

|   |  |  |                                     |
|---|--|--|-------------------------------------|
| <b>Location: Leitrim Village, Co. Leitrim</b>                     |  | <b>Unique ID: 263853</b><br>(from PFRA database) |                                     |
| <b>Initial OPW Designation</b>                                    | <b>APSR</b> <input type="checkbox"/>   | <b>AFRR</b> <input checked="" type="checkbox"/>  | <b>IRR</b> <input type="checkbox"/> |
| <b>Co-ordinates</b>   | <b>Easting: 195700</b>   |  | <b>Northing: 304639</b>             |
| <b>River / Catchment / Sub-catchment</b>                          | <b>River Shannon / Shannon</b>   |  |                                     |
| <b>Type of Flooding / Flood Risk</b><br>(identify all that apply) | <b>Fluvial non-tidal</b> <input checked="" type="checkbox"/> <b>Fluvial tidal</b> <input type="checkbox"/> <b>Coastal</b> <input type="checkbox"/> |  |                                     |

| <b>Stage 1: Desktop Review</b>   |   |
|--|---|
| <b>1.1 Flood History<br/>(include review of Floodmaps.ie)</b>            | <p><b>River Flow Path</b></p> <p>Leitrim Village is adjacent to the River Shannon. The Ballinamore and Ballyconnell canal meets the Shannon, at Leitrim</p> <p>The canal is crossed by the R280 (Main Street) in the centre of Leitrim Village. A marina is located in Leitrim Village.</p> <p><b>Flood Event Records</b></p> <p>Two flood records are listed in floodmaps.ie, dated November 1999 and December 1954. Both events were associated with flooding from the Shannon.</p>   |
| <b>1.2 Relevant information on flooding issues from OPW and LA staff</b> | <p><b>PFRA database comments (<i>in italics</i>):</b></p> <p><b>OPW comments</b><br/> <i>Not designated APSR as failed to reach predictive analysis threshold. Extensive evidence provided by LA - recommend upgrade to APSR</i></p> <p><b>LA comments</b><br/> <i>Flooding here affects commercial properties, residential properties and some roads. The village was cut off/closed in November 2009. The source is the river Shannon after very heavy rainfall. The frequency is approx every 5 years but not to the Novemb. 2 Pubs, 1 saved by sand bags. 1 fish and chip shop. 4 new houses, Filling Station. 2009 also impacted by burst SW pipe flooding at Creamery caused + 150mm. Maps showing lands liable to flooding in Leitrim village (2010) provided by LA. During Novemebr 2009 properties were flooded, R284 was closed (18/11/09), R280 was closed (20/11/09). Subsidence on local roads into Drumshambo canal.</i></p> <p><b>Meeting / discussion summary comments:</b></p> <p><b>OPW comments</b></p> <ul style="list-style-type: none"> <li>Issues with the canal gates, flooded in November 2009.</li> <li>Old Garda Station has a history of flooding.</li> </ul> <p><b>LA comments</b></p> <ul style="list-style-type: none"> <li>Petrol station was flooded.</li> <li>Hotel wasn't flooded.</li> <li>New housing development by "Battle Bridge" on border with Roscommon, 6-7 houses affected.</li> <li>Culvert blocked, outlet of Lough Brann. Levels rose, then culvert unblocked itself under pressure. Levels subsequently rose downstream by 150mm in 30 minutes.</li> </ul> |

|   |   |                         |   |
|---|---|-------------------------|---|
| <b>1.4 PFRA Data</b>  |   |                         |   |
| <b>1.4.1 PFRA hazard mapping</b>                                | <b>PFRA mapping available in GIS layer:</b>   |                         | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|   | <b>PFRA mapping included on FRR map:</b>  |                         | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| <b>1.4.2 Summary of Principal Receptors</b>                     | <b>Type</b>   | <b>Number (approx.)</b> | <b>FRI score (if available)</b>                                     |
|   | Receptors not considered as part of the PFRA process.<br><br>FRI score not calculated in PFRA.                |                         |   |
| <b>1.7 Stage 1 Evaluation</b>                                   | <b>Aspect</b>   | <b>Clearly APSR</b>     | <b>Uncertain</b>  |
|   | <b>Flood History (1.1)</b>  | <b>X</b>                |   |
|   | <b>OPW / LA Information (1.2)</b>   | <b>X</b>                |   |
|   | <b>PFRA Evaluation (1.4)</b>  |                         | <b>X</b>  |
|   | <b>Overall Desktop Evaluation</b><br>(if any above aspect is uncertain then overall designation is uncertain) |                         | <b>X</b>  |
| <b>1.8 Proposed level of assessment for Stage 2 site visits</b> | <b>Level A Site Visit</b>   |                         | <b>X</b>  |
|   | <b>Level B Site Visit</b>   |                         |   |

|   |  |   |                |   |
|---|--|---|----------------|---|
| <b>Stage 2: Site Inspection</b>   |  | <b>Level A Assessment</b>   |                |   |
| <b>Date and Time of Inspection</b>  |  | <b>Date: 28/04/11</b>   |                |   |
|   |  | <b>Time: 12:00</b>  |                |   |
| <b>Names of inspection team<br/>(including OPW/LA staff if present)</b>   |  | <b>Mathieu Valois</b>   |                |   |
|   |  | <b>James Murray</b>   |                |   |
|   |  |   |                |   |
|   |  |   |                |   |
| <b>2.1 Ground-truthing of Hazard Mapping</b>  | <b>Fluvial non-tidal</b> <input checked="" type="checkbox"/> <b>Fluvial tidal</b> <input type="checkbox"/> <b>Coastal</b> <input type="checkbox"/> <b>Not available</b> <input type="checkbox"/><br>PFRA hazard mapping seems accurate. May have overestimated flooding off the left bank of the canal downstream of the bridge. |   |                |   |
| <b>2.2 Spot check ground-truthing of selected receptor vulnerability</b><br><br><b>(also note any key receptors noted during visit that are not identified by PFRA)</b> | <b>Receptor Type</b>   | <b>Location description (if not obvious)</b>  | <b>Exists?</b> | <b>Overall Vulnerability / Risk (L / M / H)</b> |
|   | Some small retail, mainly bars and a petrol station  | Near the canal bridge in Leitrim Village  | Yes            | Medium  |
|   | Housing estates  | Situated to the north west of the village which have been constructed in the floodplain | Yes            | Medium  |
| <b>2.3 Local knowledge - on-site comments</b><br><br><b>(OPW, LA and any info volunteered by local residents during visit)</b>  | No on-site comments.   |   |                |   |
| <b>2.4 Comments on hydraulic constrictions (bridges, etc.) and conveyance routes</b>  | Bridge at canal likely contributed to canal breaking it's banks and flooding of the local pubs and fast food outlet.   |   |                |   |

## 2.5 SVRS Assessment Matrix

### Weightings:

A - x1 - reasonable expectation of flooding

B - x2 - high expectation of flooding

C - x5 - risk to life

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

## 2.6 Defence Assets

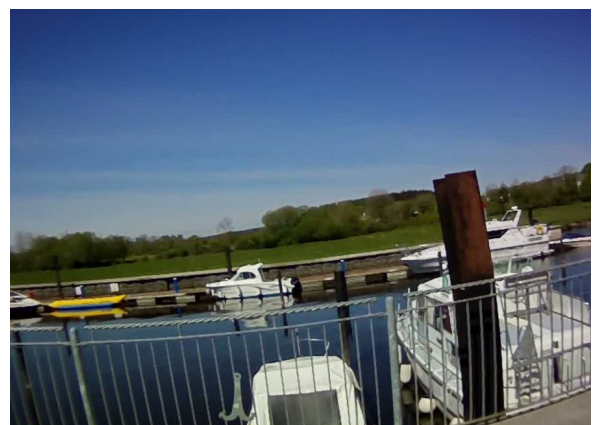
|   |   |
|---|---|
| <b>Formal and Informal Flood Defence Assets</b><br><i>(include effective and ineffective assets to inform asset survey and potential mitigation measures)</i> | <b>Open Channel Watercourses</b><br>Man-made river channel <input type="checkbox"/> Flood relief channel <input type="checkbox"/> Canal <input checked="" type="checkbox"/><br>Mill leat <input type="checkbox"/> Drainage channels / back drains <input type="checkbox"/><br><b>Bridges and Culvert crossings</b><br>Single Arch bridge <input checked="" type="checkbox"/> Multi-Arch bridge <input type="checkbox"/><br>Single Span bridge <input type="checkbox"/> Multi-Span bridge <input type="checkbox"/><br>Box culvert(s) <input type="checkbox"/> Pipe culvert(s) <input type="checkbox"/> Arch Culvert(s) <input type="checkbox"/><br><b>Culverted Watercourses</b> (culvert length is greater than just a crossing)<br>Box culvert(s) <input type="checkbox"/> Pipe culvert(s) <input type="checkbox"/> Arch Culvert(s) <input type="checkbox"/> Irregular Culvert(s) <input type="checkbox"/><br><b>Walls and Embankments</b><br>Embankment(s) <input type="checkbox"/> Raised wall(s) <input checked="" type="checkbox"/> Retaining wall(s) <input type="checkbox"/><br><b>Control Structures – weirs, gates, dams</b><br>Fixed crest weir <input type="checkbox"/> Adjustable weir <input type="checkbox"/> Dam / Barrage <input type="checkbox"/><br>Sluice gates <input type="checkbox"/> Lock gates <input type="checkbox"/> Radial gates <input type="checkbox"/><br><b>Storage</b><br>On-line storage (natural) <input type="checkbox"/> On-line storage (artificial) <input type="checkbox"/> Off-line storage <input type="checkbox"/><br><b>Outfalls</b><br>Flapped outfall(s) into watercourse <input type="checkbox"/> Unflapped outfall(s) into watercourse <input type="checkbox"/><br><i>i.e. from smaller watercourses, drains etc. into river / estuary / sea</i><br>Tidal flap(s) <input type="checkbox"/> Tidal sluice(s) <input type="checkbox"/><br><i>i.e. from main watercourse into estuary / sea</i> |
|---|---|

|  |  |
|--|--|
|  | <b>Other</b><br>Pumping Station <input type="checkbox"/> Erosion Protection <input type="checkbox"/> Sand Dunes <input type="checkbox"/><br><b>Additional notes (if required):</b>   |
| <b>2.8 Initial Potential Mitigation Measures</b> |  |
| <b>Non-structural measures</b>                   | Planning and Development control <input checked="" type="checkbox"/><br>Sustainable Urban Drainage Systems <input type="checkbox"/><br>Flood forecasting / warning <input checked="" type="checkbox"/><br>Change in Operating Procedures for water level control: <input type="checkbox"/><br>Public awareness campaign <input checked="" type="checkbox"/><br>Individual property protection <input type="checkbox"/><br>Land use management <input checked="" type="checkbox"/>  |
| <b>Structural measures</b>                       | <b>Strategic development management for floodplain development:</b> <input checked="" type="checkbox"/><br><i>(integration of measures into strategic development proposals)</i><br><b>Storage:</b> On-line <input type="checkbox"/> Off-line <input type="checkbox"/><br><b>Flow diversion:</b> Flood relief channel <input type="checkbox"/> Flood relief culvert <input type="checkbox"/><br><b>Increase conveyance:</b> Bridge works <input type="checkbox"/> Channel works <input type="checkbox"/> Floodplain <input checked="" type="checkbox"/><br><b>Flood defences:</b> Walls <input type="checkbox"/> Embankments <input checked="" type="checkbox"/><br><b>Localised works:</b> Defence raising <input type="checkbox"/> In-fill gaps <input type="checkbox"/> Trash screen <input type="checkbox"/><br><b>Maintenance works:</b> Culvert / channel clearance <input type="checkbox"/> Asset maintenance <input type="checkbox"/><br><b>Relocation of properties:</b> <input checked="" type="checkbox"/><br><b>Improve existing defences:</b> <input type="checkbox"/> (describe)<br><br><b>Other (describe):</b> |

|   |   |                  |                              |                      |
|---|---|------------------|------------------------------|----------------------|
| <b>Outcomes</b>   |   |                  |                              |                      |
| <b>PFRA Designation</b>   | <b>APSR</b> <input type="checkbox"/> <b>not an APSR</b> <input checked="" type="checkbox"/> <b>IRR</b> <input type="checkbox"/>   |                  | <b>FRI Score: Not scored</b> |                      |
| <b>Site Ground-truthing of PFRA Assessment (hazard mapping and receptors)</b> | <b>High Confidence (good)</b>   | <b>Uncertain</b> | <b>Low Confidence (poor)</b> | <b>Not available</b> |
|   | <b>X</b>  |                  |                              |                      |
| <b>Site Visit Review Score</b>  | <b>250</b>  |                  |                              |                      |
| <b>Recommended Designation</b>  | <b>APSR</b> <input checked="" type="checkbox"/> <b>not an APSR</b> <input type="checkbox"/> <b>IRR</b> <input type="checkbox"/>   |                  |                              |                      |
| <b>Summary Comments (if required)</b>   | The reasons for the recommendation of Leitrim Village as an APSR are: <ul style="list-style-type: none"> <li>• Historical evidence of flooding to a significant number of receptors.</li> <li>• Recently constructed development within a recognised floodplain.</li> </ul> |                  |                              |                      |



**Photo1:** Bridge over canal in Leitrim Village



**Photo 2:** Marina at Leitrim Village

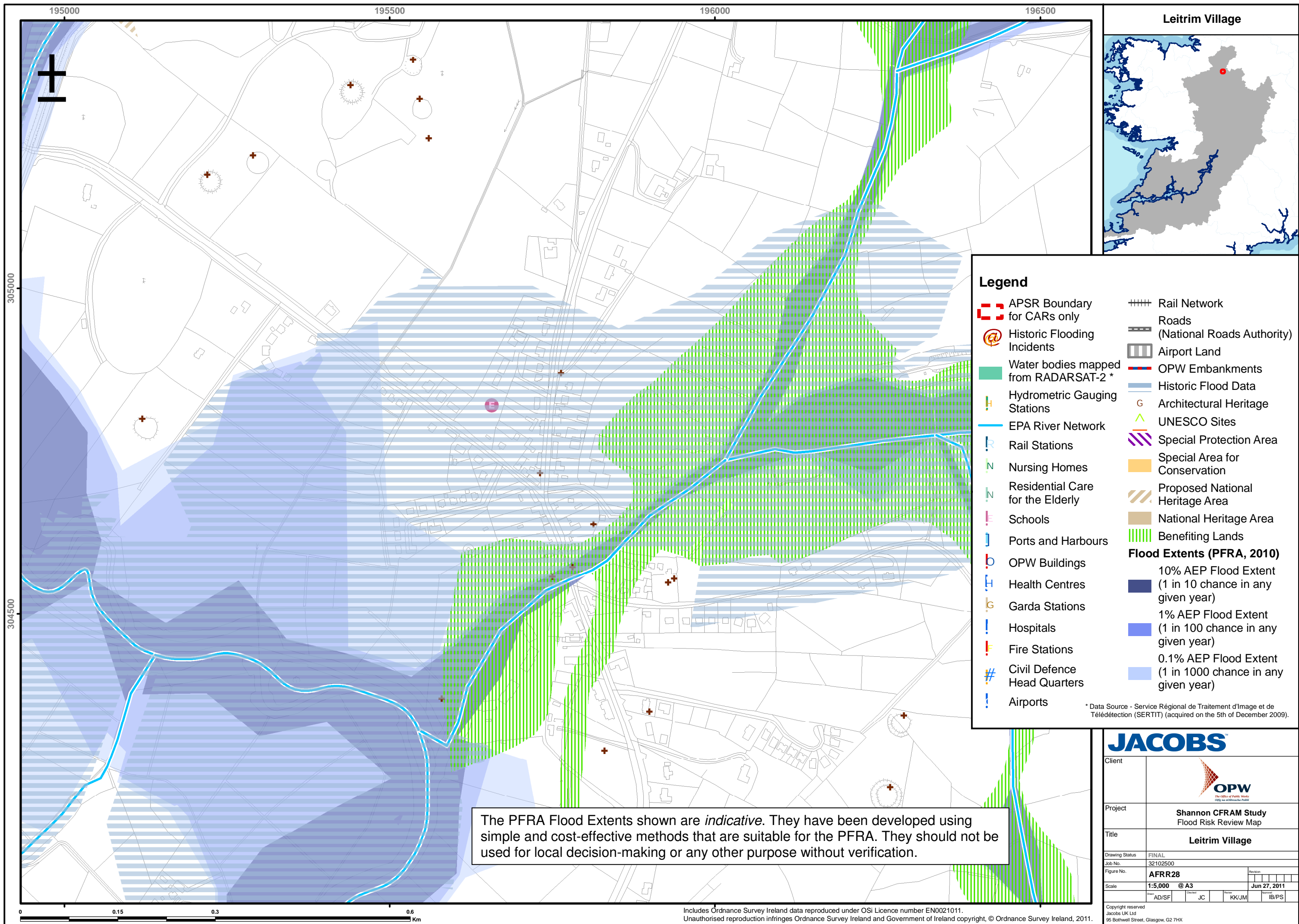


**Photo 3:** View of canal to Leitrim Village from the Shannon




**Photo 4:** View of the Shannon from the Canal to Leitrim Village





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.

**JACOBS**

|  |   |          |              |
|--|---|----------|--------------|
| Client   |  |          |              |
| Project  | Shannon CFRAM Study<br>Flood Risk Review Map  |          |              |
| Title  | Leitrim Village   |          |              |
| Drawing Status   | FINAL   |          |              |
| Job No.  | 32102500  |          |              |
| Figure No.   | AFRR28  |          |              |
| Scale  | 1:5,000   | @ A3     | Jun 27, 2011 |
| Drawn  | AD/SF   | Checked  | JC           |
| Reviewed   | KK/JM   | Approved | IB/PS        |
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