

Location: Quin, Co. Clare		Unique ID: 270480 (from PFRA database)	
Initial OPW Designation	APSR <input type="checkbox"/>	AFRR <input checked="" type="checkbox"/>	IRR <input type="checkbox"/>
Co-ordinates	Easting: 141750	Northing: 174500	
River / Catchment / Sub-catchment	River Rine / Fergus Catchment / Shannon Estuary		
Type of Flooding / Flood Risk (identify all that apply)	Fluvial non-tidal <input checked="" type="checkbox"/> Fluvial tidal <input type="checkbox"/> Coastal <input type="checkbox"/>		

Stage 1: Desktop Review	
1.1 Flood History (include review of Floodmaps.ie)	<p>River Flow Path</p> <p>The River Rine flows from an eastern direction and turns SW north of Quin. The Rine River flows through the centre of Quin with one large stream joining north of the village and there is an extensive network of drains south of the village. The Rine River is crossed by the Quin Bridge in the centre of the village.</p> <p>Flood event records</p> <p>There is 1 recurring flood record listed, with a report dated 2006. Boolyree and Rine Rivers at Dangan Bridge / Brook Lodge - The L8180 floods over a length of 1km on average twice per year. The maximum depth of flooding varies between 450mm to 600mm. Cause is rainfall/ runoff which exceeds the channel capacity of the Quinn river causing it to overflow. This location is around 6km northeast of Quin.</p>
1.2 Relevant information on flooding issues from OPW and LA staff	<p>PFRA database comments (<i>in italics</i>):</p> <p><i>OPW comments</i> <i>Quite a sizeable settlement. LA refer to extensive flooding but not to risk.</i></p> <p><i>LA comments</i> <i>Area of large scale flooding.</i></p> <p>Meeting / discussion summary comments:</p> <p>OPW comments</p> <ul style="list-style-type: none"> Not very familiar with this area, and not aware of any work requests for this area. The OPW scheme reaches up to Blackweir River, southwest of Quin. Clare CoCo maintain the Quin DD. The river channel is fairly deep and constricted where it passes through the centre of the village. New development in Quin may encroach into the flood extents. <p>LA comments</p> <ul style="list-style-type: none"> No detailed knowledge on issues in Quin. Area engineer has more detailed knowledge.

1.4 PFRA Data			
1.4.1 PFRA hazard mapping	PFRA mapping available in GIS layer:		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
	PFRA mapping included on FRR map:		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1.4.2 Summary of Principal Receptors	Type		FRI score (if available)
	Arch_Regional_Weighted_F_E		10
	Monument_LV_Weighted_F_E		21.1
	Total		223.7
1.7 Stage 1 Evaluation	Aspect	Clearly APSR	Uncertain
	Flood History (1.1)		X
	OPW / LA Information (1.2)		X
	PFRA Evaluation (1.4)		X
	Overall Desktop Evaluation (if any above aspect is uncertain then overall designation is uncertain)		X
1.8 Proposed level of assessment for Stage 2 site visits	Level A Site Visit		X
	Level B Site Visit		

Stage 2: Site Inspection		Level A Assessment		
Date and Time of Inspection		Date: 09/06/11		
		Time: 11:30		
Names of inspection team (including OPW/LA staff if present)		Iain Blackwell		
		Lewis Maani		
2.1 Ground-truthing of Hazard Mapping	Fluvial non-tidal <input checked="" type="checkbox"/> Fluvial tidal <input type="checkbox"/> Coastal <input type="checkbox"/> Not available <input type="checkbox"/> The shape of the flood outline is reasonable in general, although the extents look to be large for the frequency of events. For example, the 10% AEP event shows significant flooding of properties downstream of the main bridge, which is considered unlikely in an event of this magnitude. Similarly, flooding of Quin Friary (which has been there for several hundred years) is considered unlikely in the 10% AEP event.			
2.2 Spot check ground-truthing of selected receptor vulnerability (also note any key receptors noted during visit that are not identified by PFRA)	Receptor Type	Location description (if not obvious)	Exists?	Overall Vulnerability / Risk (L / M / H)
	Houses	Upstream of bridge	Y	L-M
	Parochial Hall		Y	L-M
	Monument		Y	L
2.3 Local knowledge - on-site comments (OPW, LA and any info volunteered by local residents during visit)	No on site comments			
2.4 Comments on hydraulic constrictions (bridges, etc.) and conveyance routes	Main hydraulic restriction is the three-arch bridge through the centre of the town. This has significant parts of the outside arches blocked (filled in and a wall constructed across half the height of the left bank arch) reducing the capacity. Upstream of this, there is a single span bridge which would not present a significant restriction to flow. There is a pipe crossing south of the main bridge, but this is close to bank full level. There are no clear alternative conveyance routes.			

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												
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) [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	X			200				400			
Environmental Designated Site	20				200				400			
Hazardous Substances Site	50				500				1000			
Total SVRS									270			
2.6 Defence Assets												
Formal and Informal Flood Defence Assets <i>(include effective and ineffective assets to inform asset survey and potential mitigation measures)</i>	Open Channel Watercourses Man-made river channel <input type="checkbox"/> Flood relief channel <input type="checkbox"/> Canal <input type="checkbox"/> Mill leat <input type="checkbox"/> Drainage channels / back drains <input type="checkbox"/>											
	Bridges and Culvert crossings Single Arch bridge <input type="checkbox"/> Multi-Arch bridge <input checked="" type="checkbox"/> Single Span bridge <input checked="" type="checkbox"/> Multi-Span bridge <input type="checkbox"/> Box culvert(s) <input type="checkbox"/> Pipe culvert(s) <input type="checkbox"/> Arch Culvert(s) <input type="checkbox"/>											
	Culverted Watercourses (culvert length is greater than just a crossing) Box culvert(s) <input type="checkbox"/> Pipe culvert(s) <input type="checkbox"/> Arch Culvert(s) <input type="checkbox"/> Irregular Culvert(s) <input type="checkbox"/>											
	Walls and Embankments Embankment(s) <input type="checkbox"/> Raised wall(s) <input type="checkbox"/> Retaining wall(s) <input checked="" type="checkbox"/>											
	Control Structures – weirs, gates, dams Fixed crest weir <input type="checkbox"/> Adjustable weir <input type="checkbox"/> Dam / Barrage <input type="checkbox"/> Sluice gates <input type="checkbox"/> Lock gates <input type="checkbox"/> Radial gates <input type="checkbox"/>											
	Storage On-line storage (natural) <input checked="" type="checkbox"/> On-line storage (artificial) <input type="checkbox"/> Off-line storage <input type="checkbox"/>											
	Outfalls Flapped outfall(s) into watercourse <input type="checkbox"/> Unflapped outfall(s) into watercourse <input type="checkbox"/> <i>i.e. from smaller watercourses, drains etc. into river / estuary / sea</i>											

	Tidal flap(s) <input type="checkbox"/> Tidal sluice(s) <input type="checkbox"/> <i>i.e. from main watercourse into estuary / sea</i> Other Pumping Station <input type="checkbox"/> Erosion Protection <input type="checkbox"/> Sand Dunes <input type="checkbox"/> Additional notes (if required): There are no “flood defence” assets within Quin, although the three-arch bridge will influence channel conveyance. The flood storage is provided in natural floodplain areas immediately upstream and downstream of the town.
2.8 Initial Potential Mitigation Measures	
Non-structural measures	Planning and Development control <input checked="" type="checkbox"/> Sustainable Urban Drainage Systems <input type="checkbox"/> Flood forecasting / warning <input type="checkbox"/> Change in Operating Procedures for water level control: <input type="checkbox"/> Public awareness campaign <input type="checkbox"/> Individual property protection <input type="checkbox"/> Land use management <input type="checkbox"/>
Structural measures	Strategic development management for floodplain development: <input type="checkbox"/> <i>(integration of measures into strategic development proposals)</i> Storage: On-line <input checked="" type="checkbox"/> Off-line <input type="checkbox"/> Flow diversion: Flood relief channel <input type="checkbox"/> Flood relief culvert <input type="checkbox"/> Increase conveyance: Bridge works <input checked="" type="checkbox"/> Channel works <input type="checkbox"/> Floodplain <input type="checkbox"/> Flood defences: Walls <input checked="" type="checkbox"/> Embankments <input checked="" type="checkbox"/> Localised works: Defence raising <input type="checkbox"/> In-fill gaps <input type="checkbox"/> Trash screen <input type="checkbox"/> Maintenance works: Culvert / channel clearance <input type="checkbox"/> Asset maintenance <input type="checkbox"/> Relocation of properties: <input type="checkbox"/> Improve existing defences: <input type="checkbox"/> (describe) Other (describe):

Outcomes				
PFRA Designation	APSR <input type="checkbox"/> not an APSR <input checked="" type="checkbox"/> IRR <input type="checkbox"/>		FRI Score: 223.7	
Site Ground-truthing of PFRA Assessment (hazard mapping and receptors)	High Confidence (good)	Uncertain	Low Confidence (poor)	Not available
		X		
Site Visit Review Score	270			
Recommended Designation	APSR <input checked="" type="checkbox"/> not an APSR <input type="checkbox"/> IRR <input type="checkbox"/>			
Summary Comments (if required)	<p>There is no flood history in Quin from this river. The flood history listed relates to roads several kilometres from Quin.</p> <p>If the hazard mapping is correct, a flood history over many years at the Friary and formerly the Castle would be expected. This would seem unlikely and therefore the extent of the 10% and 1% events is considered to be over-estimated, although at this stage it is not possible to determine how much it is over-estimated by.</p> <p>There is a possible flood risk to residential properties downstream of the bridge on the left bank, but it is considered unlikely to be at risk in an event as frequent as the 10% AEP event. However, there are a large number of residential properties in this area (>20) which may be at risk in more significant events. There are also a handful of small retail / businesses immediately downstream of the bridge which are potentially at risk.</p> <p>Whilst the flood outlines indicated from the PFRA are considered to be overestimated, there are a significant number of residential and commercial properties that may be at risk. On this basis it is recommended that Quin is designated as an APSR.</p>			



Photo 1: Quin Friary located at the upstream end of the village, elevated on the left bank



Photo 2: Single span bridge at Quin Friary



Photo 3: Quin Friary located well above the flood plain level



Photo 4: Three arch bridge. The left hand arch is blocked to around half of its height and the right hand arch is partially blocked



Photo 5: River channel immediately downstream of the three arch bridge



Photo 6: House on the the estate (on the right of the picture) downstream of the three arch bridge



Photo 7: River looking downstream from the right bank with the housing estate in the background on the left bank



Photo 8: Flood plain downstream of the housing estate on the left bank

