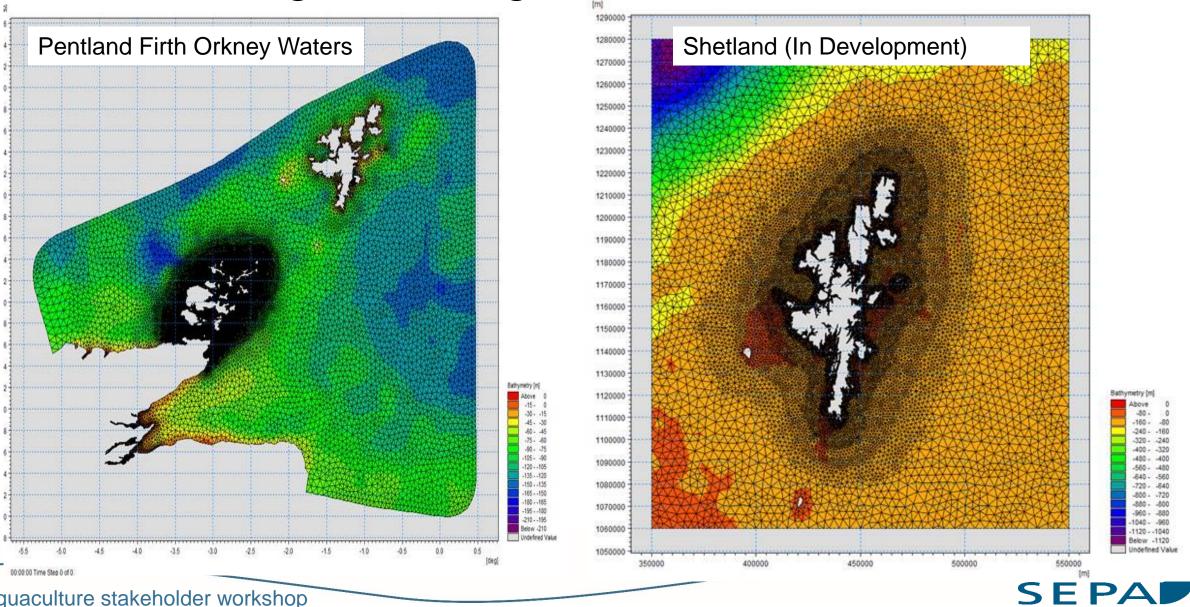
Colgrave Sound



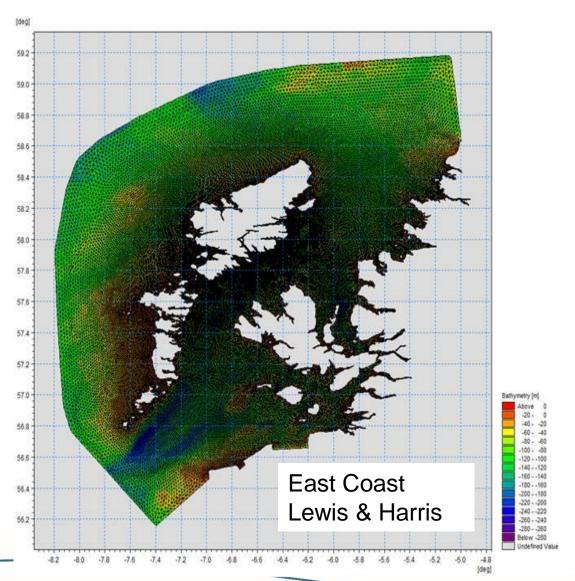


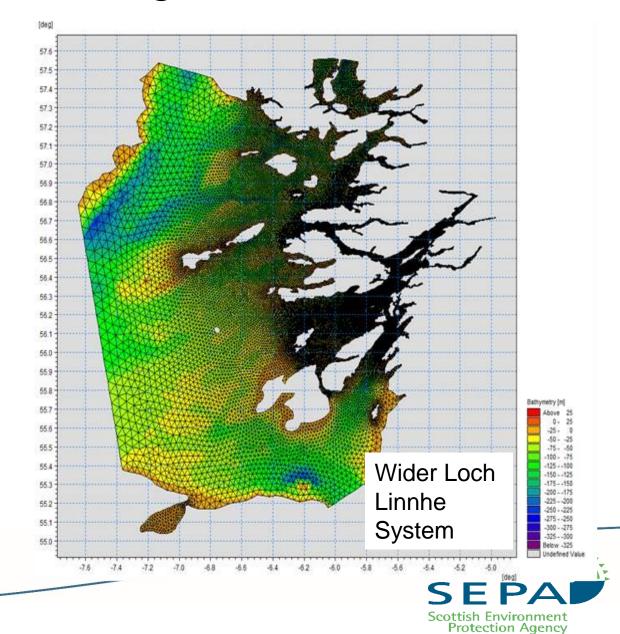


Scottish Environment Protection Agency



Scottish Environment Protection Agency





Screening Modelling Development

Need To Improve Resolution In Areas Of Interest Shetland Model Development

Distribute
Current
Versions Of
Screening
Models &
Current
Properties
Maps

Marine Scotland Re-Analysis Project

Compare
Screening
Results With
More Detailed
Modelling

Model

Development

Further Develop Method Based On Feedback



Aquaculture stakeholder workshop 23 September 2019

Aquaculture Modelling - Update

- Questions and feedback on example report.
- Update on NewDepomod. Questions.



Summary Of Key Points

Example Report
Can Be
Developed
Based on
Feedback

Principle of Screening Seems Sound & Useful

Stock of Screening Reports Will Be Useful

Screening Modelling

Currently Have Six Screening Reports in Preparation

Increased
Resolution Of
Models
Required

Method And Reporting Can Be Developed After Use

