

**NS 2 FRESHWATER PEARL MUSSEL SUB-BASIN
MANAGEMENT PLANS**

**REPORT ON MORPHOLOGICAL MONITORING AND
CATCHMENT WALKOVER RISK ASSESSMENTS IN THE
GLASKEELAN CATCHMENT**

September 2009

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1.0 INTRODUCTION

In order to assess the hydromorphological alterations within the Glaskeelan catchment the EPA WFD classification tool called the River Hydromorphology Assessment Technique (RHAT) was utilised by RPS. This tool was developed through the North South Share project, to classify rivers in terms of their morphology. It is a field technique which assigns a channel typology. This influences the rivers physical attributes assessed in the field. The technique assigns a morphological classification directly related to that of the WFD – high, good, moderate, poor and bad.

RHAT surveys were carried out at high risk areas located within pearl mussel populations. The methodology classifies river hydromorphology based on a departure from naturalness, and assigns a morphological classification, based on semi-quantitative criteria. It is designed to be a rapid visual assessment based on information from desktop studies, using GIS data, aerial photography, historical data and data obtained from previous field surveys as well as observations in the field.

A catchment walkover risk assessment survey sheet was also designed by the project team in conjunction with NPWS in order to focus the collation of the pressure data in the field with respect to the Freshwater Pearl Mussel. The risk sheet was divided into eight categories designed to highlight the main pressures within the catchment. The eight categories are as follows:

- Source of erosion
- Diffuse Nutrient
- Diffuse Silt
- Current Riparian Zone
- Field Drainage
- Outfalls
- Abstractions
- Barriers to Migration

Each sub-pressure within the eight categories is analysed and an overall risk assessment of High, Medium or Low is assigned to that category. The “one out all out principle” is then used to assign the river stretch or point an overall risk category. A detailed description, together with a series of photographs outlining the pressures is also taken. The risk assessment sheets will assist the project team in focussing the specific freshwater pearl mussel measures within the catchment.

Location of survey stretches and points are shown in **Figure 1**

2.0 METHODOLOGY

Sampling was carried out on the 28th of May 2009.

2.1 CATCHMENT WALKOVER RISK ASSESSMENT

During the development of the draft sub-basin management plans throughout 2008 a complete desk study was conducted of all relevant biological, water quality and pressure source data within the Glaskeelan catchment. Best use was made of all available datasets such as the pressure source data collated by the River Basin District Projects for the Article V Characterisation and Programme of Measures Studies. This work allowed the NS 2 project team to assess the catchment through the combined availability of aerial imagery and digitised pressure information. Where gaps in this data existed together with areas that required ground truthing such as physical barriers to migration, catchment walkover risk assessments were focussed throughout the 2009 field survey season.

The catchment walkover risk assessment sheet (See Appendix 3) covers eight main categories or pressures which are subsequently sub-divided into the various sources. Each source is ticked if present and an overall risk assessment for each pressure assigned from High to Medium to Low over the survey length or point. All eight pressures are combined to give an overall risk assessment to the catchment based on the “one out all out principle”.

3.0 RESULTS

3.1 Catchment Walkover Risk Assessment Results

A total of three sites were surveyed in the Glaskeelan sub-basin catchment, with a risk assessment carried out at all three of these sites. Figure 1 outlines the locations of the High to Low Risk Assessment from the Catchment Walkover Risk Assessments. Two high risk sites were recorded out of the three that were assessed. The remaining site was recorded as medium risk, meaning no low risk sites were recorded within this catchment. Figure 2 outlines the percentage of sites classified at high and medium risk throughout the catchment.

The most frequent high risk category identified was:

- Diffuse Nutrient – evident at 100% of high risk sites,

The most common source of diffuse nutrient was forestry evident at both high risk sites. A break-down of the individual sources of diffuse nutrient at high risk sites is given in **Figure 4**.

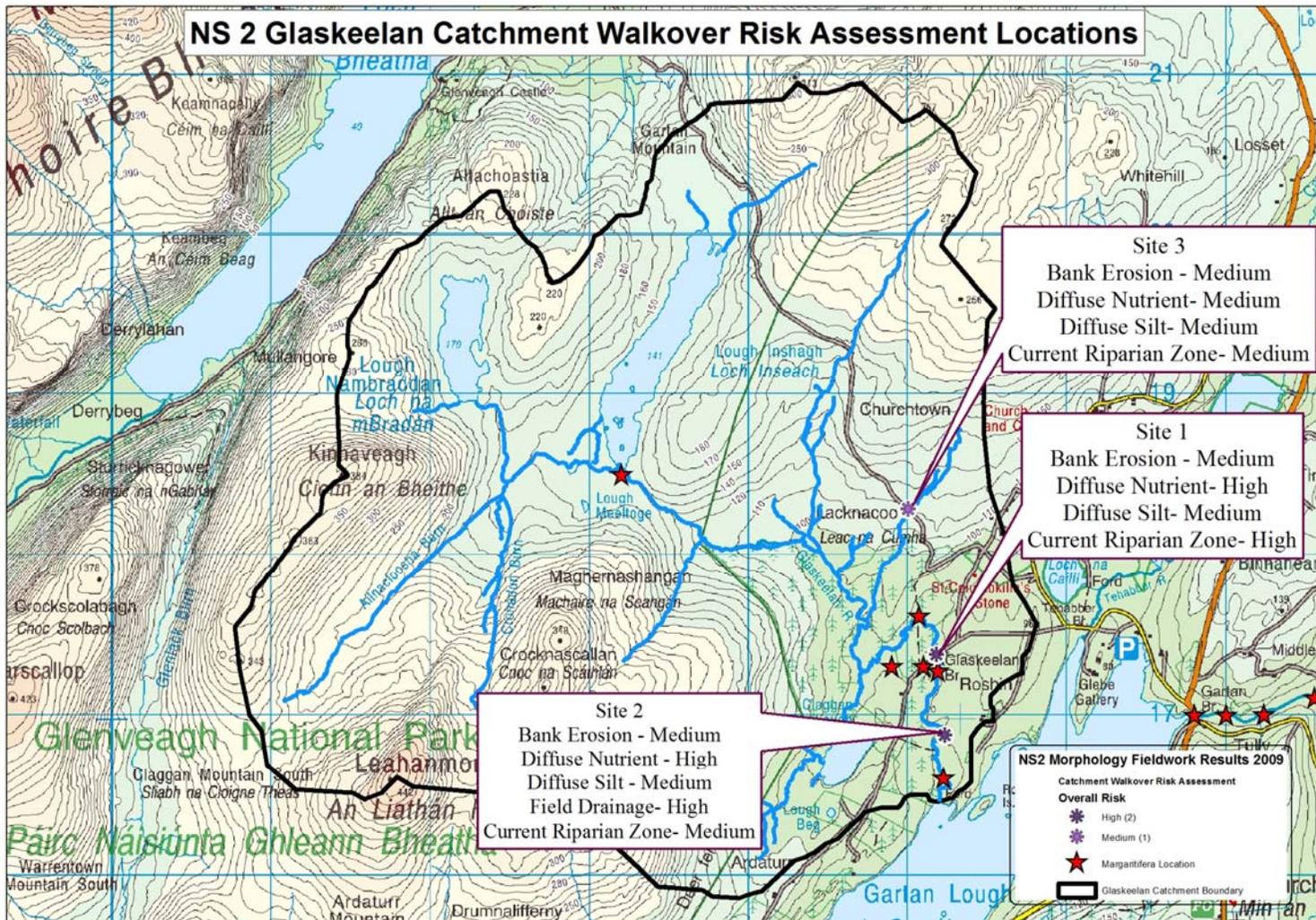


Figure 1 Location of Catchment Walkover Risk Assessments

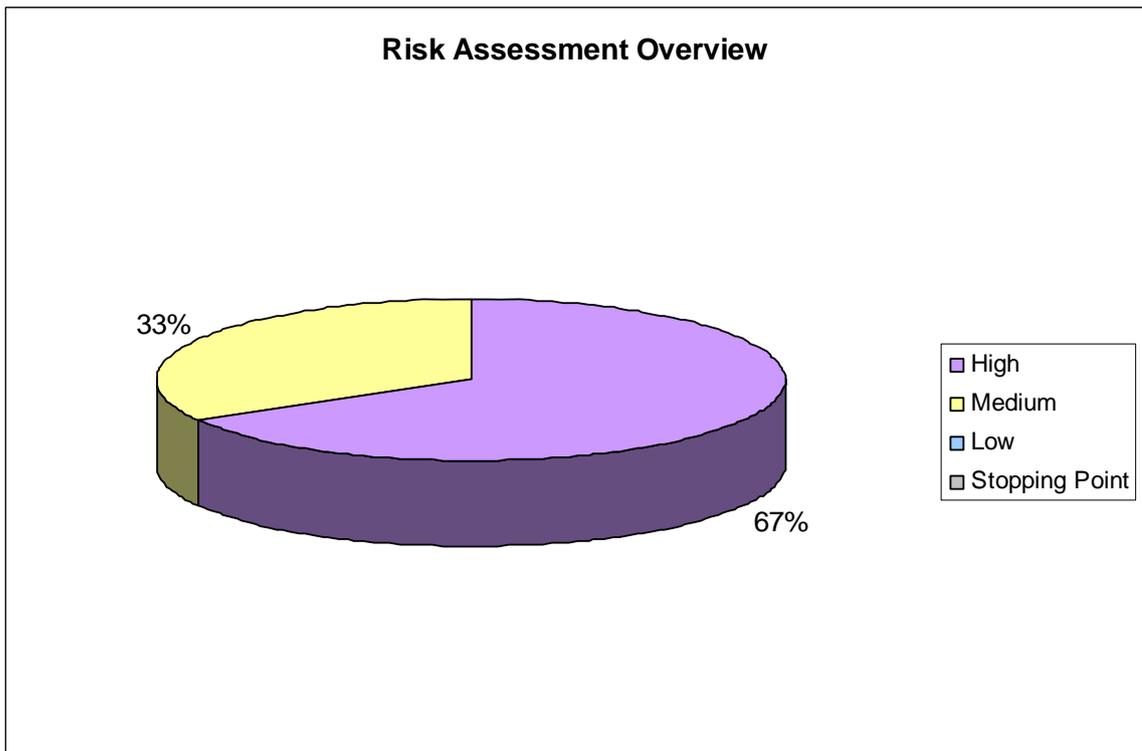


Figure 2 Risk Assessment Overview

The break-down of pressure categories identified as high risk are outlined in Figure 3

Figure 3 Breakdown of High Risk Categories

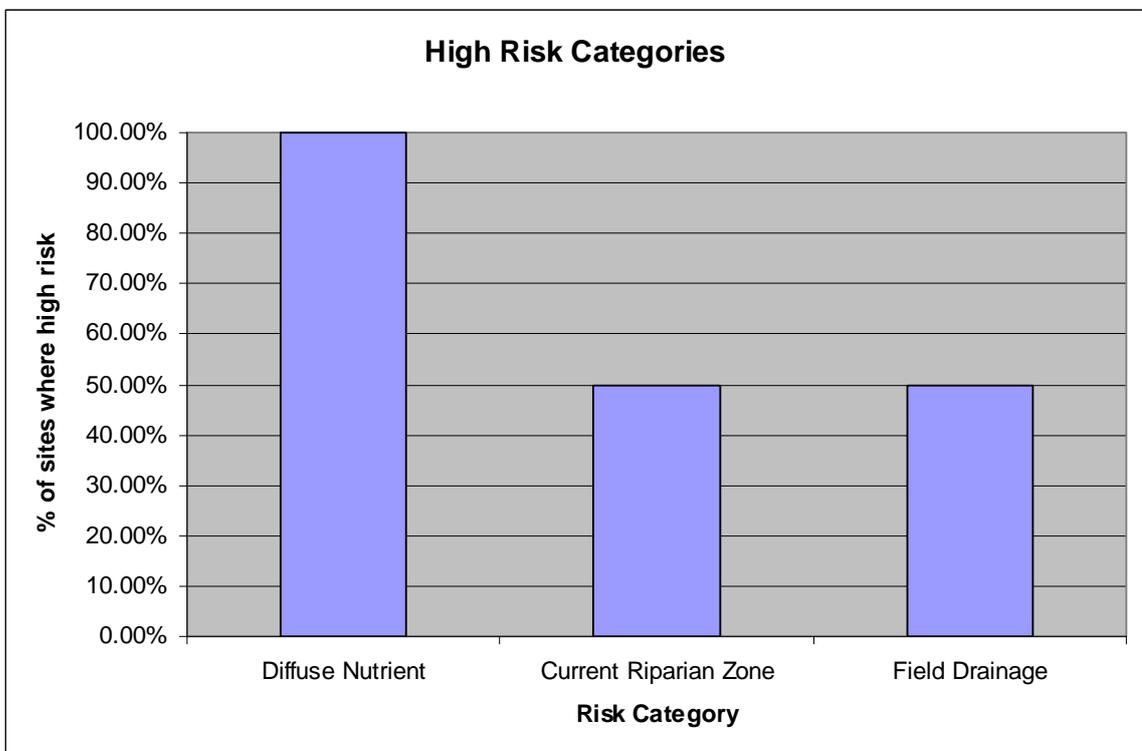
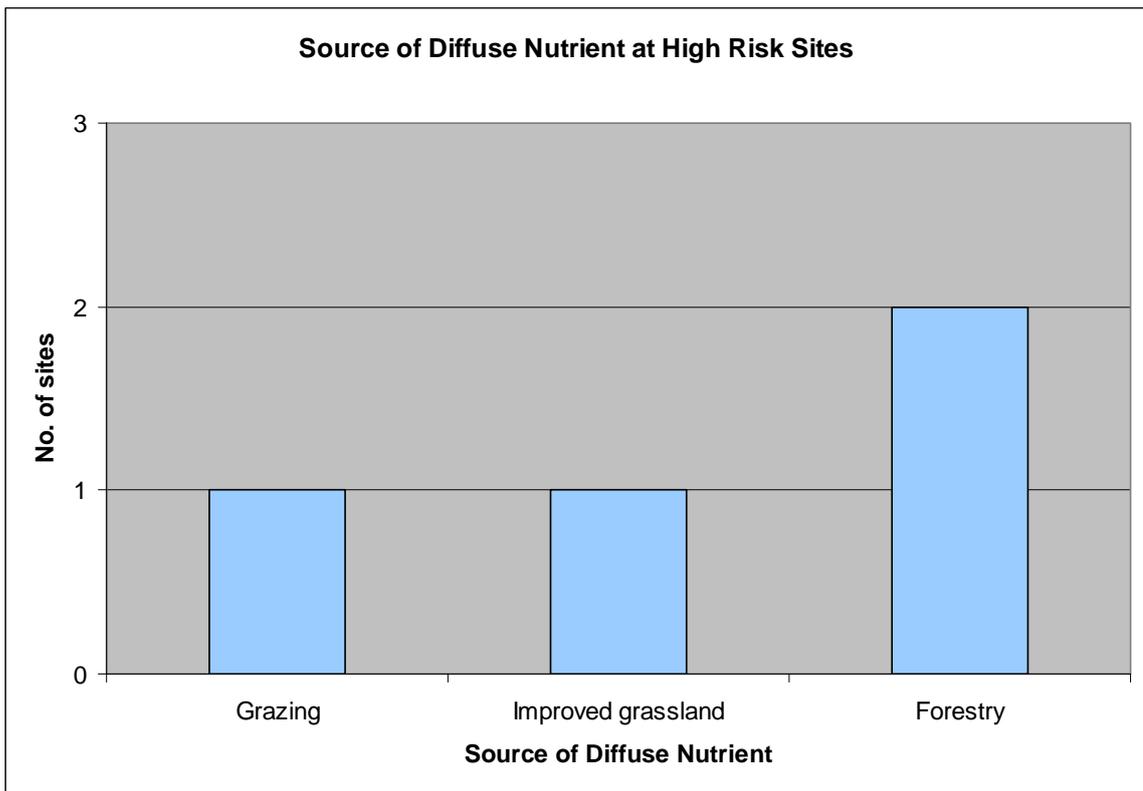


Figure 4 Sources of Diffuse Nutrient at High Risk Sites



Some representative photographs for the three sites which were surveyed can be found below.

Site 1, Photo 2 – New and old forestry



Site 2 – Photo 7 Deep slow moving channel – possible historically drained.



Site 3, Photo 5 – Old stone culvert



Site 3, Photo 6 – Peaty soils, peat stain channel



4.0 CONCLUSIONS

The Glaskeelan sub-basin catchment is the smallest Freshwater Pearl Mussel sub-basin catchment in Ireland. As a result only three risk assessments were undertaken with two being carried out in locations where Freshwater Pearl Mussel populations are known to exist. Both these risk assessments were high risk with the remaining medium risk site located further upstream. Diffuse nutrient appears to be the greatest issue within this catchment with forestry detected at all high risk sites. If this pressure can be remediated it will greatly assist this catchment in returning to favourable conservation status.

APPENDIX 1

PHOTOGRAPHS

Photographs of site locations and catchment pressures on the Glaskeelan River and tributaries 2009. All field work photographs can be found in the accompanying electronic appendix.

Overall Risk * uses the “one out all out” principle

Site No.	Catchment Name	Location	X	Y	Photo No.	Bank Erosion	Diffuse Nutrient	Diffuse Silt	Field Drainage	Outfalls	Abstraction	Barriers to Migration	Current Riparian Zone	Overall Risk*	Pressure/Photo Details
1	Glaskeelan	Site at Glaskeelan Bridge	205184	417370	1, 2, 3, 10, 11	Medium	High	Medium	Low	Low	Low	Low	High	High	Animal trampling, new forestry planting with several ditches draining to river, siltation is low but enrichment is evident in channel, FGA noted on stones in channel
1	Glaskeelan	Site at Glaskeelan Bridge	205157	417386	4										Mosses on bedrock substrate
1	Glaskeelan	Site at Glaskeelan Bridge	205174	417382	5, 6										Drainage from newly planted forest entering river
1	Glaskeelan	Site at Glaskeelan Bridge	205191	417335	7										Ranunculus growth in channel
1	Glaskeelan	Site at Glaskeelan Bridge	205191	417335	8										View upstream taken from downstream of bridge
1	Glaskeelan	Site at Glaskeelan Bridge	205194	417329	9										Land drainage, peat staining
1	Glaskeelan	Site at Glaskeelan Bridge	205200	417323											
2	Glaskeelan		205235	416869		Medium	High	Medium	High	Low	Low	Low	Medium	High	Natural bank erosion occurring, possible historic channelisation, enrichment evident in channel, new forest plantation, slurry spreading

															on improved grassland, 50m back from river, historical peat cutting in fields
2	Glaskeelan		205382	416938	1										Land drainage in field
2	Glaskeelan		205382	416938	2,3										Land drainage in field
2	Glaskeelan		205235	416869	4, 5										View upstream and Downstream of river
2	Glaskeelan		205178	416843	6,7										Deep slow moving channel, possibly deepened in the past
2	Glaskeelan		205172	416805	8										Mid channel bar indicating active erosion and deposition processes
2	Glaskeelan		205197	416805	9										New planting in distance, where river enters Lough Gartan
2	Glaskeelan		205232	416772	10										Old peat cutting bank
2	Glaskeelan		205355	416831	11										Landscape looking towards Lough Gartan
2	Glaskeelan		205410	416829	12										Slurry recently spread on field
3	Glaskeelan		205003	418282	1,2	Medium	Medium	Medium	Low	Low	Low	Low	Medium	Medium	Tributary at hiking trail which leads to Glenveagh Castle
3	Glaskeelan		205003	418282	1,2										
3	Glaskeelan		205003	418282	3										
3	Glaskeelan		205003	418282	4										Ditch dug along hiking trail / mountain track leading to tributary
3	Glaskeelan		205007	418284	5										Stone culvert under hiking path

Appendix 2 – Catchment Walkover Risk Assessment Survey Sheet

	Present?		Grid Reference of specific pressure	No. of Photographs	Comments
	Yes	No			
Source of Erosion					
Bank erosion					
Land clearance					
In river clearance					
Arable ploughing					
Animal trampling					
Fords					
Channel manipulation					
Hard bank protection measures					
Other sources					
Overall Risk	High	Medium	Low		
Diffuse Nutrient					
Arable					
Grazing					
Improved grassland					
Slilage					
Forestry					
Housing					
Industry and associated works					
Other sources					
Overall Risk	High	Medium	Low		
Diffuse Silt					
Arable					
Grazing					
Over-grazing					
Improved grassland (Re-seeding)					
Forest					
Slilage					
Industry					
Construction stages					
Housing					
Infilling					
Peat cutting					
Quarries					
Other sources					
Overall Risk	High	Medium	Low		

	Present?		Grid Reference of specific pressure	No. of Photographs	Comments
	Yes	No			
Current Riparian Zone					
Fencing					
Buffer					
Tree line at bank					
Tree line buffer					
Plantation with no buffer					
Urbanisation					
Flood protection					
Marshy land					
Landuse at bank					
Other sources					
Overall Risk	High	Medium	Low		
Field Drainage					
Ditch managed					
Ditch unmanaged					
Drainage on high slope					
Drainage on low slope					
Land drainage (perforated pipes)					
Other sources					
Overall Risk	High	Medium	Low		
Outfalls					
Industrial discharges					
Storm drains					
Culvert outfalls					
Other sources					
Overall Risk	High	Medium	Low		
Abstractions					
Small					
Large					
Overall Risk	High	Medium	Low		
Barriers to migration					
Culverts					
Bridge aprons					
Weirs					
Stone weirs					
Other sources					
Overall Risk	High	Medium	Low		