

<b>Location: Limerick City, Co. Limerick</b>		<b>Unique ID: 270477</b> (from PFRA database)	
<b>Initial OPW Designation</b>	<b>APSR</b> <input checked="" type="checkbox"/>	<b>AFRR</b> <input type="checkbox"/>	<b>IRR</b> <input type="checkbox"/>
<b>Co-ordinates</b>	<b>Easting: 157858</b>	<b>Northing: 157475</b>	
<b>River / Catchment / Sub-catchment</b>	<b>Shannon and tributaries including Groody and Mulkear / Shannon Estuary</b>		
<b>Type of Flooding / Flood Risk</b> (identify all that apply)	<b>Fluvial non-tidal</b> <input type="checkbox"/> <b>Fluvial tidal</b> <input checked="" type="checkbox"/> <b>Coastal</b> <input type="checkbox"/>		

<b>Stage 1: Desktop Review</b>	
<b>1.1 Flood History (include review of Floodmaps.ie)</b>	<p><b>River Flow Path</b></p> <p>The Shannon flows through Limerick city, initially flowing south before turning west to form the Shannon Estuary. There are several tributaries to the Shannon whose confluences are within the Limerick APSR, most notably the Mulkear and the Groody. The discharge from Ardnacrusha also flows into the Shannon at Limerick.</p> <p><b>Flood Event Records</b></p> <p>Sixty-eight flood records are listed in floodmaps.ie. These flood events are from various sources and different hydrological conditions throughout the City</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>  <i>Designated APSR on the basis of predictive analysis and historical extents. Combine with other locations: Ballynanty, Castletroy, Garryglass, Limerick</i></p> <p><b>LA comments</b>  <i>Tide Related Commercial and Residential (Clare Side) Shannon Banks Domestic Residents at risk Erosion of Bank of Shannon OPW constructed emergency embankment last winter to protect houses from flooding Clare Part of Limerick N.B. Very Important for Public Consultation. Springfields (10 properties); Westbury / Shannon Banks (20 properties evacuated) (OPW Embankment). Gillogue (1 property flooded Nov '09 - Part of UL. Clare Campus development)</i></p>

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)	
	Primary	250	
	OPW_LV	3	
	Nursing_H	250	
	ESB_HV_Sub	2500	
	Airport_MV	25	
	Arch_Local	10	
	Arch_Regional	146.6	
	Arch_National	30	
	Museum_HV	25	
	Monument_LV	265.1	
	Civil_Defence	34.25	
	ESB_HV_Sub	68.5	
	Gais_L_Weighted_T_C	13.7	
	UWWTP	34.25	
	Port_Harbour	342.5	
	Airport_MV	34.25	
	Arch_Regional	282.64	
	Monument_LV	374.1	
	<b>Total</b>		<b>38584.86</b>
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		
	Level B Site Visit		X

<b>Stage 2: Site Inspection</b>		<b>Level B Assessment</b>	
<b>Date and Time of Inspection</b>		<b>Date:09/06/11</b>	
		<b>Time:14:00</b>	
<b>Names of inspection team (including OPW/LA staff if present)</b>		<b>James Murray</b>	
		<b>Mathieu Valois</b>	
<b>2.3 Local knowledge - on-site comments (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>	<p>There are several bridge crossings of the Shannon in Limerick City, including road, rail, pedestrian and abandoned crossings. There is a weir in the City centre.</p> <p>A full understanding of all hydraulic constrictions in Limerick City during flood risk review stage was not attempted. This will be developed throughout the CFRAM Study programme.</p>		
<b>2.6 Defence Assets</b>			
<b>Formal and Informal Flood Defence Assets</b> <i>(include effective and ineffective assets to inform asset survey and potential mitigation measures)</i>	<b>Open Channel Watercourses</b>		
	Man-made river channel <input type="checkbox"/>	Flood relief channel <input type="checkbox"/>	Canal <input checked="" type="checkbox"/>
	Mill leat <input type="checkbox"/>	Drainage channels / back drains	<input checked="" type="checkbox"/>
	<b>Bridges and Culvert crossings</b>		
	Single Arch bridge <input checked="" type="checkbox"/>	Multi-Arch bridge <input checked="" type="checkbox"/>	
	Single Span bridge <input checked="" type="checkbox"/>	Multi-Span bridge <input checked="" type="checkbox"/>	
	Box culvert(s) <input checked="" type="checkbox"/>	Pipe culvert(s) <input checked="" type="checkbox"/>	Arch Culvert(s) <input checked="" type="checkbox"/>
	<b>Culverted Watercourses</b> (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"/>
	<b>Walls and Embankments</b>		
	Embankment(s) <input checked="" type="checkbox"/>	Raised wall(s) <input checked="" type="checkbox"/>	Retaining wall(s) <input type="checkbox"/>
	<b>Control Structures – weirs, gates, dams</b>		
	Fixed crest weir <input checked="" type="checkbox"/>	Adjustable weir <input type="checkbox"/>	Dam / Barrage <input type="checkbox"/>
Sluice gates <input type="checkbox"/>	Lock gates <input checked="" type="checkbox"/>	Radial gates <input type="checkbox"/>	
<b>Storage</b>			
On-line storage (natural) <input checked="" type="checkbox"/>	On-line storage (artificial) <input type="checkbox"/>	Off-line storage <input type="checkbox"/>	
<b>Outfalls</b>			
Flapped outfall(s) into watercourse <input checked="" 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>			
<b>Other</b>			

	Pumping Station <input type="checkbox"/> Erosion Protection <input type="checkbox"/> Sand Dunes <input type="checkbox"/>	
<b>Additional notes (if required):</b> It is not feasible to identify all flood defence assets for Limerick City during flood risk review stage and as a result the list above should no be considered definitive.		
<b>2.8 Initial Potential Mitigation Measures</b>		
<b>Non-structural measures</b>	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 checked="" type="checkbox"/> Land use management <input checked="" type="checkbox"/>	
<b>Structural measures</b>	<b>Strategic development management for floodplain development:</b> <input type="checkbox"/> <i>(integration of measures into strategic development proposals)</i> <b>Storage:</b> On-line <input checked="" type="checkbox"/> Off-line <input type="checkbox"/> <b>Flow diversion:</b> Flood relief channel <input type="checkbox"/> Flood relief culvert <input type="checkbox"/> <b>Increase conveyance:</b> Bridge works <input checked="" type="checkbox"/> Channel works <input type="checkbox"/> Floodplain <input type="checkbox"/> <b>Flood defences:</b> Walls <input checked="" type="checkbox"/> Embankments <input checked="" type="checkbox"/> <b>Localised works:</b> Defence raising <input type="checkbox"/> In-fill gaps <input checked="" type="checkbox"/> Trash screen <input type="checkbox"/> <b>Maintenance works:</b> Culvert / channel clearance <input checked="" type="checkbox"/> Asset maintenance <input checked="" type="checkbox"/> <b>Relocation of properties:</b> <input checked="" type="checkbox"/> <b>Improve existing defences:</b> <input checked="" type="checkbox"/> <b>(describe)</b> flood defence embankment near St. Thomas Island could be improved.  <b>Other (describe):</b>	

<b>Outcomes</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>	Limerick City has a history of flooding. The PFRA mapping predicts an ongoing significant flood risk with this conclusion supported by both the Local Authority and the OPW. Limerick City was confirmed as an APSR following a desk based assessment, with no on-site verification required.	





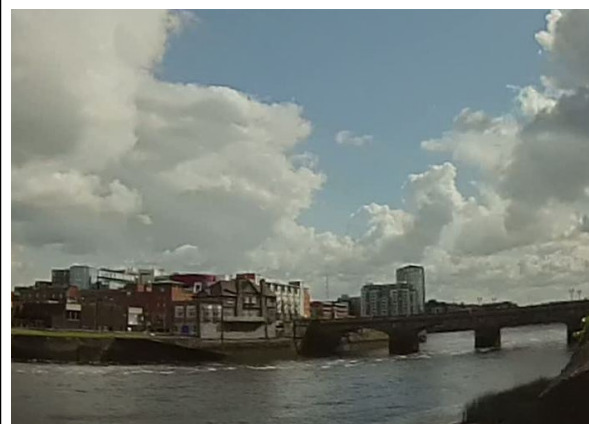
**Photo1:** The Shannon in Limerick City.



**Photo 2:** Bridge over the Shannon in Limerick City

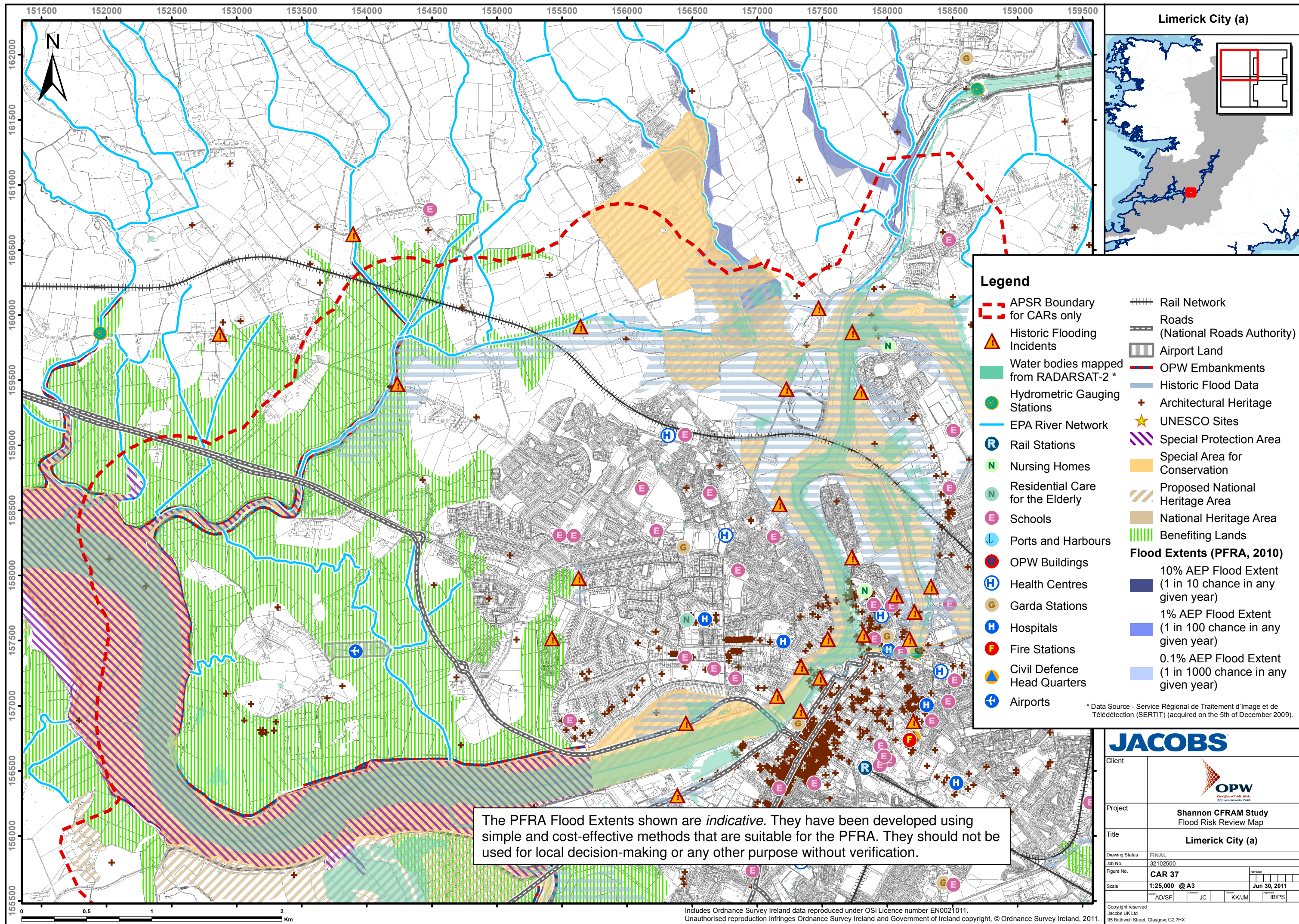


**Photo 3:** Bridge over the Shannon in Limerick City.

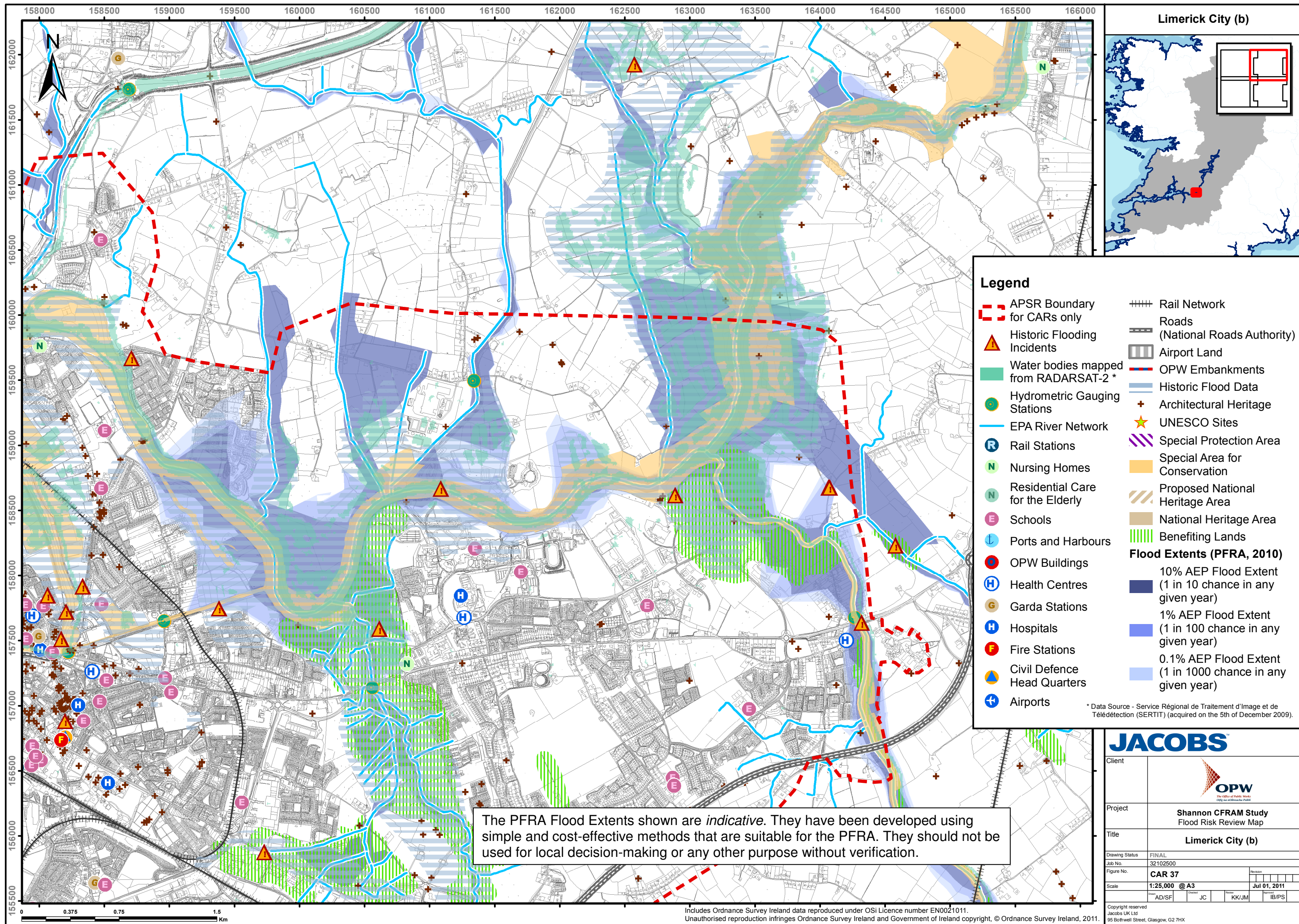


**Photo 4:** Bridge over the Shannon in Limerick City

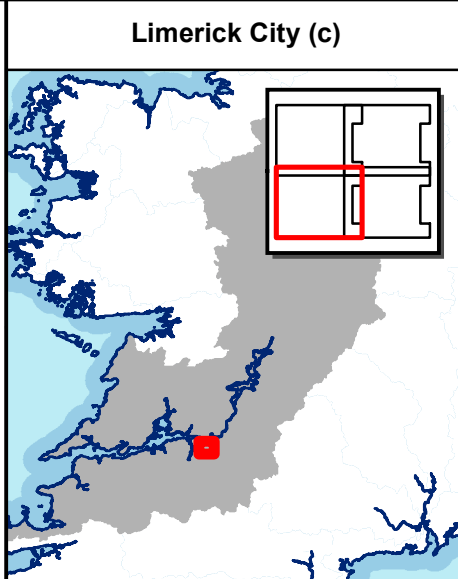
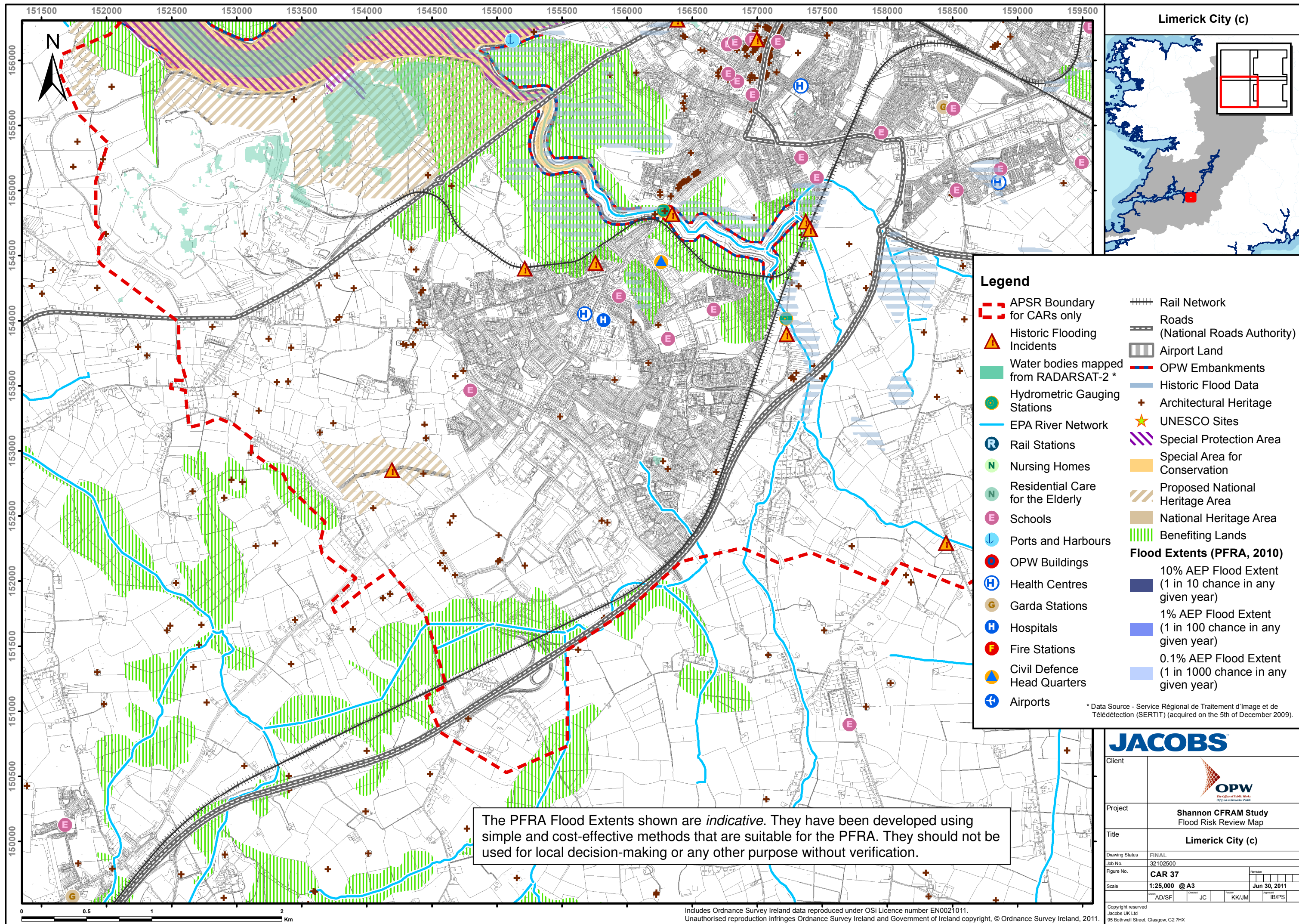







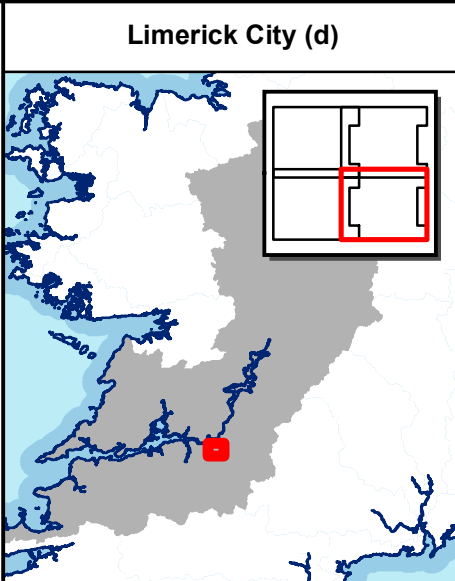
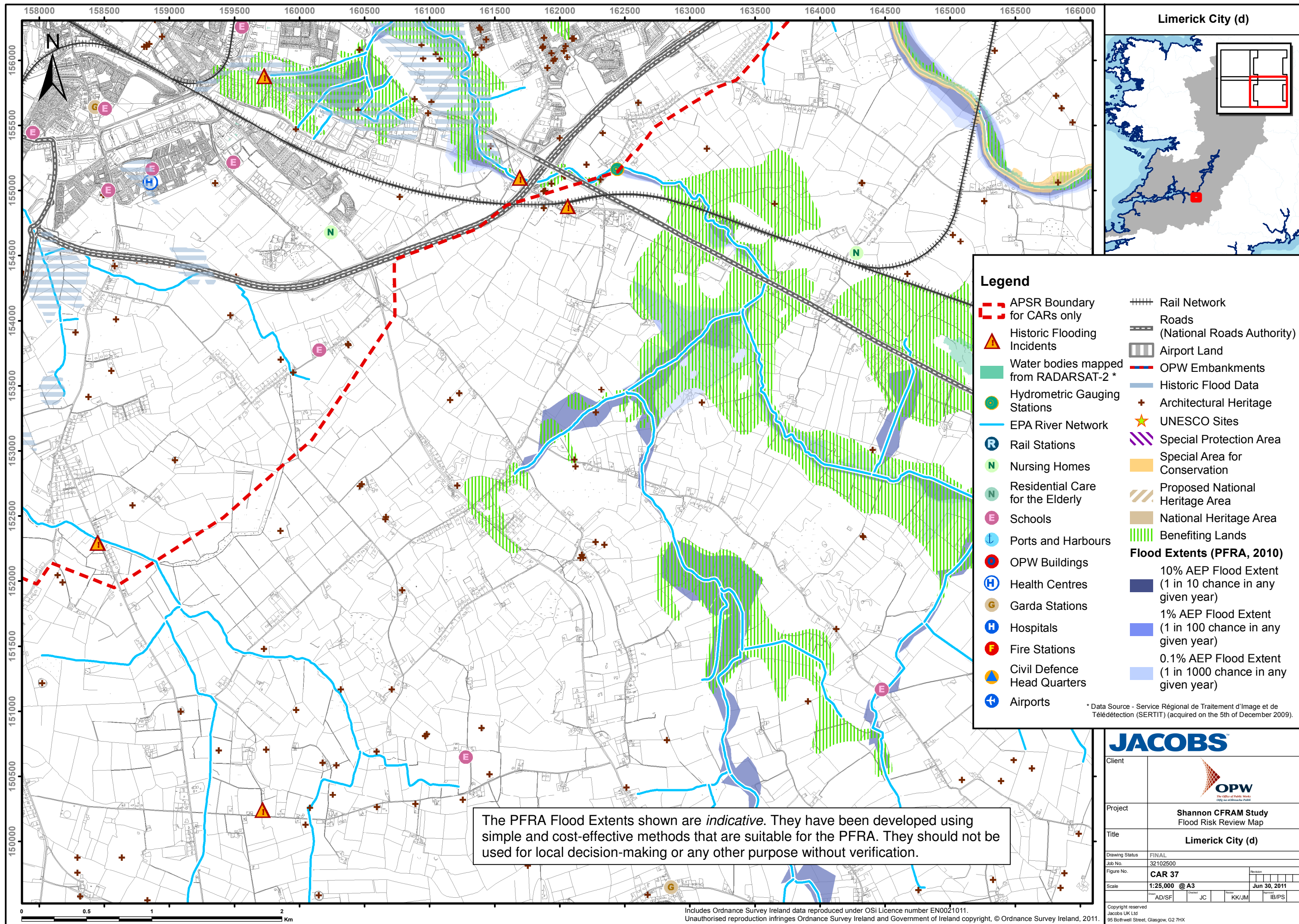







Client			
Project		Shannon CFRAM Study Flood Risk Review Map	
Title		Limerick City (c)	
Drawing Status	FINAL		
Job No.	32102500		
Figure No.	CAR 37		
Scale	1:25,000 @ A3	Jun 30, 2011	
Drawn	AD/SF	Checked	JC
Drawn	KK/JM	Checked	IB/PS
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<b>JACOBS</b>	
Client	
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Drawing Status	FINAL
Job No.	32102500
Figure No.	CAR 37
Scale	1:25,000 @ A3
Drawn	AD/SF
Checked	JC
Reviewed	KK/JM
Approved	IB/PS
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