

<b>Location: Kilkee, Co. Clare</b>		<b>Unique ID: 270475</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: 88731</b>	<b>Northing: 160073</b>	
<b>River / Catchment / Sub-catchment</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 checked="" 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>Kilkee is a coastal town located adjacent to Moore Bay on the west coast of Co. Clare. There are a number of small streams in the area but no significant rivers. The Victoria Stream is the main watercourse, flowing through the southern part of the town. Two more watercourses (one in the central / northern part of the town, and one at the golf course) also flow within (or at) the town boundary.</p> <p><b>Flood event records</b></p> <p>There is one flood record listed as recurring event. Flooding occurrences are as a result of pluvial influences on the Victoria Stream.</p> <p>Areas to note from the OPW reports include:</p> <ul style="list-style-type: none"> <li>Church Street on Carrigaholt Road in front of St Patrick's Terrace - The Victoria Stream flows in an easterly direction just north of the R487 and overflows its banks over a length of 200-300m. Church Street and Well Road Car park are flooded. Road is not passable and the car park is closed. 4 to 5 houses are affected. Frequency is about once per year. Cause is heavy rainfall/runoff exacerbated by tides/wind. The problem is being worsened by development in the Victoria Stream flood plain which is reducing flood storage and increasing runoff.</li> </ul>
<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>Approved - APSR</i></p> <p><b>LA comments</b> <i>To be included as an APSR, APSR Score = 1216</i></p> <p><b>Meeting / discussion summary comments:</b></p> <p><b>OPW comments</b></p> <p><b>LA comments</b></p> <ul style="list-style-type: none"> <li>Victoria Stream (southern part of town) has flooded on several occasions (known problem area) with up to 20+ properties directly affected.</li> <li>Pumping station is in construction at the downstream end of Victoria stream.</li> <li>Another stream towards the central / northern part of the town is not known to give any flooding problems.</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>FRI score (if available)</b>
	Monument_LV_Weighted_F_E		10
	<b>Total</b>		<b>1186.66</b>
<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> (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: 08/06/11</b>		
		<b>Time: 14:30</b>		
<b>Names of inspection team (including OPW/LA staff if present)</b>		<b>Iain Blackwell</b>		
		<b>Lewis Maani</b>		
<b>2.1 Ground-truthing of Hazard Mapping</b>	<b>Fluvial non-tidal <input checked="" type="checkbox"/> Fluvial tidal <input checked="" type="checkbox"/> Coastal <input type="checkbox"/> Not available <input type="checkbox"/></b>  The general shape of the flood outline appears to be well represented overall for the two streams flowing through the main part of the town. Low points – such as the car park affected by the Victoria Stream – are shown to be flooded, although the extent may be over-estimated for the higher frequency events.			
<b>2.2 Spot check ground-truthing of selected receptor vulnerability</b>  <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>
	Houses	Church Road, and low-lying area along sea front close to where Victoria Stream is culverted under the road. Includes Well Road, Victoria Park, Crescent Place	Y	H
	Sewage Pumping Station	Victoria Park	Y	H
	Houses	Pound Street	Y	M
<b>2.3 Local knowledge - on-site comments</b>  <b>(OPW, LA and any info volunteered by local residents during visit)</b>	Discussions with Clare County Council employees at the Sewage Pumping Station (SPS) confirmed the area along Church Road to be vulnerable to flooding, as well as properties generally in this low-lying area near to the SPS.			
<b>2.4 Comments on hydraulic constrictions (bridges, etc.) and conveyance routes</b>	Victoria Stream - Main hydraulic restriction is the culvert under Marine Parade. Additional constriction is at Church Road (upstream) where there are twin culverts with blockage risk. The outfall to the beach is blocked during summer and the stream is pumped from the Sewage Pumping Station to avoid any spills that could affect water quality on the beach. During winter, the blockage of the outfall by beach material is possible.  Minor watercourse near Pound Lane – bridge / culvert has good capacity. This is the watercourse in the central / northern part of the town.			

## 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				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	X			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>280</b>			

## 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) <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 checked="" type="checkbox"/> Erosion Protection <input type="checkbox"/> Sand Dunes <input type="checkbox"/>  <b>Additional notes (if required):</b> The main flood defence / conveyance related assets are the culverts and outfall on the Victoria Stream to the beach. The outfall also has a large trash screen and weir boards on it to prevent access into the culvert from the beach, as well as to reduce the influx of sand being blown into the culvert. On the minor watercourse to the north of the town (which crosses Pound Lane) there are two large culvert / bridge crossings.
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## 2.8 Initial Potential Mitigation Measures

<b>Non-structural measures</b>	Planning and Development control <input checked="" type="checkbox"/> Sustainable Urban Drainage Systems <input checked="" type="checkbox"/> Flood forecasting / warning <input 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 type="checkbox"/>
<b>Structural measures</b>	<b>Strategic development management for floodplain development:</b> <input checked="" type="checkbox"/> <i>(integration of measures into strategic development proposals)</i> <b>Storage:</b> On-line <input type="checkbox"/> Off-line <input type="checkbox"/> <b>Flow diversion:</b> Flood relief channel <input type="checkbox"/> Flood relief culvert <input checked="" type="checkbox"/> <b>Increase conveyance:</b> Bridge works <input checked="" type="checkbox"/> Channel works <input checked="" type="checkbox"/> Floodplain <input type="checkbox"/> <b>Flood defences:</b> Walls <input checked="" type="checkbox"/> Embankments <input type="checkbox"/> <b>Localised works:</b> Defence raising <input type="checkbox"/> In-fill gaps <input checked="" type="checkbox"/> Trash screen <input checked="" 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 type="checkbox"/> <b>Improve existing defences:</b> <input type="checkbox"/> (describe) <b>Other (describe):</b>

## Outcomes

<b>PFRA Designation</b>	APSR <input checked="" type="checkbox"/> not an APSR <input type="checkbox"/> IRR <input type="checkbox"/>		<b>FRI Score: 1187</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>
		X		
<b>Site Visit Review Score</b>	280			
<b>Recommended Designation</b>	APSR <input checked="" type="checkbox"/> not an APSR <input type="checkbox"/> IRR <input type="checkbox"/>			
<b>Summary Comments (if required)</b>	The main watercourse to be considered is the Victoria Stream. This is the area on the southwest edge of town and has flooded historically. The small watercourse in the central / northern part of the town is not a significant risk.			



**Photo 1:** Culvert exit from the Victoria Stream on to the beach at Kilkee



**Photo 2:** Victoria Stream looking upstream from the culvert entrance



**Photo 3:** Low lying properties close to the Victoria Stream



**Photo 4:** Victoria Stream culvert crossing at Church Road

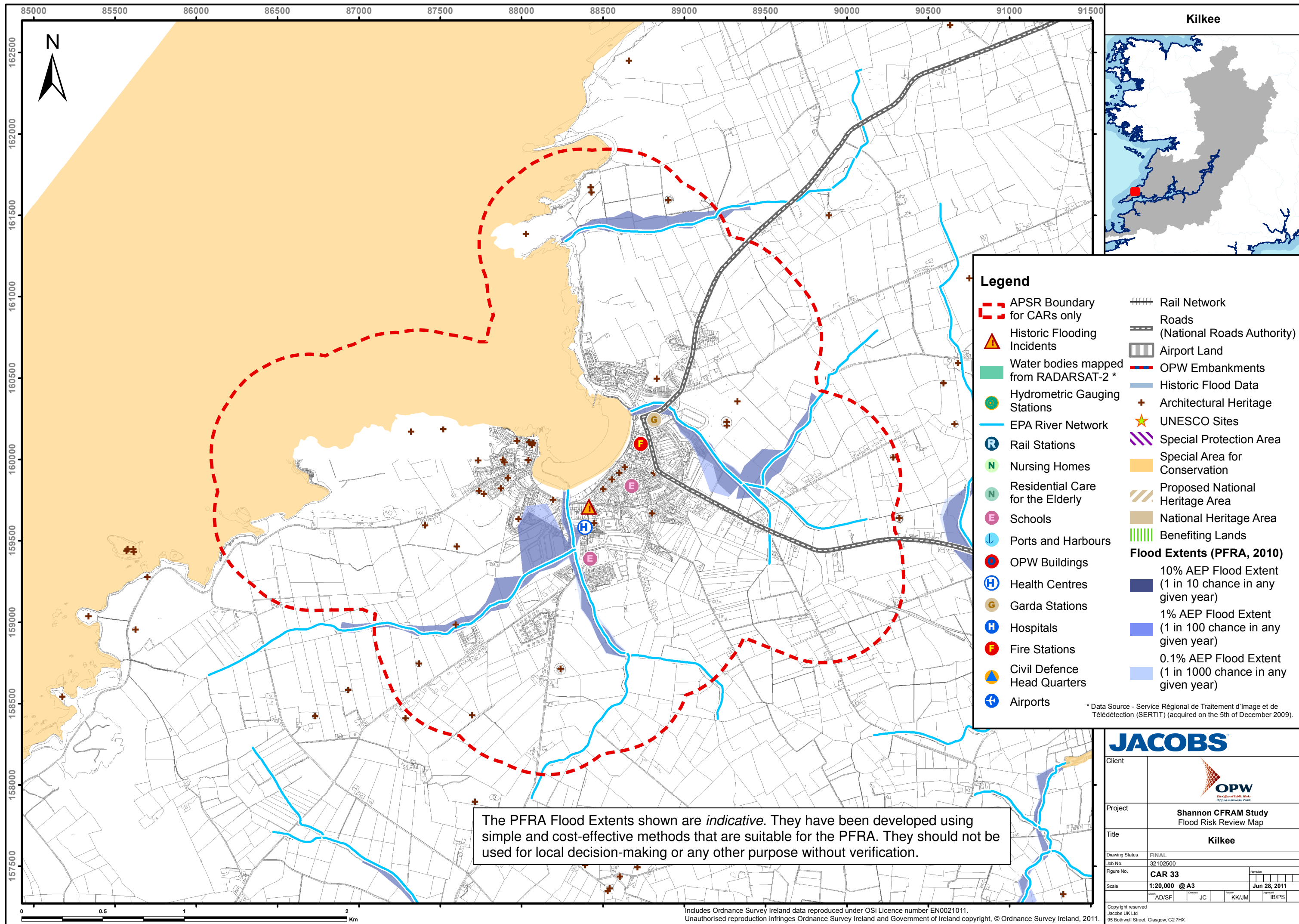


**Photo 5:** Smaller watercourse crossing at Pound Street (in northern part of Kilkee)




**Photo 6:** Watercourse to the north of Kilkee at the golf course. No flood risk





**JACOBS**

Client	 The Office of Public Works OPW ne réitíneann na Poblachtaí		
Project	Shannon CFRAM Study Flood Risk Review Map		
Title	Kilkee		
Drawing Status	FINAL		
Job No.	32102500		
Figure No.	CAR 33		
Scale	1:20,000 @ A3		
Drawn	AD/SF	Checked	JC
Drawn	KK/JM	Checked	IB/PS
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