# NS 2 FRESHWATER PEARL MUSSEL SUB-BASIN MANAGEMENT PLANS

# REPORT ON MORPHOLOGICAL MONITORING AND CATCHMENT WALKOVER RISK ASSESSMENTS IN THE CLODIAGH CATCHMENT

**September 2009**

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# INTRODUCTION

In order to assess the hydromorphological alterations within the Clodiagh 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 23rd of June 2009.

### 2.1 RIVER HYDROMORPHOLOGY ASSESSMENT TECHNIQUE (RHAT)

Classification of hydromorphology can be used to contribute to the status classification of water bodies at high ecological status only. However, RHAT plays a vital role in identifying why a water body might be failing to achieve Good Ecological Status as it is based on the observed impact in the field. It can assist in deciding what indirect and direct efforts are needed to improve status and in helping to prevent further deterioration.

The eight criteria that are scored are:

1. Channel morphology and flow types
2. Channel vegetation
3. Substrate diversity and embeddedness
4. Channel flow status
5. Bank and bank top stability
6. Bank and bank top vegetation
7. Riparian land use
8. Floodplain connectivity

Sheet 1 of the RHAT form contains the Field Health and Safety sheet which is filled on arrival at the site. Before the field survey, a desk study is required this element of the survey was completed as part of the development of the draft sub-basin management plans. The reach identification and physical characterisation sections for each field site are recorded on Sheet 2 (see Appendix 1) with all information available from GIS and aerial photographs, including:

a. expected stream type and the description of various stream types
b. catchment and reach-scale pressures (these may help to identify, confirm or explain field observations);
c. expected riparian vegetation types (for high quality status);
d. the weather conditions on the day of the survey, and those immediately preceding the day of the survey. This information is important to interpret the effects of storm events on the survey results;
e. the estimated stream width and the reach length to be assessed (~ 40 x width).
f. any other notable issues (e.g. from previous surveys).

A score is allocated to each relevant attribute (the number of attributes to be assessed will depend on the stream type). Where the condition departs from the reference condition, note should be made if this condition results from a particular identifiable pressure. Where possible and where relevant, all attributes should be included in the assessment, using the assessment sheet (Sheet 3, see Appendix 1). If an attribute is not assessed, the score-summary table should be amended (cells shaded) and a note made as to why the assessment was not carried out. The WFD status can still be calculated on the basis of other attributes, but with a note that a particular attribute was omitted.

Transfer scores for individual attributes to the summary table on the survey Sheet 2. Finally the overall WFD category can be calculated using the following values:

| | |
|---|---|
| > 0.8 | = high |
| 0.6 – 0.8 | = good |
| 0.4 – 0.6 | = moderate |
| 0.2 – 0.4 | = poor |
| < 0.2 | = bad |

For the purposes of the assessment as part of the NS2 project, a high status for morphology is desirable for pearl mussel habitats. Through work carried out by the Shannon IRBD project on the Freshwater Morphology Programme of Measures Study, it was found that an observed relationship exists between biological data and a RHAT score. The study confirmed that morphological pressure can impact biology and therefore ecological status. In general, sites with RHAT scores less than 0.6 also have less than good Q scores. Similarly high levels of siltation affecting macrophyte populations are reflected by less than good RHAT scores.

Grid references were recorded at all sites using a GPS together with site photographs which were taken using a digital camera.

## 2.2 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 Clodiagh 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

**Figure 3.1** indicates where the Clodiagh RHAT assessments were carried out throughout the catchment.

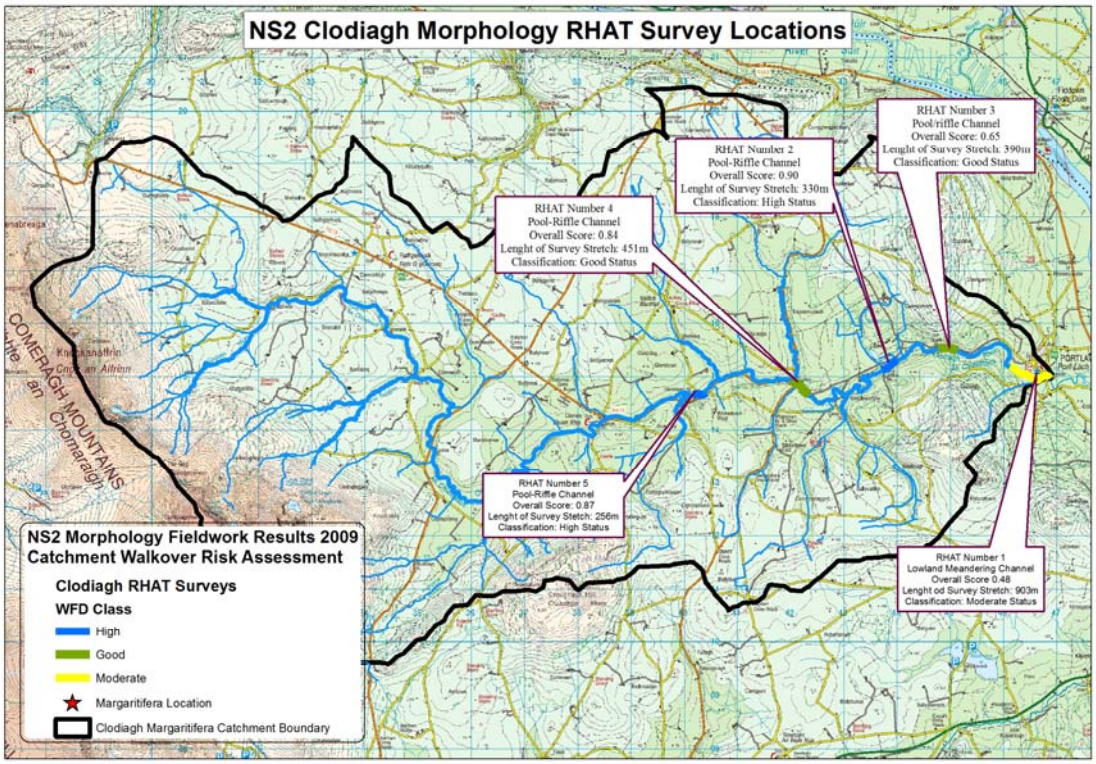



**Figure 3.1 Morphology RHAT Assessment Locations**

(The RHAT numbering system corresponds to the site code which may mean they are not sequential where a RHAT was not carried out at a particular site)

### 3.1 RHAT Survey Results

Five RHAT surveys were carried out within the Clodiagh catchment in the vicinity of the pearl mussel populations. The first was carried out in Portlaw on a largely lowland meandering channel however it does change to a pool-riffle-glide channel at the downstream end of the survey stretch. The survey was carried out over a 903m stretch with some resectioning and reinforcement recorded. All attributes scored quite low with the bank structure and stability, bank vegetation and floodplain connectivity all scoring one out of four only. This is due to the toe line reinforcement which is found at the beginning of the survey stretch together with a wall that runs along the majority of the stretch. One major bridge together with a weir and fish pass were recorded at the lower end of the survey stretch in association with the old mill which is found in the town. The substrate condition was also quite poor scoring two out of four over the survey

stretch it was largely found to contain fine silts with dead mussels recorded in the channel. Overall this stretch was classified as moderate status however the hydromorph score was just over the poor classification boundary.

The second RHAT survey was carried out along a 330m stretch of a pool-riffle-glide channel within the grounds of Curraghmore Estate. This stretch was found to be in good condition with very little morphological alterations acting on the channel. The only attributes which were downgraded were the substrate condition and the barriers to continuity which scored two and three out of four respectively. From a morphological point of view this stretch was classified as being at high status however the substrate condition was found to contain high levels of fine silts and a heavy silt plume was evident during a kick of the substrate.

RHAT number 3 was also carried out in Curraghmore Estate over a 390m survey stretch. Excessive resectioning on the left bank together with resectioing on the right bank and reinforcement on both banks were recorded. As a result the channel form and flow type only scored one out of four based on the observation that approximately >80% of the left bank was reinforced and/or resectioned. The bank structure and stability together with the bank vegetation and floodplain connectivity all scored low also.

**Plate 3.1 Representative photographs from reach:**

| **RHAT 1 Site 1 Photo 7** | **RHAT 1 Site 1 Photo 22** |
|---|---|
|  |  |

| | |
|---|---|
| **RHAT 2 Site 2 Photo 9**  | **RHAT 2 Site 2 Photo 1**  |
| **RHAT 3 Site 3 Photo 1**  | **RHAT 3 Site 3 Photo 2**  |

For a channel of this type significantly more macrophyte growth than would be expected for a channel of this type was recorded in particular *Ranunculus.* Overall this stretch was classified as being at good status.

RHAT number 4 was carried out farther up the catchment over a 451m stretch of a pool-riffle-glide channel. Overall this stretch was found to be in good condition from a morphological point of view with only the substrate condition and channel vegetation scoring quite low due to the presence of fine silts in the channel and greater than expected levels of macrophyte growth in particular *Ranunculus*. Overall this stretch was classified as being at good status.

The final RHAT survey carried out within the catchment was RHAT number 5 this was carried out at Glenstown Bridge. This is a pool-riffle-channel with very little morphological alterations. Only the substrate condition scored low together with the

channel vegetation. This is again due to the presence of fine silts and greater than expected amounts of macrophytes including *Ranunculus* and filamentous algae. Some poaching has occurred in the past but this is largely localised and not an on-going issue. Overall this stretch was classified as being at high status.

**Plate 3.2 Representative photos from the survey reach**

| | |
|---|---|
| **RHAT 4 Site 4 Photo 9** | **RHAT 4 Site 4 Photo 3** |
|  |  |
| **RHAT 5 Site 5 Photo 5** | **RHAT 2 Site 5 Photo 3** |
|  |  |

Details in relation to photographs are tabulated in Appendix 2.

## 3.2 Catchment Walkover Risk Assessment Results

A total of thirteen sites were surveyed in the Clodiagh sub-basin catchment, with a risk assessment carried out at all of these sites. **Figure 3.2** outlines the locations of the High to Low Risk Assessments from the Catchment Walkover Risk Assessments. Three high risk sites were recorded out of the thirteen that were assessed. Nine sites were recorded as medium risk; meaning only one low risk site was recorded within this catchment. **Figure 3.3** outlines the percentage of sites classified at high, medium and low risk throughout the catchment.

The most common high risk categories identified were:

- Erosion – at 100% of high risk sites.
- Outfalls – at 67% of high risk sites,

The Current Riparian Zone category of the Catchment Walkover Risk Assessment slightly varies from the seven other categories or pressures. The Current Riparian Zone is not a pressure in itself; however the aspects listed in this category are the interceptors to the pressure and convey the extent or lack of buffer provided by the riparian zone. A high risk riparian zone indicates that the pressures acting on the river are more likely to have significant impact. For example the lack of fencing along a river stretch can lead to excessive trampling and/or poaching which in turn may lead to siltation within a pearl mussel habitat. The various categories and pressures listed in the Catchment Walkover Risk Assessment sheet were designed to assist the project in focussing the measures which will be needed to combat the pressure along its pathway, rather than removing a source which may not always be possible such as intensive agriculture. Recording the Riparian Zone in terms of its current performance as a buffer is important in this regard.

Current Riparian Zone has ten aspects as follows:

- Fencing
- Buffer

- Tree line at bank
- Tree line buffer
- Plantation with no buffer
- Urbanisation
- Flood Protection
- Marshy Land
- Landuse at bank
- Other Sources

Where one or any of these aspects is found to be the cause of significant impact to the riparian zone, or the channel along the stretch then this category may be assigned a high risk score. Locations where pressures were evident in the field which were not highlighted through the desk based assessment were also noted as stopping points. These points were not selected prior to fieldwork, they were opportunistic as the catchment drive through was taking place. The pie chart in **Figure 3.3** indicates the percentage of stopping points also.

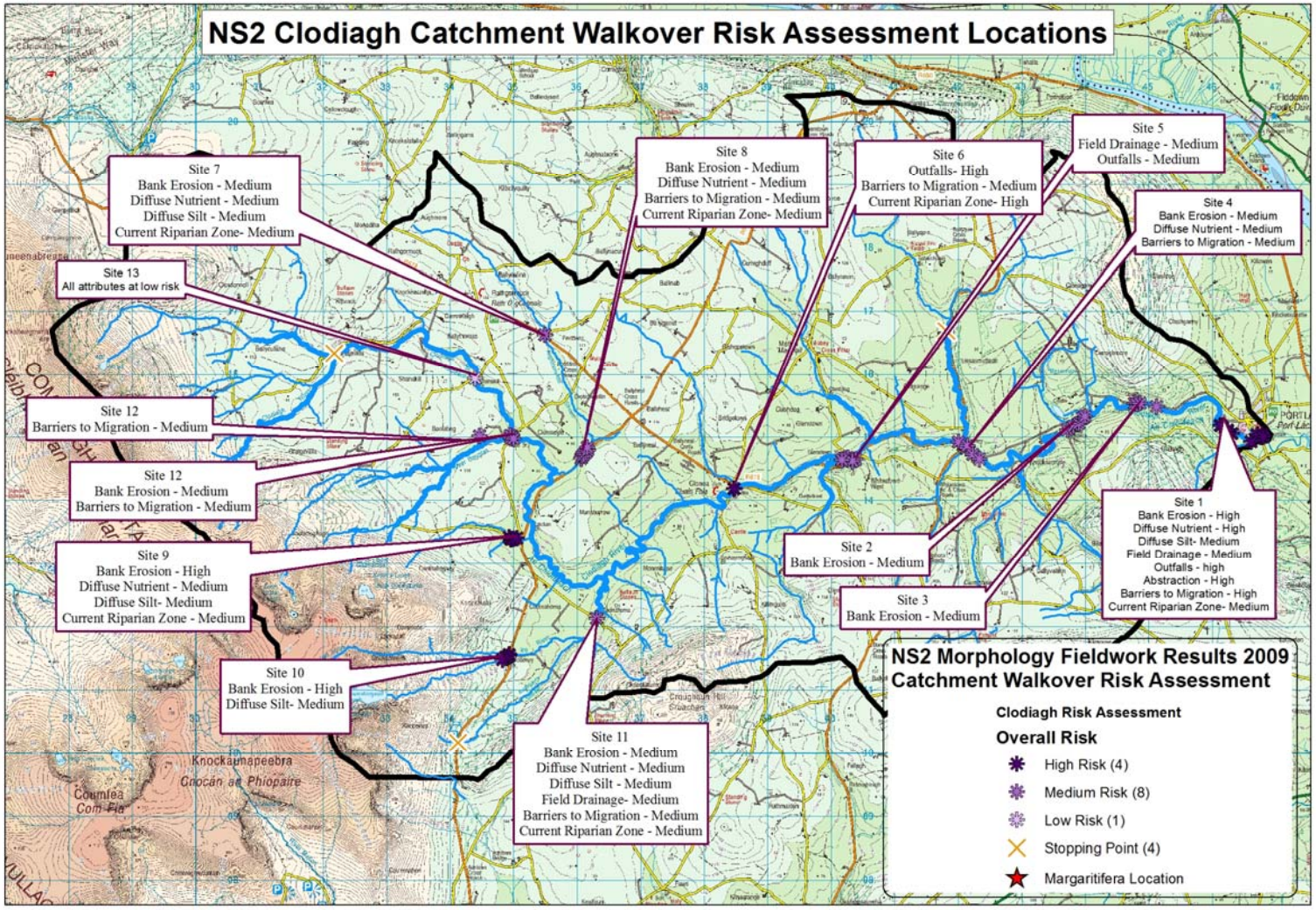



**Figure 3.2 Location of Stopping points and Catchment Walkover Risk Assessment**

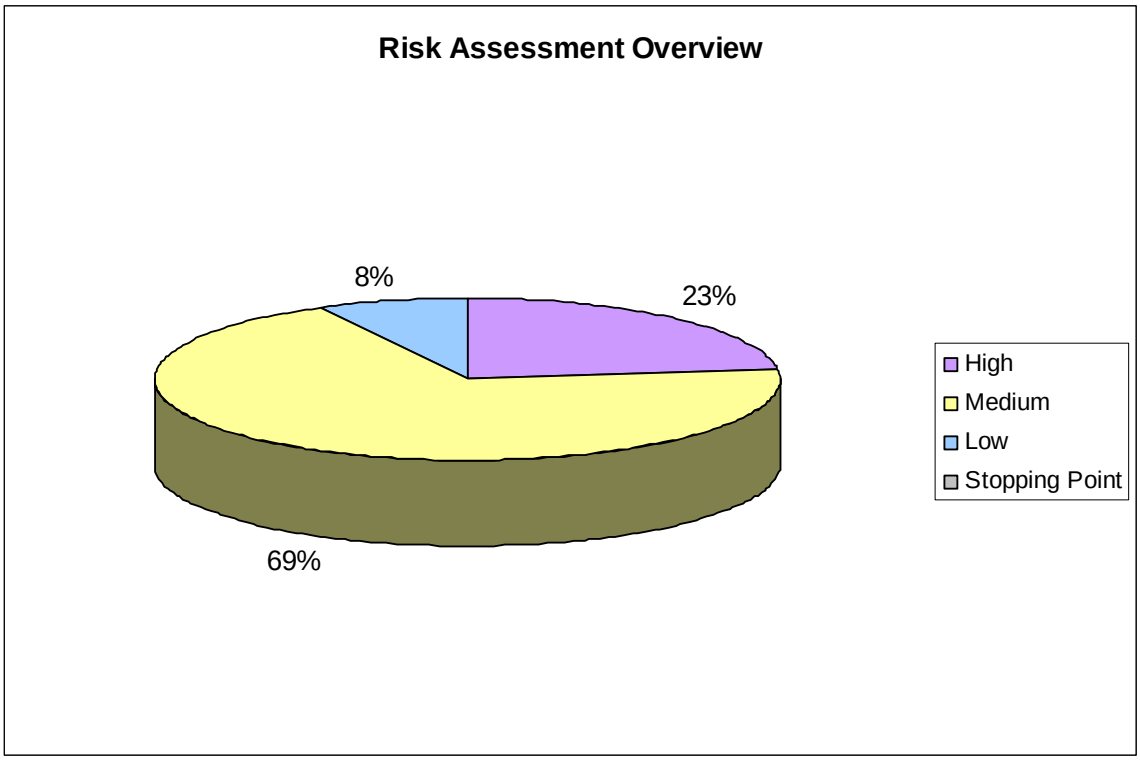
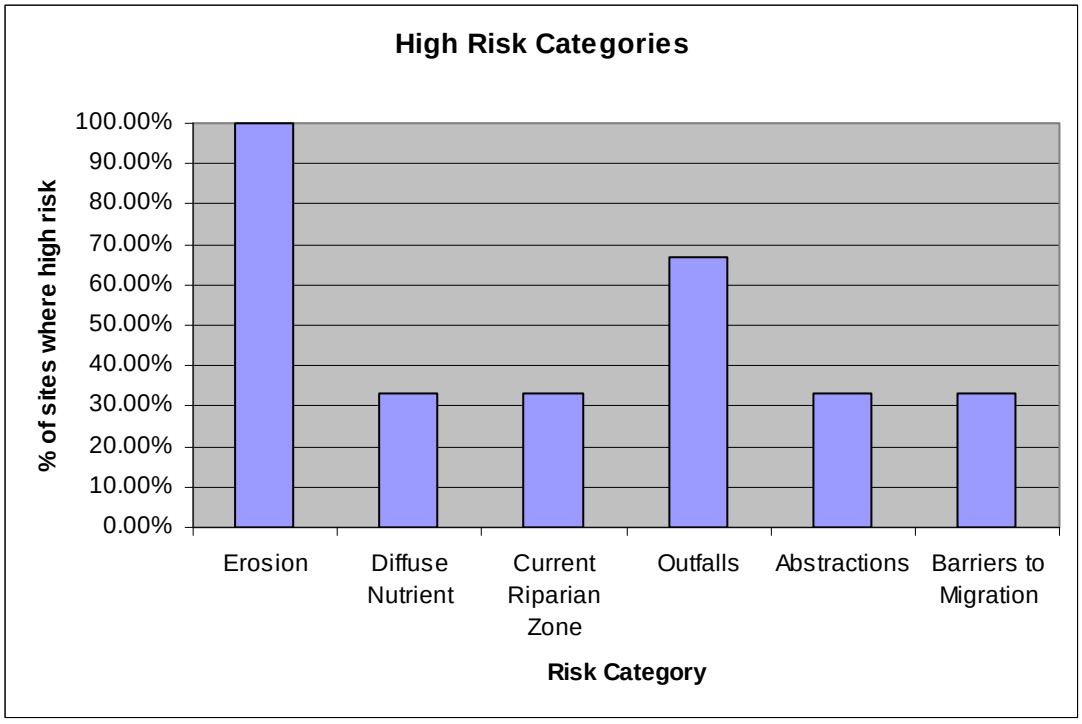



**Figure 3.3 Risk Assessment Overview**

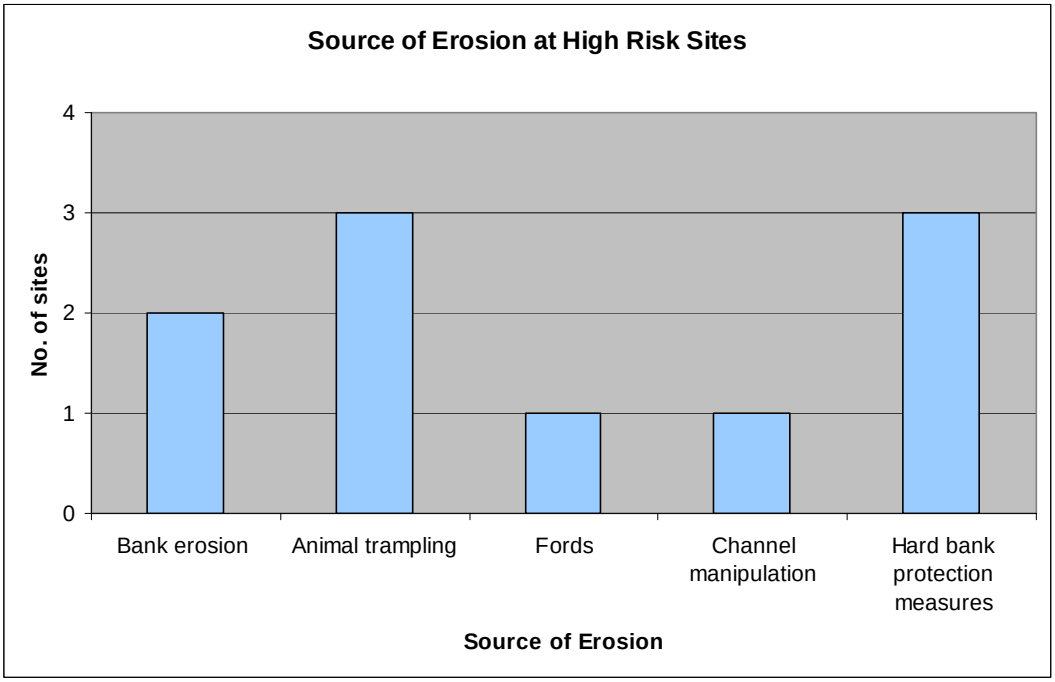
The break-down of pressure categories identified as high risk are outlined in **Figure 3.4**

**Figure 3.4 Breakdown of High Risk Categories**



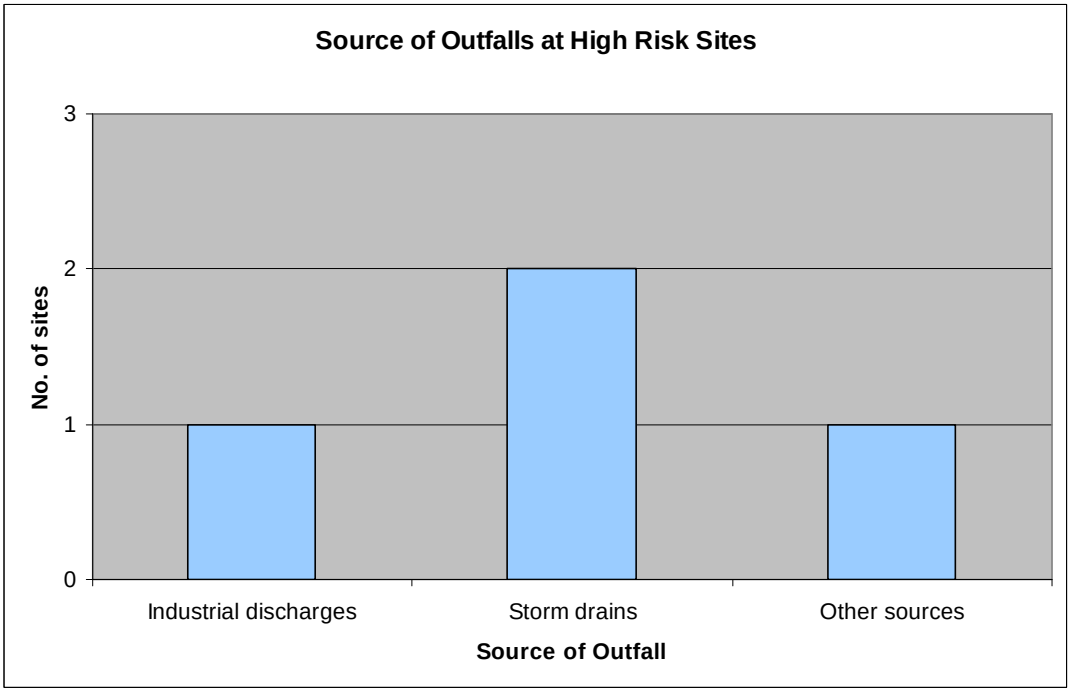
The most common source of erosion is animal trampling and hard bank protection measures which were both evident at all three high risk sites. The additional high risk erosion categories can be seen below:

**Figure 3.5 Sources of Erosion at high risk sites**




High risk outfalls were present at two sites, the most common type identified is storm drains.

**Figure 3.6 Sources of outfalls at high risk sites**



## 3.3 Point Discharges

Point sources discharging nutrients, such as wastewater treatment plants, can contribute very significant nutrient and organic loads to rivers. Quarry dust and effluent can cause problems with silt pollution and, in some cases, lime pollution. Landfills and landfill leachate can be sources of surface and groundwater contamination that can find pathways to the river. Storm water drainage can be a source of silt and pollutants.

### Waste Water Treatment Plants

A review was undertaken of the available information on municipal and industrial discharges by the South Western River Basin District Project (SWRBD) and an assessment carried out as to whether any river water bodies were considered to be at risk from point sources under a number of circumstances. Within the Clodiagh catchment we then assessed all monitoring information together with pearl mussel status above and below any WWTP and prioritised those which we deemed to have a significant adverse effect on the pearl mussel population or its habitat. Following this prioritisation process Clonea Power WWTPs within the Clodiagh catchment was deemed to have a significant adverse affect on the pearl mussel or its habitat.

The plant is upstream of the majority of mussels in this population. Both the NS2 monitoring information as shown in Chapter 4 together with the EPA monitoring results supports the impact this plant is having given the poor status downstream of the discharge. This requires further investigation, connection of all sewered/unsewered houses to WWTP and WWTP upgrade. As a result Clonea Power has been included in the Water Services Investment Programme 2010-2012.

### Quarries

The Clodiagh catchment contains one quarry which is upstream of the pearl mussel populations as per **Figure 3.7.** The potential risk from quarry dust, effluent or pollution incidents will need to be investigated further within the catchment.

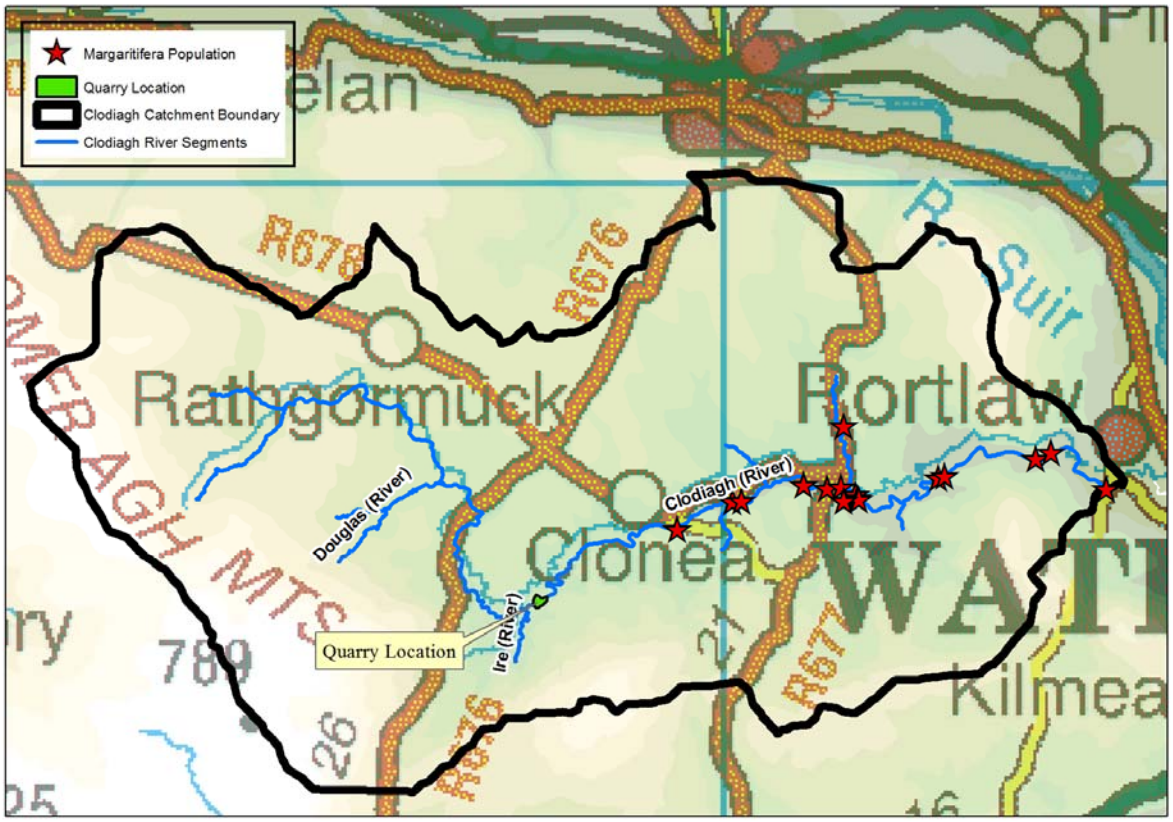



**Figure 3.7 Location of Quarries within and adjacent to the Clodiagh Catchment**

The pressures outlined above all have the ability to negatively affect the status of the freshwater pearl mussel. In some cases, a single pressure alone may be enough to cause a kill or ongoing chronic effects, but in most cases it is the combination of the negative effects of a number of pressures that are acting together to leave the freshwater pearl mussel habitat in unfavourable condition. It is unlikely that the effect of every diffuse source of pollution can be totally removed. Therefore, it is not possible to choose a subset of pressures to act on; steps must be taken to reduce every pressure, until the cumulative effect of all the reductions is a sustainable habitat for the freshwater pearl mussel and all the other species that it protects thanks to its umbrella and keystone status in its habitat. This is the essence of the precautionary principle under which the Habitats Directive must be implemented.

## 4.0 CONCLUSIONS

Freshwater Pearl Mussel populations are present in certain locations along the downstream end of the Clodiagh River from Clonea to Portlaw. There were six risk assessments carried out along this stretch; out of these two were recorded as high risk and the remaining four were medium risk. The remaining low risk and medium risk sites are located further upstream in the catchment in locations along the Clodiagh main channel and its tributaries. The main point source pressure within this catchment which needs to be addressed as a top priority is located at Clonea village as outlined above. The untreated sewage which enters the channel at this point is having a considerable impact on the main river channel downstream and should be addressed prior to the implementation of all other measures.

# APPENDIX A

# RHAT Field Sheet

**Field Health and Safety sheet**

River Name_____ Site Code_____ Date_____

1 = Low risk 5 = High risk

Please circle applicable number

| | | | | | |
|---|---|---|---|---|---|
| PARKING | 1 | 2 | 3 | 4 | 5 |
| FENCES/BARRIERS | 1 | 2 | 3 | 4 | 5 |
| GROUND STABILITY | 1 | 2 | 3 | 4 | 5 |
| DENSE VEGETATION | 1 | 2 | 3 | 4 | 5 |
| BANK STEEPNESS OR STABILITY | 1 | 2 | 3 | 4 | 5 |
| RISK FROM ANIMALS | 1 | 2 | 3 | 4 | 5 |
| PHONE COVERAGE | 1 | 2 | 3 | 4 | 5 |

Previous RHS/RAT/RHAT surveys - year and code _____

Details of access _____

# RHAT (VERSION 2)

TRIBUTARY / MAIN CHANNEL*

**Site Identification**

River Name _____ Site Code _____

Nearest WFD site FF10 _____

Water Body ID _____ Start U / S or D / S*

First IGR _____ Last IGR _____

Bank surveyed from L / R / Both / in-Channel*

| Desk-study notes | | Field Notes |
|---|---|---|
| ACTION TO TAKE PRIOR TO FIELDWORK<br><br>General overall shape of river<br>Check weirs, impoundments etc. on catchment | | River type<br><br>Date |
| Floodplain connectivity and land use<br><br>Expected river type<br><br>Rain last week<br><br>Estimated river width<br><br>Estimated survey length<br><br>Riparian land cover(s)<br><br>River Agency designated?<br><br>Other comments including geology - limestone / siliceous / peat* | | Time<br><br>Surveyors<br><br>Weather conditions now<br><br>Estimated river **width** (m) (average 3 readings)<br><br>Estimated survey **length** (m) (40 X wetted width)<br><br>Estimated river depth (m)<br><br>Channel characteristics (e.g. different stream types on the reach) |
| RESULTS | | Pressures |
| Hydromorph score<br><br>WFD class | | *Circle as appropriate |

**Photograph details include IGR or approximate location**

_____

_____

_____

_____

*N.B. The survey length should be 40x the wetted width with a minimal stretch of 160m but not exceeding 1km.*

## NS RHAT

Anthropogenic Impacts

River Name _____ Site Code _____ Date _____

| Feature | | Tick if present, record as E if > 30% | | |
|---|---|---|---|---|
| Resectioning | | None ☐ Left bank ☐ Right bank ☐ | | |
| Reinforcement | | None ☐ Left bank ☐ Right bank ☐ | | |
| Embankments | NO* | LB ☐ RB ☐ Set back LB ☐ SB RB ☐ | | |
| Culverts** | | Y / N / Unknown* | | |
| Over deepening | | Y / N / Unknown* | | |
| Wver widened | | Y / N / Unknown* | | |
| Narrowing | | Y / N / Unknown* | | |
| Fords** | | Y / N* | | |
| | | Major | Intermediate | Minor |
| Bridges** | NO* | | | |
| Weirs** | NO* | | | |
| Fish Pass** | NO* | | | |

**Physical features or resource use if applicable.** *

Deflectors / Jetties / Arterial drainage / Side channels / Mid channel bar / Field Drains / Mill Race

Navigation / Fishing / Recreation / Forestry/ Urban / Industry / HEP

Trashline present (height __ m) above water / Buffer zone (LBm / RBm back from water edge)

**Other observations - Invasives - Trees - Birds - Pollution indicators - Invertebrates***

Rhododendron / Himalayan Balsam / Japanese Knotweed / Giant hogweed / Snowberry / Cherry-Laurel/ Gunnera

Sycamore / Beech / Conifers / Oak / Ash / Alder / Willow / Birch / Hazel / Hawthorn / Blackthorn / Holly

Heron / Sand martin / Grey wagtail / Dippers / Kingfishers /

Sewage fungus / Diatomaceous algae / Oil / Cladophora / Vaucheria / Dumping / Silt on Substrate

Other comments:

_____

** Circle as appropriate E - extensive. ** Tally as appropriate. LB - left bank / RB - right bank*

## RHAT RIVER HYDROMORPHOLOGY ASSESSMENT TECHNIQUE

Field Assessment of Morphological Condition

River Name _____ Site Code _____ Date _____

If river in spate ignore 3 and 4 but deduct individual scores from overall if either feature not visible. Greyed boxes may be scored but note why in Comments/Notes.

| | Bedrock | Cascade / Step-pool | Pool-riffle-glide | Lowland Meandering |
|---|---|---|---|---|
| 1. Channel form and flow types | 4 | 4 | 4 | 4 |
| 2. Channel vegetation | 4 | 4 | 4 | 4 |
| 3. Substrate condition | 4 | 4 | 4 | 4 |
| 4. Barriers to continuity | 4 | 4 | 4 | 4 |
| 5. Bank structure & stability L+R | 4 | 4 | 4 | 4 |
| 6. Bank vegetation L+R | 4 | 4 | 4 | 4 |
| 7. Riparian land cover L+R | 4 | 4 | 4 | 4 |
| 8. Floodplain connectivity L+R | 4 | 4 | 4 | 4 |
| TOTAL | 32 | 32 | 32 | 32 |
| Hydromorph Score * | | | | |
| WFD class ** | | | | |

* Hydromorph score - Assessment score = Maximum Possible score

** WFD Class
> 0.8 = high
>0.6 – 0.8 = good
>0.4 – 0.6 = moderate
>0.2 - 0.4 = poor
< 0.2 = bad.

## SHEET 5

### NOTES

# APPENDIX 2

# PHOTOGRAPHS

Photographs of site locations and catchment pressures on the Clodiagh 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 | Clodiagh | Main Channel: Portlaw Bridge | 246779 | 115049 | 1 | High | High | Medium | Medium | High | High | High | Medium | High | Looking downstream from left bank at bridge |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246779 | 115049 | 2 | High | High | Medium | Medium | High | High | High | Medium | High | Council staff washing stones for capping wall in channel |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246779 | 115049 | 3 | High | High | Medium | Medium | High | High | High | Medium | High | Cannalised section looking upstream |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246779 | 115049 | 4 | High | High | Medium | Medium | High | High | High | Medium | High | Abstractiom facility on right bank |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246785 | 115003 | 5 | High | High | Medium | Medium | High | High | High | Medium | High | Abstraction facility |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246785 | 115003 | 6 | High | High | Medium | Medium | High | High | High | Medium | High | Pumping station note on door |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246752 | 115009 | 7 | High | High | Medium | Medium | High | High | High | Medium | High | View across bank from right to left |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246784 | 115019 | 8 | High | High | Medium | Medium | High | High | High | Medium | High | Combined Sewer overflow on right bank blue pipe |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246703 | 115042 | 9 | High | High | Medium | Medium | High | High | High | Medium | High | Perforated pipe on top of bank below it larger outfall |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246703 | 115042 | 10 | High | High | Medium | Medium | High | High | High | Medium | High | Perforated pipe on top of bank below it larger outfall |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246703 | 115042 | 11 | High | High | Medium | Medium | High | High | High | Medium | High | Poor substrate condition |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246798 | 115007 | 12 | High | High | Medium | Medium | High | High | High | Medium | High | View from right bank looking downstream |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246798 | 115007 | 13 | High | High | Medium | Medium | High | High | High | Medium | High | Outfall on right bank just downstream of bridge |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246608 | 114925 | 14 | High | High | Medium | Medium | High | High | High | Medium | High | Possible tributary entering on right bank, tiny concrete weir before bridge, 1.5m wide crosses under bridge & into main river |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246608 | 114925 | 15 | High | High | Medium | Medium | High | High | High | Medium | High | Possible tributary entering on right bank, tiny concrete weir before bridge, 1.5m wide crosses under bridge & into main river |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246306 | 115056 | 16 | High | High | Medium | Medium | High | High | High | Medium | High | Reinforced right bank with large boulders. Deposition on left bank |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246306 | 115056 | 17 | High | High | Medium | Medium | High | High | High | Medium | High | Reinforced right bank with large boulders. Deposition on left bank |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246306 | 115056 | 18 | High | High | Medium | Medium | High | High | High | Medium | High | Reinforced right bank with large boulders. Deposition on left bank |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246238 | 115112 | 19 | High | High | Medium | Medium | High | High | High | Medium | High | Silty substrate condition on right bank, some small fish visible |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246238 | 115112 | 20 | High | High | Medium | Medium | High | High | High | Medium | High | Trampling & poaching evident but not excessive |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246241 | 115119 | 21 | High | High | Medium | Medium | High | High | High | Medium | High | Dead mussel recently dead, white shell inside x2 & one juevenile dead |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246241 | 115119 | 22 | High | High | Medium | Medium | High | High | High | Medium | High | Major weir &fish pass |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246131 | 115185 | 23 | High | High | Medium | Medium | High | High | High | Medium | High | Bridge apron associated with weir on both banks, old mill on left bank at end point of survey |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246131 | 115185 | 24 | High | High | Medium | Medium | High | High | High | Medium | High | Fish pass |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246122 | 115187 | 25 | High | High | Medium | Medium | High | High | High | Medium | High | Channelised flow & back water behind weir |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246122 | 115187 | 26 | High | High | Medium | Medium | High | High | High | Medium | High | View across river shows left bank there is a concrete channel & view of old mill |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246122 | 115187 | 27 | High | High | Medium | Medium | High | High | High | Medium | High | View of fish pass & walkway over river |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246122 | 115187 | 28 | High | High | Medium | Medium | High | High | High | Medium | High | View of water intake for water supply |
| 1 | Clodiagh | Main Channel: Portlaw Bridge | 246122 | 115187 | 29 | High | High | Medium | Medium | High | High | High | Medium | High | Chamber / tank underground tank before pimping station on right bank |
| 2 | Clodiagh | Main Channel: Currahmore Estate | 243718 | 115123 | 1 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | Looking upstream from bridge, riparian zone almost meets over river |
| 2 | Clodiagh | Main Channel: Currahmore Estate | 243718 | 115123 | 2 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | Looking downstream from bridge |
| 2 | Clodiagh | Main Channel: Currahmore Estate | 243816 | 115177 | 3 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | Looking across from left bank |
| 2 | Clodiagh | Main Channel: Currahmore Estate | 243816 | 115177 | 4 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | Looking downstream from left bank |
| 2 | Clodiagh | Main Channel: Currahmore Estate | 243902 | 115219 | 5 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | Colouration of water |
| 2 | Clodiagh | Main Channel: Currahmore | 243902 | 115219 | 6 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | Looking upstream from |

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| | | Estate | | | | | | | | | | | | | left bank standing on rock outcrop of river bed at bankside |
| 2 | Clodiagh | Main Channel: Currahmore Estate | 243902 | 115219 | 7 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | Looking downstream at large pool area standby at point 6 |
| 2 | Clodiagh | Main Channel: Currahmore Estate | 243902 | 115219 | 8 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | Upstream view looking at right bank to capture silty/ sand deposition |
| 2 | Clodiagh | Main Channel: Currahmore Estate | 243902 | 115219 | 9 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | View of kick on rock outcrop silt plume standing at point 6 |
| 2 | Clodiagh | Main Channel: Currahmore Estate | 243961 | 115309 | 10 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | Beneath copper beech tree left bank. Heavy siltation |
| 2 | Clodiagh | Main Channel: Currahmore Estate | 243993 | 115336 | 11 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | Tributary to river on left bank |
| 3 | Clodiagh | Main Channel: North East of Knocknacrohy | 244772 | 115541 | 1 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | Looking upstream from wooden bridge, ranunculus in sight |
| 3 | Clodiagh | Main Channel: North East of Knocknacrohy | 244772 | 115541 | 2 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | Looking downstream from wooden bridge |
| 3 | Clodiagh | Main Channel: North East of Knocknacrohy | 244811 | 115533 | 3 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | Possibley OPW staff gauge |
| 3 | Clodiagh | Main Channel: North East of Knocknacrohy | 244811 | 115533 | 4 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | Looking upstream at bridge structure, reformed structure on left bank, dead mussels seen at staff gauge |
| 3 | Clodiagh | Main Channel: North East of Knocknacrohy | 244862 | 115541 | 5 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | Taken from right bank over to left bank |
| 3 | Clodiagh | Main Channel: North East of | 245118 | 115495 | 6 | Medium | Low | Low | Low | Low | Low | Low | Low | Medium | View from right bank over to left |

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| | | Knocknacrohy | | | | | | | | | | | | | bank, poaching due to horses accessing for drinking water |
| 4 | Clodiagh | Main Channel At Lowry Bridge | 242141 | 114863 | 1 | Medium | Medium | Low | Low | Low | Low | Medium | Low | Medium | Looking downstream from bridge |
| 4 | Clodiagh | Main Channel At Lowry Bridge | 242141 | 114863 | 2 | Medium | Medium | Low | Low | Low | Low | Medium | Low | Medium | Looking upstream from bridge |
| 4 | Clodiagh | Main Channel At Lowry Bridge | 242076 | 114877 | 3 | Medium | Medium | Low | Low | Low | Low | Medium | Low | Medium | On right bank of main river before bridge |
| 4 | Clodiagh | Main Channel At Lowry Bridge | 242007 | 114929 | 4 | Medium | Medium | Low | Low | Low | Low | Medium | Low | Medium | On right bank of Clodiagh |
| 4 | Clodiagh | Main Channel At Lowry Bridge | 242007 | 114929 | 5 | Medium | Medium | Low | Low | Low | Low | Medium | Low | Medium | Land use meadow |
| 4 | Clodiagh | Main Channel At Lowry Bridge | 242120 | 114824 | 6 | Medium | Medium | Low | Low | Low | Low | Medium | Low | Medium | Tributary to river on right bank of bridge as it comes from culvert behind lodge house, 100% shaded |
| 4 | Clodiagh | Main Channel At Lowry Bridge | 242133 | 114836 | 7 | Medium | Medium | Low | Low | Low | Low | Medium | Low | Medium | Further on downstream of tributary 100% cover |
| 4 | Clodiagh | Main Channel At Lowry Bridge | 242145 | 114869 | 8 | Medium | Medium | Low | Low | Low | Low | Medium | Low | Medium | From right bank beside bridge cloudy water, very silty & sandy bed |
| 4 | Clodiagh | Main Channel At Lowry Bridge | 242231 | 114733 | 9 | Medium | Medium | Low | Low | Low | Low | Medium | Low | Medium | Looking upstream from mid-channel |
| 4 | Clodiagh | Main Channel At Lowry Bridge | 242231 | 114733 | 10 | Medium | Medium | Low | Low | Low | Low | Medium | Low | Medium | Looking downstream from mid-channel |
| 4 | Clodiagh | Main Channel At Lowry Bridge | 242231 | 114733 | 11 | Medium | Medium | Low | Low | Low | Low | Medium | Low | Medium | Some toe line re-inforcement on right bank |
| 4 | Clodiagh | Main Channel At Lowry Bridge | 242231 | 114733 | 12 | Medium | Medium | Low | Low | Low | Low | Medium | Low | Medium | Bridge in estate looking upstream |
| 4 | Clodiagh | Main Channel At Lowry | 242329 | 114661 | 13 | Medium | Medium | Low | Low | Low | Low | Medium | Low | Medium | Bridge in estate looking |

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| | | Bridge | | | | | | | | | | | | | downstream, bridge is up high over river |
| Stopping point 1 | Clodiagh | Inflowing Tributary: South of Tobarchuain | 241813 | 116691 | 1 | | | | | | | | | | Looking upstream from bridge |
| Stopping point 1 | Clodiagh | Inflowing Tributary: South of Tobarchuain | 241813 | 116691 | 2 | | | | | | | | | | Poaching upstream 20m from bridge |
| Stopping point 1 | Clodiagh | Inflowing Tributary: South of Tobarchuain | 241813 | 116691 | 3 | | | | | | | | | | Downstream from bridge |
| Stopping point 1 | Clodiagh | Inflowing Tributary: South of Tobarchuain | 241813 | 116691 | 4 | | | | | | | | | | Planted forest 1/2 km upstream |
| Stopping point 1 | Clodiagh | Inflowing Tributary: South of Tobarchuain | 241813 | 116691 | 5 | | | | | | | | | | C & D waste downstream on right bank |
| Stopping point 1 | Clodiagh | Inflowing Tributary: South of Tobarchuain | 241813 | 116691 | 6 | | | | | | | | | | C & D waste downstream on right bank |
| 5 | Clodiagh | Main Channel: Glenstown Bridge | 240212 | 114669 | 1 | Low | Low | Low | Medium | Medium | Low | Low | Low | Medium | Left bank downstream of bridge looking upstream of bridge structure |
| 5 | Clodiagh | Main Channel: Glenstown Bridge | 240212 | 114669 | 2 | Low | Low | Low | Medium | Medium | Low | Low | Low | Medium | Discolouration / S.S of water |
| 5 | Clodiagh | Main Channel: Glenstown Bridge | 240212 | 114669 | 3 | Low | Low | Low | Medium | Medium | Low | Low | Low | Medium | Downstream view |
| 5 | Clodiagh | Main Channel: Glenstown Bridge | 240212 | 114669 | 4 | Low | Low | Low | Medium | Medium | Low | Low | Low | Medium | Cattle poaching on right bank just downstream from bridge |
| 5 | Clodiagh | Main Channel: Glenstown Bridge | 240264 | 114679 | 5 | Low | Low | Low | Medium | Medium | Low | Low | Low | Medium | On right bank looking upstream towards the bridge poor substrate |
| 5 | Clodiagh | Main Channel: Glenstown | 240324 | 114649 | 6 | Low | Low | Low | Medium | Medium | Low | Low | Low | Medium | On right bank looking |

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| | | Bridge | | | | | | | | | | | | | downstream at left bank deposition |
| 5 | Clodiagh | Main Channel: Glenstown Bridge | 240383 | 114654 | 7 | Low | Low | Low | Medium | Medium | Low | Low | Low | Medium | Local Authority chip yard s.s source |
| 5 | Clodiagh | Main Channel: Glenstown Bridge | 240331 | 114626 | 8 | Low | Low | Low | Medium | Medium | Low | Low | Low | Medium | Gully downstream of chip yard |
| 5 | Clodiagh | Main Channel: Glenstown Bridge | 240331 | 114626 | 9 | Low | Low | Low | Medium | Medium | Low | Low | Low | Medium | Right bank looking downstream at bridge on mussel side |
| 5 | Clodiagh | Main Channel: Glenstown Bridge | 240165 | 114642 | 10 | Low | Low | Low | Medium | Medium | Low | Low | Low | Medium | Tributary side channel & mid channel just at confluence of river & tributary deep in mid river- no habitat |
| 5 | Clodiagh | Main Channel: Glenstown Bridge | 240165 | 114642 | 11 | Low | Low | Low | Medium | Medium | Low | Low | Low | Medium | Looking downstream from centre of channel |
| 5 | Clodiagh | Main Channel: Glenstown Bridge | 240165 | 114642 | 12 | Low | Low | Low | Medium | Medium | Low | Low | Low | Medium | Poor substrate condition |
| 5 | Clodiagh | Main Channel: Glenstown Bridge | 240165 | 114642 | 13 | Low | Low | Low | Medium | Medium | Low | Low | Low | Medium | Ranunculus flowers -shelia photo |
| 6 | Clodiagh | Main Channel: At Clonea Bridge | 238472 | 114196 | 1 | Low | Low | Low | Low | High | Low | Medium | High | High | Outfall / discharges on right bank upstream of bridge |
| 6 | Clodiagh | Main Channel: At Clonea Bridge | 238472 | 114196 | 2 | Low | Low | Low | Low | High | Low | Medium | High | High | Bridge structure |
| 6 | Clodiagh | Main Channel: At Clonea Bridge | 238472 | 114196 | 3 | Low | Low | Low | Low | High | Low | Medium | High | High | Collection of discharge pipes from pub |
| 6 | Clodiagh | Main Channel: At Clonea Bridge | 238472 | 114196 | 4 | Low | Low | Low | Low | High | Low | Medium | High | High | Discharge point from pub under bridge on right bank |
| 6 | Clodiagh | Main Channel: At Clonea Bridge | 238472 | 114196 | 5 | Low | Low | Low | Low | High | Low | Medium | High | High | Sewage discharge from town at bridge on left bank, |

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| | | | | | | | | | | | | | | | three houses upstream no septic tanks , one at bridge, one from church, felling at area |
| 6 | Clodiagh | Main Channel: At Clonea Bridge | 238472 | 114196 | 6 | Low | Low | Low | Low | High | Low | Medium | High | High | Discharge from town discolouration on wall |
| 6 | Clodiagh | Main Channel: At Clonea Bridge | 238472 | 114196 | 7 | Low | Low | Low | Low | High | Low | Medium | High | High | Discharge from town discolouration on wall |
| 6 | Clodiagh | Main Channel: At Clonea Bridge | 238472 | 114196 | 8 | Low | Low | Low | Low | High | Low | Medium | High | High | Discharge from town discolouration on wall |
| 6 | Clodiagh | Main Channel: At Clonea Bridge | 238472 | 114196 | 9 | Low | Low | Low | Low | High | Low | Medium | High | High | Discharge from town discolouration on wall |
| 6 | Clodiagh | Main Channel: At Clonea Bridge | 238472 | 114196 | 10 | Low | Low | Low | Low | High | Low | Medium | High | High | Discharge from town discolouration on wall |
| 6 | Clodiagh | Main Channel: At Clonea Bridge | 238472 | 114196 | 11 | Low | Low | Low | Low | High | Low | Medium | High | High | Discolouration of substrate from sewage discharge. Flow today at this point is quite low |
| 6 | Clodiagh | Main Channel: At Clonea Bridge | 238472 | 114196 | 12 | Low | Low | Low | Low | High | Low | Medium | High | High | View of discharge from downstream of bridge |
| 6 | Clodiagh | Main Channel: At Clonea Bridge | 238472 | 114196 | 13 | Low | Low | Low | Low | High | Low | Medium | High | High | Poaching although fenced off inadequate on right bank approx 30m downstream of bridge |
| 6 | Clodiagh | Main Channel: At Clonea Bridge | 238472 | 114196 | 14 | Low | Low | Low | Low | High | Low | Medium | High | High | Discharge point into tributary from church |
| 7 | Clodiagh | Aughatanwillin River At Feddans Cross Roads | 235493 | 116632 | 1 | Medium | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Choked channel excessive Ranunculus growth >90% |

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| | | | | | | | | | | | | | | | looking upstream from bridge |
| 7 | Clodiagh | Aughatanwillin River At Feddans Cross Roads | 235493 | 116632 | 2 | Medium | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Heavy shading of channel, largely overgrown looking from bridge |
| 7 | Clodiagh | Aughatanwillin River At Feddans Cross Roads | 235493 | 116632 | 3 | Medium | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Grazing on left bank |
| 7 | Clodiagh | Aughatanwillin River At Feddans Cross Roads | 235493 | 116632 | 4 | Medium | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Downstream of bridge >90% shading faster flowing no ranunculus |
| 7 | Clodiagh | Aughatanwillin River At Feddans Cross Roads | 235493 | 116632 | 5 | Medium | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Poaching & trampling on left bank |
| 7 | Clodiagh | Aughatanwillin River At Feddans Cross Roads | 235493 | 116632 | 6 | Medium | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Horse riding pathway on left bank upstream |
| 8 | Clodiagh | Main Channel: North East of Lackan Bridge | 236067 | 114673 | 1 | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Medium | Looking downstream from field access bridge |
| 8 | Clodiagh | Main Channel: North East of Lackan Bridge | 236067 | 114673 | 2 | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Medium | Cattle poaching on right bank just downstream from bridge |
| 8 | Clodiagh | Main Channel: North East of Lackan Bridge | 236067 | 114673 | 3 | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Medium | Excessive new ranunculus growth with filamentous algae growing on it |
| 8 | Clodiagh | Main Channel: North East of Lackan Bridge | 236067 | 114673 | 4 | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Medium | Excessive new ranunculus growth with filamentous algae growing on it |
| 8 | Clodiagh | Main Channel: North East of Lackan Bridge | 236067 | 114673 | 5 | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Medium | Bridge structure, concrete bed, apron |
| 8 | Clodiagh | Main Channel: | 236083 | 114699 | 6 | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Medium | Cattle poaching |

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| | | North East of Lackan Bridge | | | | | | | | | | | | | on right bank |
| 8 | Clodiagh | Main Channel: North East of Lackan Bridge | 236083 | 114699 | 7 | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Medium | Excessive new ranunculus growth |
| 8 | Clodiagh | Main Channel: North East of Lackan Bridge | 236104 | 114728 | 8 | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Medium | Excessive poaching & trampling on right bank, heavy macrophyte growth & mat of Filamentous green algae in channel |
| 8 | Clodiagh | Main Channel: North East of Lackan Bridge | 236138 | 114766 | 9 | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Medium | Minor bank re-inforcement |
| 8 | Clodiagh | Main Channel: North East of Lackan Bridge | 236172 | 114799 | 10 | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Medium | bank reinforcement by road on left bank |
| 8 | Clodiagh | Main Channel: North East of Lackan Bridge | 236160 | 114838 | 11 | Medium | Medium | Low | Low | Low | Low | Medium | Medium | Medium | Historical poaching on right bank end point, sewage discharge flow today at this point quite low |
| 9 | Clodiagh | Main Channel: South of Lakan Bridge | 234928 | 113419 | 1 | High | Medium | Medium | Low | Low | Low | Low | Medium | High | Poaching, trampling on left bank excessive |
| 9 | Clodiagh | Main Channel: South of Lakan Bridge | 234953 | 113398 | 2 | High | Medium | Medium | Low | Low | Low | Low | Medium | High | Left bank reinforcement |
| 9 | Clodiagh | Main Channel: South of Lakan Bridge | 234952 | 113385 | 3 | High | Medium | Medium | Low | Low | Low | Low | Medium | High | Culvert from right bank entering channel, managed ditch |
| 9 | Clodiagh | Main Channel: South of Lakan Bridge | 234962 | 113388 | 4 | High | Medium | Medium | Low | Low | Low | Low | Medium | High | Poor substrate condition |
| 9 | Clodiagh | Main Channel: South of Lakan Bridge | 234998 | 113399 | 5 | High | Medium | Medium | Low | Low | Low | Low | Medium | High | Stockpile on left bank |
| 9 | Clodiagh | Main Channel: South of Lakan Bridge | 235048 | 113403 | 6 | High | Medium | Medium | Low | Low | Low | Low | Medium | High | Heavily shaded locking upstream |
| Stopping point 2 | Clodiagh | Inflowing | 234122 | 110174 | 1 | | | | | | | | | | Looking |

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| | | Tributary: Aughgarra Stream | | | | | | | | | | | | | upstream from point plantation in background |
| Stopping point 2 | Clodiagh | Inflowing Tributary: Aughgarra Stream | 234122 | 110174 | 2 | | | | | | | | | | Substrate condition, no silt source is just below plantation |
| Stopping point 2 | Clodiagh | Inflowing Tributary: Aughgarra Stream | 234122 | 110174 | 3 | | | | | | | | | | 2x box culverts under road where drain joins tributary |
| 10 | Clodiagh | Inflowing Tributary: Ire River | 234944 | 11569 | 1 | High | Low | Medium | Low | Medium | Low | Low | Low | High | Looking downstream from road bridge, Possible placed stone weirs |
| 10 | Clodiagh | Inflowing Tributary: Ire River | 234944 | 11569 | 2 | High | Low | Medium | Low | Medium | Low | Low | Low | High | Substrate just downstream of bridge |
| 10 | Clodiagh | Inflowing Tributary: Ire River | 234944 | 11569 | 3 | High | Low | Medium | Low | Medium | Low | Low | Low | High | Major bridge apron with outfall on right bank |
| 10 | Clodiagh | Inflowing Tributary: Ire River | 234944 | 11569 | 4 | High | Low | Medium | Low | Medium | Low | Low | Low | High | River substrate apron upstream of right bank |
| 10 | Clodiagh | Inflowing Tributary: Ire River | 234918 | 111536 | 5 | High | Low | Medium | Low | Medium | Low | Low | Low | High | Culverted pipe along road |
| 10 | Clodiagh | Inflowing Tributary: Ire River | 234928 | 111559 | 6 | High | Low | Medium | Low | Medium | Low | Low | Low | High | Run off on right bank |
| 10 | Clodiagh | Inflowing Tributary: Ire River | 234928 | 111559 | 7 | High | Low | Medium | Low | Medium | Low | Low | Low | High | Bridge structure & apron |
| 10 | Clodiagh | Inflowing Tributary: Ire River | 234928 | 111559 | 8 | High | Low | Medium | Low | Medium | Low | Low | Low | High | Bridge structure & apron |
| 10 | Clodiagh | Inflowing Tributary: Ire River | 234876 | 111518 | 9 | High | Low | Medium | Low | Medium | Low | Low | Low | High | Ford crossing |
| 10 | Clodiagh | Inflowing Tributary: Ire River | 234876 | 111518 | 10 | High | Low | Medium | Low | Medium | Low | Low | Low | High | Ford crossing |
| 10 | Clodiagh | Inflowing Tributary: Ire River | 234827 | 111484 | 11 | High | Low | Medium | Low | Medium | Low | Low | Low | High | End point, ranunculus growth in channel |
| 11 | Clodiagh | Inflowing | 236303 | 112129 | 1 | Medium | Medium | Medium | Medium | Low | Low | Medium | Medium | Medium | Looking |

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| | | Tributary At Coolnahorna Bridge | | | | | | | | | | | | | upstream from road bridge |
| 11 | Clodiagh | Inflowing Tributary At Coolnahorna Bridge | 236303 | 112129 | 2 | Medium | Medium | Medium | Medium | Low | Low | Medium | Medium | Medium | Minor poaching effect on left bank at bridge, possible with Iron loving bacteria |
| 11 | Clodiagh | Inflowing Tributary At Coolnahorna Bridge | 236303 | 112129 | 3 | Medium | Medium | Medium | Medium | Low | Low | Medium | Medium | Medium | Looking downstream from bridge |
| 11 | Clodiagh | Inflowing Tributary At Coolnahorna Bridge | 236303 | 112129 | 4 | Medium | Medium | Medium | Medium | Low | Low | Medium | Medium | Medium | Bridge structure |
| 11 | Clodiagh | Inflowing Tributary At Coolnahorna Bridge | 236303 | 112129 | 5 | Medium | Medium | Medium | Medium | Low | Low | Medium | Medium | Medium | On right bank looks like a dicotamous algae |
| 11 | Clodiagh | Inflowing Tributary At Coolnahorna Bridge | 236303 | 112129 | 6 | Medium | Medium | Medium | Medium | Low | Low | Medium | Medium | Medium | Overview looking downstream from road plantation with no buffer |
| 12 | Clodiagh | Confluence of R. Douglas & R. Clodiagh at Ross Bridge | 234465 | 115026 | 1 | Medium | Low | Low | Low | Low | Low | Medium | Low | Medium | Sika spruce cut at left bank and thrown into river |
| 12 | Clodiagh | Confluence of R. Douglas & R. Clodiagh at Ross Bridge | 234465 | 115026 | 2 | Medium | Low | Low | Low | Low | Low | Medium | Low | Medium | Sika spruce cut at left bank and thrown into river |
| 12 | Clodiagh | Confluence of R. Douglas & R. Clodiagh at Ross Bridge | 234976 | 115020 | 3 | Medium | Low | Low | Low | Low | Low | Medium | Low | Medium | Bridge structure |
| 12 | Clodiagh | Confluence of R. Douglas & R. Clodiagh at Ross Bridge | 234976 | 115020 | 4 | Medium | Low | Low | Low | Low | Low | Medium | Low | Medium | Evidence that tractor is entering channel on left bank just upstream of bridge |
| 12 | Clodiagh | Confluence of R. Douglas & R. Clodiagh at Ross Bridge | 234976 | 115020 | 5 | Medium | Low | Low | Low | Low | Low | Medium | Low | Medium | Crop on left bank downstream of bridge |

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| 12 | Clodiagh | Confluence of R. Douglas & R. Clodiagh at Ross Bridge | 234976 | 115020 | 6 | Medium | Low | Low | Low | Low | Low | Medium | Low | Medium | Looking downstream from bridge |
| 12 | Clodiagh | Confluence of R. Douglas & R. Clodiagh at Ross Bridge | 234960 | 114996 | 7 | Medium | Low | Low | Low | Low | Low | Medium | Low | Medium | Side tributary - Doughlas |
| 12 | Clodiagh | Confluence of R. Douglas & R. Clodiagh at Ross Bridge | 234960 | 114996 | 8 | Medium | Low | Low | Low | Low | Low | Medium | Low | Medium | Continuous tree line buffer plus adequate fencing |
| 12 | Clodiagh | Confluence of R. Douglas & R. Clodiagh at Ross Bridge | 234947 | 115028 | 9 | Medium | Low | Low | Low | Low | Low | Medium | Low | Medium | Second machinery / tractor access point on right bank |
| 12 | Clodiagh | Confluence of R. Douglas & R. Clodiagh at Ross Bridge | 235001 | 114978 | 10 | Medium | Low | Low | Low | Low | Low | Medium | Low | Medium | Poor substrate condition |
| 13 | Clodiagh | Main Channel: Shanakill Bridge | 234393 | 115940 | 1 | Low | Low | Low | Low | Low | Low | Low | Low | Low | Looking upstream from road bridge |
| 13 | Clodiagh | Main Channel: Shanakill Bridge | 234393 | 115940 | 2 | Low | Low | Low | Low | Low | Low | Low | Low | Low | Looking downstream from road bridge, Possible placed stone weirs |
| 13 | Clodiagh | Main Channel: Shanakill Bridge | 234393 | 115940 | 3 | Low | Low | Low | Low | Low | Low | Low | Low | Low | Tree line buffer on right bank looking upstream |
| Stopping point 3 | Clodiagh | Inflowing tributary Near Ballycullane | 232180 | 116340 | 1 | | | | | | | | | | Downstream of bridge from culvert under road |
| Stopping point 3 | Clodiagh | Inflowing tributary Near Ballycullane | 232180 | 116340 | 2 | | | | | | | | | | Main channel downstream |
| Stopping point 3 | Clodiagh | Inflowing tributary Near Ballycullane | 232180 | 116340 | 3 | | | | | | | | | | Upstream view of culvert under roadway |
| Stopping point 3 | Clodiagh | Inflowing tributary Near Ballycullane | 232180 | 116340 | 4 | | | | | | | | | | Recent dumping of road grass cuttings |
| Stopping point 4 | Clodiagh | Inflowing tributary North of Ballycullane | 231235 | 118180 | 1 | | | | | | | | | | Looking downstream of bridge on left |

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| | | | | | | | | | | | | | | | bank poaching & erosion, broadleaf plantation |
| Stopping point 4 | Clodiagh | Inflowing tributary North of Ballycullane | 231235 | 118180 | 2 | | | | | | | | | | On bridge looking west of upstream |
| Stopping point 4 | Clodiagh | Inflowing tributary North of Ballycullane | 231235 | 118180 | 3 | | | | | | | | | | Felled forest & new plantation in upper catchment |
| Stopping point 4 | Clodiagh | Inflowing tributary North of Ballycullane | 231235 | 118180 | 4 | | | | | | | | | | Felled forest & new plantation in upper catchment |

## Appendix 3 – Catchment Walkover Risk Assessment Survey Sheet

| Sheet 1: Catchment Walkovers | Version 1. 07/04/2009 |
|---|---|
| Tributary/Main Channel* | |
| **Site Identification** | |
| River Name | Site Code |
| Water Body ID | Start U/S or D/S* |
| First site IGR | Last site IGR |
| Bank surveyed from L/R/In-channel* | |
| **Photograph details include IGR or approximate location.** | |
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| | Present? | | | | | |
|---|---|---|---|---|---|---|
| | Yes | No | | Grid Reference of specific pressure | No.of Photographs | Comments |
| 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 | | | | | | |
| Silage | | | | | | |
| Forestry | | | | | | |
| Housing | | | | | | |
| Industry and associated works | | | | | | |
| Other sources | | | | | | |
| | | | | | | |
| Overall Risk | High | Medium | Low | | | |
| | | | | | | |
| Diffuse Silt | | | | | | |
| Arable | | | | | | |
| Grazing | | | | | | |
| Over-grazing | | | | | | |
| Improved grassland (Re-seeding) | | | | | | |
| Forest | | | | | | |
| Silage | | | | | | |
| Industry | | | | | | |
| Construction stages | | | | | | |
| Housing | | | | | | |
| Infilling | | | | | | |
| Peat cutting | | | | | | |
| Quarries | | | | | | |
| Other sources | | | | | | |
| | | | | | | |
| Overall Risk | High | Medium | Low | | | |
| | | | | | | |

| | Present? | | | | | |
|---|---|---|---|---|---|---|
| | Yes | No | | Grid Reference of specific pressure | No.of Photographs | Comments |
| 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 | | | |
| | | | | | | |