

Location: Shannon, Co. Clare		Unique ID: 270481 (from PFRA database)	
Initial OPW Designation	APSR <input checked="" type="checkbox"/>	AFRR <input type="checkbox"/>	IRR <input type="checkbox"/>
Co-ordinates	Easting: 139750		Northing: 162000
River / Catchment / Sub-catchment			
Type of Flooding / Flood Risk (identify all that apply)		Fluvial non-tidal <input checked="" type="checkbox"/> Fluvial tidal <input checked="" type="checkbox"/> Coastal <input checked="" type="checkbox"/>	

Stage 1: Desktop Review

1.1 Flood History (include review of Floodmaps.ie)	<p>River Flow Path</p> <p>Shannon Town is located north of the River Shannon. There are approximately six streams (EPA order 2-3) located both east and west of the main town area. This includes the Clenagh River to the West and the Drumline River to the East.</p> <p>Flood event records</p> <p>There is one flood record listed for Shannon area. There is one report dated 2006. The report details 15 areas that flooding occurs or has occurred in the past in the Shannon area. The mapped flood area corresponds to:</p> <ul style="list-style-type: none"> Ballycally - Surface water ran off land onto the L3169 in January 2005. The runoff was from land to the south of the road. Water flowed around one house but the house was not flooded. This is a rare event. In around 2000, the L7174 was flooded due to tidal backup from the estuary. A flap valve has been installed into the estuary since and the problem has not recurred.
1.2 Relevant information on flooding issues from OPW and LA staff	<p>PFRA database comments (<i>in italics</i>):</p> <p>OPW comments <i>None</i></p> <p>LA comments <i>Town while currently protected by embankments and two pumping stations a severe flood risk is present as town is low laying on a flood plain of the Shannon. – Risk of Breaching of Defences or pump failure. Pumps are considered to be in poor state of repair.</i></p> <p>Meeting / discussion summary comments:</p> <p>OPW comments</p> <ul style="list-style-type: none"> There is public fear of flooding in this town. The whole area is below sea level and at significant risk of flooding. No flooding to date. The old gravity system is in place in the town but no longer operates satisfactorily as it is starved of flow since being superseded by pumps under ownership of Clare County Council. Pumping has not been associated with flooding to date. Significant risk if overtopping / failure of the embankments occurs. Currently the slob (wetlands) offer some protection to the town. OPW maintain embankments east of the local road to the airport, and Shannon Airport maintain those west of this point. OPW referred to an area west of the town and airport that may be assessed within this APSR (or airport IRR): sluiced land commission area where houses are protected by embankments

	LA comments <ul style="list-style-type: none"> Major concern with regard to the flooding potential from the Shannon in the event of a breach of the embankments. In addition to this, there are several small watercourses that drain through the town. These fill the back drains that are then pumped. Pumping station(s) must be operational. Some local flooding issues from e.g. culvert blockage. 		
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 ESB_HV_Sub_Weighted_F_C Monument_LV_Weighted_F_E Primary_Weighted_T_S PostPrimary_Weighted_T_S Third_Level_Weighted_T_S Fire_Stations_Weighted_T_S Garda_Stations_Weighted_T_S OPW_LV_Weighted_T_S OPW_MV_Weighted_T_S Health_Centre_Weighted_T_S ESB_HV_Sub_Weighted_T_C Exchange_Weighted_T_C Airport_Cr_Weighted_T_C Arch_Regional_Weighted_T_E Monument_LV_Weighted_T_E Total	FRI score (if available) 2500 30 2055 376.75 342.5 685 34.25 27.4 34.25 34.25 3425 27.4 34250 13.7 10 98311.66	
1.7 Stage 1 Evaluation	Aspect Flood History (1.1) OPW / LA Information (1.2) PFRA Evaluation (1.4) Overall Desktop Evaluation (if any above aspect is uncertain then overall designation is uncertain)	Clearly APSR X X X⁽¹⁾	Uncertain X
1.8 Proposed level of assessment for Stage 2 site visits	Level A Site Visit Level B Site Visit	 X	

Note: (1) Although the flood history does not suggest there is a major flooding problem in Shannon, it is considered to be at potentially high risk given its location behind the Shannon embankments. A Level B Site Visit assessment is therefore appropriate.

Stage 2: Site Inspection		Level B Assessment	
Date and Time of Inspection		Date: 09/06/11	
		Time: 16:00	
Names of inspection team (including OPW/LA staff if present)		Iain Blackwell	
		Lewis Maani	
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	<p>Flood risk in Shannon is primarily from the Shannon Estuary. However, there are a number of smaller watercourses – including drains – that are within the area, for which there are culvert and bridge crossings. There are no major rivers that flow <i>through</i> Shannon itself, and there is thus no flood risk from such rivers.</p> <p>Given the flat topography of Shannon behind the embankments, any breach of the defences would tend to spread across the land behind the embankments – there is no clear conveyance route away from Shannon.</p>		
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 checked="" type="checkbox"/>	
	Bridges and Culvert crossings		
	Single Arch bridge <input checked="" type="checkbox"/>	Multi-Arch bridge <input type="checkbox"/>	
	Single Span bridge <input checked="" type="checkbox"/>	Multi-Span bridge <input type="checkbox"/>	
	Box culvert(s) <input checked="" type="checkbox"/>	Pipe culvert(s) <input checked="" type="checkbox"/>	Arch Culvert(s) <input type="checkbox"/>
	Culverted Watercourses (culvert length is greater than just a crossing)		
	Box culvert(s) <input checked="" type="checkbox"/>	Pipe culvert(s) <input checked="" type="checkbox"/>	Arch Culvert(s) <input type="checkbox"/> Irregular Culvert(s) <input type="checkbox"/>
	Walls and Embankments		
Embankment(s) <input checked="" type="checkbox"/>	Raised wall(s) <input checked="" type="checkbox"/>	Retaining wall(s) <input 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 checked="" type="checkbox"/>	Lock gates <input type="checkbox"/>	Radial gates <input type="checkbox"/>	
Storage			
On-line storage (natural) <input type="checkbox"/>	On-line storage (artificial) <input type="checkbox"/>	Off-line storage <input type="checkbox"/>	

	<p>Outfalls Flapped outfall(s) into watercourse <input checked="" type="checkbox"/> Unflapped outfall(s) into watercourse <input checked="" type="checkbox"/> <i>i.e. from smaller watercourses, drains etc. into river / estuary / sea</i> Tidal flap(s) <input checked="" type="checkbox"/> Tidal sluice(s) <input type="checkbox"/> <i>i.e. from main watercourse into estuary / sea</i></p> <p>Other Pumping Station <input checked="" type="checkbox"/> Erosion Protection <input type="checkbox"/> Sand Dunes <input type="checkbox"/></p> <p>Additional notes (if required): Shannon is protected on its south side by extensive flood defence embankments of varying heights. These extend for many kilometres to the east and west, along the Shannon Estuary protecting large areas of low lying land behind them. Integral to the flood defence provided by these embankments is the series of drainage channels and back drains behind the embankments, outfalls (with tidal flaps) from these drainage channels through the embankments, and pumping stations to discharge water through the embankments.</p>
<p>2.8 Initial Potential Mitigation Measures</p>	
<p>Non-structural measures</p>	<p>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 checked="" type="checkbox"/> Individual property protection <input type="checkbox"/> Land use management <input type="checkbox"/></p>
<p>Structural measures</p>	<p>Strategic development management for floodplain development: <input type="checkbox"/> <i>(integration of measures into strategic development proposals)</i></p> <p>Storage: On-line <input 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 type="checkbox"/> Flood defences: Walls <input checked="" type="checkbox"/> Embankments <input checked="" type="checkbox"/> Localised works: Defence raising <input checked="" type="checkbox"/> In-fill gaps <input checked="" type="checkbox"/> Trash screen <input type="checkbox"/> Maintenance works: Culvert / channel clearance <input checked="" type="checkbox"/> Asset maintenance <input checked="" type="checkbox"/> Relocation of properties: <input type="checkbox"/> Improve existing defences: <input checked="" type="checkbox"/> (describe) The main embankments protecting Shannon will form an important part of a flood risk management strategy for the area. This is a significant asset already in operation, and therefore provides a basis for improvements where necessary, for example, localised raising (if identified as being necessary). Other (describe):</p>

<p>Outcomes</p>	
<p>Recommended Designation</p>	<p>APSR <input checked="" type="checkbox"/> not an APSR <input type="checkbox"/> IRR <input type="checkbox"/></p>
<p>Summary Comments (if required)</p>	<p>Shannon has a major flood risk from tidal flooding in the event of a breach of the Shannon Estuary embankments. It is recommended to be identified as an APSR on the basis of its location behind the Shannon embankments, rather than because of any previous flood events.</p>



Photo 1: Looking southwest over the Shannon Estuary



Photo 2: Embankment behind the estuary, numerous properties are located behind the trees



Photo 3: Properties located behind the main embankment



Photo 4: Back drain located along the embankment towards the east of Shannon



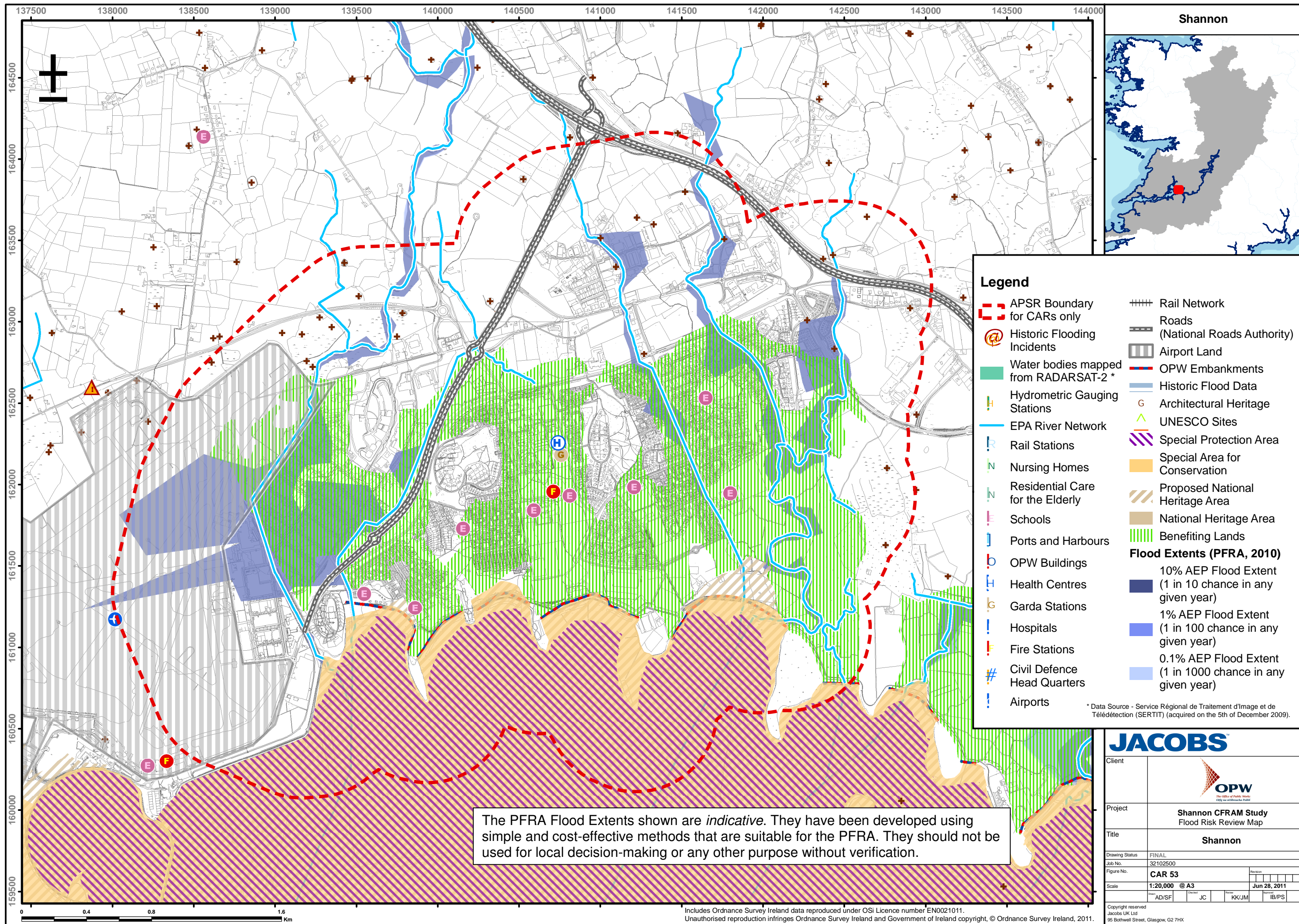
Photo 5: Properties behind the main Shannon embankments towards the east of Shannon




Photo 6: Embankment and back drain outfalls close to Shannon Airport



Photo 7: Pumping Station located at the end of a major back drain close to Shannon Airport



JACOBS

Client			
Project	Shannon CFRAM Study Flood Risk Review Map		
Title	Shannon		
Drawing Status	FINAL		
Job No.	32102500		
Figure No.	CAR 53		
Scale	1:20,000 @ A3		
Drawn	AD/SF	Checked	JC
Drawn	AD/SF	Checked	KK/JM
Drawn	AD/SF	Checked	IB/PS
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