

Location: Banagher, Co. Offaly, includes townland in Co. Galway		Unique ID: 252835 (from PFRA database)	
Initial OPW Designation	APSR <input type="checkbox"/>	AFRR <input checked="" type="checkbox"/>	IRR <input type="checkbox"/>
Co-ordinates	Easting: 200915	Northing: 215334	
River / Catchment / Sub-catchment	River Shannon / Shannon		
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)	River Flow Path <p>The River Shannon flows south through Banagher. A large marina is located at Banagher on the left bank of the River Shannon.</p> Flood Event Records <p>Six flood records are listed in floodmaps.ie. Significant events include the 2009, 1999/2000 and 1954 events which relate to flooding from the Shannon.</p>
1.2 Relevant information on flooding issues from OPW and LA staff	PFRA database comments (<i>in italics</i>): OPW comments <i>Not designated as APSR, no strong LA support. Partly in Galway too</i> LA comments <i>2009 Land in Banagher Pumping Stations, not many properties LA want Risk review. Included in Shannon doc as risk review. (Fire Station comments need to be removed) (in Galway list instead of Offaly) (250409)</i> Meeting / discussion summary comments: OPW comments <ul style="list-style-type: none"> This is on the Shannon, however, not considered a significant flood risk. LA comments <ul style="list-style-type: none"> The area Lusma near Banagher is potentially at risk of flooding. Offaly CC would have expected Banagher to be an APSR. There is a flood risk from the River Shannon. The bridge over the Shannon was investigated after the 2009 event and was considered to be in good condition, reports of the bridge close to failure during the flood were unsubstantiated.

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		42.3
	Arch_National		25
	Monument_LV		22.1
	Total		408.25
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: 06/05/11		
		Time: 09:00		
Names of inspection team (including OPW/LA staff if present)		James Murray		
		Peter Smyth		
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"/> PFRA hazard mapping seems to be indicating very large areas of flooding. Mapping is a bit coarse through Banagher and in areas likely to be inaccurate			
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)
	Castle	On right bank downstream of bridge over the Shannon	Yes	Medium
2.3 Local knowledge - on-site comments (OPW, LA and any info volunteered by local residents during visit)	Local knowledge indicated that properties behind the marina flooded in 2009. There was concern that the bridge over the Shannon would wash away during the 2009 flood event. The Local Authority considered closing the bridge but decided against it.			
2.4 Comments on hydraulic constrictions (bridges, etc.) and conveyance routes	The bridge over the Shannon is a large multi arch bridge (six arches) raised to accommodate navigation. It could cause minimal hydraulic constriction but afflux is possible due to piers. The springing and soffit levels are very high. The bridge was built in 1843 and refurbished in 1971			

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	X			200			
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									190			

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
Tidal flap(s) ☐ Tidal sluice(s) ☐
i.e. from main watercourse into estuary / sea

	Other Pumping Station <input type="checkbox"/> Erosion Protection <input type="checkbox"/> Sand Dunes <input type="checkbox"/> Additional notes (if required):
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 checked="" type="checkbox"/> Change in Operating Procedures for water level control: <input checked="" type="checkbox"/> Public awareness campaign <input type="checkbox"/> Individual property protection <input checked="" type="checkbox"/> Land use management <input checked="" 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 type="checkbox"/> Channel works <input type="checkbox"/> Floodplain <input checked="" 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: 408.25	
Site Ground-truthing of PFRA Assessment (hazard mapping and receptors)	High Confidence (good)	Uncertain	Low Confidence (poor)	Not available
		X		
Site Visit Review Score	190			
Recommended Designation	APSR <input checked="" type="checkbox"/> not an APSR <input type="checkbox"/> IRR <input type="checkbox"/>			
Summary Comments (if required)	<p>The desk study indicated historical evidence of flooding at Banagher but there was a contradiction in opinions between the OPW and Local Authority regarding the flood risk. The site visit supports the Local Authorities belief that Banagher should be recommended for designation as an APSR as there are sufficient critical receptors at significant risk of flooding.</p> <p>Furthermore, the FRR team interrogated the available aerial imagery of the 2009 flood event as part of the FRR assessment and verified the conclusions by the site visit. The major area affected was the housing estate on the left bank upstream of the road crossing. The estate is lower than the natural Shannon bank levels.</p> <p>Approximately 10-15 properties affected in this housing estate as well as the Mooring Yard business (on the river's edge) which could regularly flood.</p>			



Photo1: Downstream view of bridge from left bank.



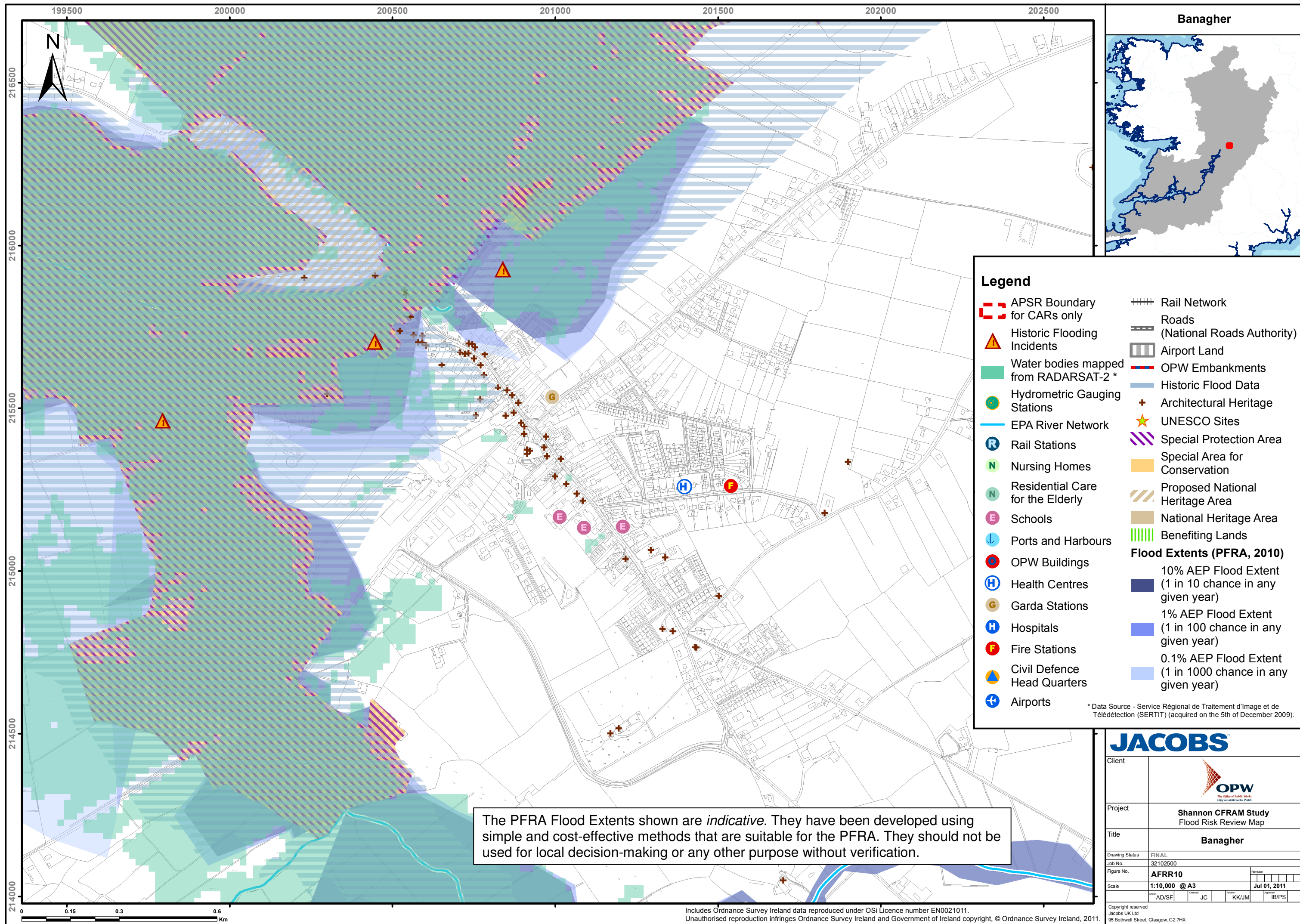
Photo 2: Downstream view of bridge from right bank.



Photo 3: Castle on right bank downstream of bridge over the Shannon.



Photo 4: View from bridge looking upstream.



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.

Legend

APSR Boundary for CARs only

Historic Flooding Incidents

Water bodies mapped from RADARSAT-2 *

Hydrometric Gauging Stations

EPA River Network

Rail Stations

Nursing Homes

Residential Care for the Elderly

Schools

Ports and Harbours

OPW Buildings

Health Centres

Garda Stations

Hospitals

Fire Stations

Civil Defence Head Quarters

Airports

Rail Network

Roads (National Roads Authority)

Airport Land

OPW Embankments

Historic Flood Data

Architectural Heritage

UNESCO Sites

Special Protection Area

Special Area for Conservation

Proposed National Heritage Area

National Heritage Area

Benefiting Lands

Flood Extents (PFRA, 2010)

10% AEP Flood Extent (1 in 10 chance in any given year)

1% AEP Flood Extent (1 in 100 chance in any given year)

0.1% AEP Flood Extent (1 in 1000 chance in any given year)

* Data Source - Service Régional de Traitement d'Image et de Télédétection (SERTIT) (acquired on the 5th of December 2009).

JACOBS	
Client	
Project	Shannon CFRAM Study Flood Risk Review Map
Title	Banagher
Drawing Status	FINAL
Job No.	32102500
Figure No.	AFRR10
Scale	1:10,000 @ A3
Drawn	AD/SF
Checked	JC
Reviewed	KK/JM
Approved	IB/PS
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