### Stage 1: Desktop Review

<table>
<thead>
<tr>
<th>1.1 Flood History (include review of Floodmaps.ie)</th>
<th>River Flow Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Ratty River (also called the Owengarney River) flows through Sixmilebridge on its eastern boundary. It flows into the Shannon Estuary around 7km to the south-southeast.</td>
<td></td>
</tr>
</tbody>
</table>

#### Flood event records

There are nine flood records listed: 2 recurring and 7 singular events, through reports dated 1991-2009.

Severe flooding of a number of dwellings in Sixmilebridge occurred during the winter of 1994/95 when the Owengarney River burst its banks. Serious flooding in the same area had previously occurred in 1991. An OPW scheme was completed on site in 1996.

The majority of the flood occurrences are along the R462 the main road which runs north to south through the centre of the town, parallel to the Owengarney River.

<table>
<thead>
<tr>
<th>1.2 Relevant information on flooding issues from OPW and LA staff</th>
<th>PFRA database comments (in italics):</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPW comments</td>
<td>None</td>
</tr>
</tbody>
</table>

**LA comments**

Owenogarney River on occasions has burst it banks, 15 metres of Regional Road, 4/5 commercial properties at risk, Not a regular occurrence. OPW Flood Defence scheme completed some 15 years ago. Regional route import route for county.

**Meeting / discussion summary comments:**

**OPW comments**

- Flooding was experienced here in 2009.
- The Owengarney (Ratty) river is a very slow system so when in flood, water levels take a long time to recede.
- High tides can influence this area up to Ballyliddan West (just downstream of Sixmilebridge).
- Ballyliddan West flooded 3-4 times in the early 90s prior to the construction of defence embankments (OPW) in 1996. OPW believe these embankments may have been constructed to protect up to the 75 year event (approx).
• During the 2009 floods, a 150mm pump was provided to the properties at Ballyliddan West as some seepage was observed coming through or under (more likely) the embankments. The pump kept the situation under control.
• The OPW deepened sections of the tributary of the Owengarney river as flood waters used to come out of bank. An embankment was also built on the left bank of this tributary opposite the houses. This minor tributary is located on the southeast edge of the town.
• New development on the right bank of the Owengarney River may be putting pressure on the system.

**LA comments**
• Town flooded in 2009. Areas affected include Greyhound Bar and 4-5 Commercial properties.
• OPW embankments present.

### 1.4 PFRA Data

#### 1.4.1 PFRA hazard mapping

| PFRA mapping available in GIS layer: | Yes ☑️ | No ☐ |
| PFRA mapping included on FRR map:   | Yes ☑️ | No ☐ |

#### 1.4.2 Summary of Principal Receptors

<table>
<thead>
<tr>
<th>Type</th>
<th>FRI score (if available)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arch_Regional_Weighted_F_E</td>
<td>21.1</td>
</tr>
<tr>
<td>Monument_LV_Weighted_F_E</td>
<td>10.1</td>
</tr>
<tr>
<td>Total</td>
<td>809.48</td>
</tr>
</tbody>
</table>

#### 1.7 Stage 1 Evaluation

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Clearly APSR</th>
<th>Uncertain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood History (1.1)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>OPW / LA Information (1.2)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>PFRA Evaluation (1.4)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Overall Desktop Evaluation</td>
<td>X</td>
<td>Uncertain</td>
</tr>
<tr>
<td>(if any above aspect is uncertain then overall designation is uncertain)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 1.8 Proposed level of assessment for Stage 2 site visits

<table>
<thead>
<tr>
<th>Level A Site Visit</th>
<th>Level B Site Visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
## Stage 2: Site Inspection

### Level A Assessment

| Date and Time of Inspection | Date: 06/06/11  
|                            | Time: 14:30  |

| Names of inspection team  
(including OPW/LA staff if present) | Iain Blackwell  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lewis Maani</td>
</tr>
</tbody>
</table>

### 2.1 Ground-truthing of Hazard Mapping

- **Fluvial non-tidal**  
- **Fluvial tidal**  
- **Coastal**  
- **Not available**

Generally reasonable flood outlines in principle. Flood extent is shown to be greater on left bank than right bank which is confirmed as being the case on site.

### 2.2 Spot check ground-truthing of selected receptor vulnerability

(Also note any key receptors noted during visit that are not identified by PFRA)

<table>
<thead>
<tr>
<th>Receptor Type</th>
<th>Location description (if not obvious)</th>
<th>Exists?</th>
<th>Overall Vulnerability / Risk (L / M / H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Houses</td>
<td></td>
<td>Yes</td>
<td>H</td>
</tr>
<tr>
<td>Commercial properties (typically retail, small businesses)</td>
<td></td>
<td>Yes</td>
<td>H</td>
</tr>
<tr>
<td>Local road</td>
<td></td>
<td>Yes</td>
<td>H</td>
</tr>
</tbody>
</table>

### 2.3 Local knowledge - on-site comments

(OPW, LA and any info volunteered by local residents during visit)

No onsite comments

### 2.4 Comments on hydraulic constrictions (bridges, etc.) and conveyance routes

Weir at upstream end of village is the hydraulic control, giving a head loss estimated at 0.5m to 1.0m. This could lead to overtopping of the river bank / wall adjacent to the mill on the left bank.

Channel narrows downstream of the mill causing possible restriction. At the bridge crossing of the R471 there is a main arch in the centre of the bridge and two skewed culverts (approximately 30-45 degrees to the flow direction). These additional culverts, although skewed, provide increased capacity of the bridge.

Monument in centre of river immediately downstream of the bridge.

Out of bank flows will be on the left bank, with a possible conveyance route along the main N-S road (R462) through the village. Depending on local levels, this flow may re-enter the watercourse, or it may result in ponding on the road.
### 2.5 SVRS Assessment Matrix

**Weightings:**
- A - x1 - reasonable expectation of flooding
- B - x2 - high expectation of flooding or flooding is tidal (any risk)
- C - x5 - risk to life

<table>
<thead>
<tr>
<th>Approx. Number</th>
<th>1 to 4</th>
<th>5 to 20</th>
<th>&gt;20</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weighting</strong></td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Property (domestic)</td>
<td>10</td>
<td>100 X</td>
<td>200</td>
</tr>
<tr>
<td>Property (small retail or business)</td>
<td>20</td>
<td>200 X</td>
<td>400</td>
</tr>
<tr>
<td>Property (large retail or business)</td>
<td>50</td>
<td>500</td>
<td>1000</td>
</tr>
<tr>
<td>Road or Rail Infrastructure</td>
<td>30 X</td>
<td>300</td>
<td>600</td>
</tr>
<tr>
<td>Critical Infrastructure (local) [hospital, school, police/fire/ambulance station, substation, WTW/WWTW, gov bldg, other (specify)]</td>
<td>50</td>
<td>500</td>
<td>1000</td>
</tr>
<tr>
<td>Critical Infrastructure (national importance)</td>
<td>250</td>
<td>1000</td>
<td>2000</td>
</tr>
<tr>
<td>Cultural Heritage Site</td>
<td>20</td>
<td>200</td>
<td>400</td>
</tr>
<tr>
<td>Environmental Designated Site</td>
<td>20</td>
<td>200</td>
<td>400</td>
</tr>
<tr>
<td>Hazardous Substances Site</td>
<td>50</td>
<td>500</td>
<td>1000</td>
</tr>
</tbody>
</table>

**Total SVRS** 330

### 2.6 Defence Assets

**Formal and Informal Flood Defence Assets**
(include effective and ineffective assets to inform asset survey and potential mitigation measures)

#### Open Channel Watercourses
- Man-made river channel
- Flood relief channel
- Canal
- Mill leat
- Drainage channels / back drains

#### Bridges and Culvert crossings
- Single Arch bridge
- Multi-Arch bridge
- Single Span bridge
- Multi-Span bridge
- Box culvert(s)
- Pipe culvert(s)
- Arch Culvert(s)

#### Culverted Watercourses
(culvert length is greater than just a crossing)
- Box culvert(s)
- Pipe culvert(s)
- Arch Culvert(s)
- Irregular Culvert(s)

#### Walls and Embankments
- Embankment(s)
- Raised wall(s)
- Retaining wall(s)

#### Control Structures – weirs, gates, dams
- Fixed crest weir
- Adjustable weir
- Dam / Barrage
- Sluice gates
- Lock gates
- Radial gates

#### Storage
- On-line storage (natural)
- On-line storage (artificial)
- Off-line storage

#### Outfalls
- Flapped outfall(s) into watercourse
- Unflapped outfall(s) into watercourse

\*i.e. from smaller watercourses, drains etc. into river / estuary / sea
<table>
<thead>
<tr>
<th>Tidal flap(s)</th>
<th>Tidal sluice(s)</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pumping Station</td>
</tr>
</tbody>
</table>

**Additional notes (if required):**

There is an embankment on the left bank downstream of the church, plus another embankment on the small watercourse (land drainage ditch) joining the main river from the left bank. The weir at the mill raises upstream water levels, increasing the likelihood of the river going out of bank at the upstream end of the village. This weir has a fixed crest as well as (possibly now redundant) removable weir boards / sluice openings.

### 2.8 Initial Potential Mitigation Measures

**Non-structural measures**
- Planning and Development control
- Sustainable Urban Drainage Systems
- Flood forecasting / warning
- Change in Operating Procedures for water level control:
- Public awareness campaign
- Individual property protection
- Land use management

**Structural measures**
- Strategic development management for floodplain development: (integration of measures into strategic development proposals)
- Storage: On-line Off-line
- Flow diversion: Flood relief channel Flood relief culvert
- Increase conveyance: Bridge works Channel works Floodplain
- Flood defences: Walls Embankments
- Localised works: Defence raising In-fill gaps Trash screen
- Maintenance works: Culvert / channel clearance Asset maintenance
- Relocation of properties:

**Improve existing defences:** (describe)

Various minor improvements to existing embankments may be appropriate, to tie in to other walls / assets to make a continuous defence (on the tributary to main river).

**Other (describe):**

Adjust water level control through changes to the weir arrangements adjacent to the mill, reducing risk of flow coming out of bank at the upstream end of the village.

### Outcomes

<table>
<thead>
<tr>
<th>PFRA Designation</th>
<th>APSR ¨ not an APSR □ IRR □</th>
<th>FRI Score: N/a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Ground-truthing of PFRA Assessment (hazard mapping and receptors)</td>
<td>High Confidence (good) Uncertain Low Confidence (poor) Not available</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

| Site Visit Review Score | 330 |

<table>
<thead>
<tr>
<th>Recommended Designation</th>
<th>APSR ¨ not an APSR □ IRR □</th>
</tr>
</thead>
</table>

| Summary comments (if required) | |

---

Flood Risk Review Report – UoM 27 Sixmilebridge V0_A 5
**Photo 1:** Upstream end of Sixmilebridge. Properties on right bank are elevated well above flood plain

**Photo 2:** River looking downstream towards the mill

**Photo 3:** Weir and sluice structures at the mill

**Photo 4:** Approach to the bridge over the Owengarney (Ratty) River on Pound Street
**Photo 5:** Downstream side of bridge on Pound Street

**Photo 6:** River towards the downstream end of Sixmilebridge looking upstream from the right bank. Church in the background.
The PFRA Flood Extents shown are indicative. They have been developed using simple and cost-effective methods that are suitable for the PFRA. They should not be used for local decision-making or any other purpose without verification.