

Interim Report on Flooding in Limerick City

Christmas/New Year 1999

Limerick Main Drainage

19th January 2000

Introduction

Severe flooding occurred in Limerick City during the period between 23rd and 31st December 1999 with the most serious flooding starting on the evening of 24th December 1999. This flooding occurred when a Spring tide coincided with a period of westerly winds, low atmospheric pressure and persistent rainfall. The areas worst affected were Clancy Strand, O'Callaghans Strand, Merchants Quay, Georges Quay, Sir Harrys Mall, Athlunkard Street and Corbally Road. In light of the predicted high tides and rainfall on 22nd December some flooding was anticipated and precautions were taken to deal with this. However it was not reasonable to expect the tide to reach the level which it did and the amount of rainfall which fell during this period was not expected by the Irish Meteorological Service. Personnel from Limerick Corporation, Limerick Main Drainage and Uniform Construction Ltd. were in attendance throughout the event to try and prevent the water from gaining access to properties. The emergency services were also in attendance, and assistance was provided by the Army and Civil Defence

Areas effected by the flooding

The most serious flooding occurred between the evenings of the 24th and 25th December. Both O'Callaghan's Strand and Clancy's Strand were affected together with an area from Merchants Quay along George's Quay, Sir Harry's Mall as far as Athlunkard Street and Corbally Road. The road along O'Callaghan's Strand was flooded on the morning of the 25th December. The road itself was impassable for a short period however properties in the area were not effected. Clancy's Strand suffered similarly with flooding to a lesser extent also occurring on the 24th and 26th December. Flooding in both these areas coincided with times of high tide and generally receded as the tide ebbed. The area surrounding and including Sir Harry's Mall was the worst affected with the road along Sir Harry's Mall remaining flooded for an entire week. Properties were also affected

Flooding Potential in Limerick

The level of the tide in the Shannon Estuary has a major effect on the flood levels in Limerick City. The entire reach of the river within the city is tidal. Furthermore the level of tides in the estuary is greatly influenced by atmospheric and weather conditions. Low atmospheric pressure results in an increase in the level of the tide above the predicted level while high pressure has the opposite effect. Also westerly winds will increase the tide levels while offshore winds will again have an opposite effect. Wave action on the water surface resulting from the wind increases the effective water level. Flows in the River Shannon also have a major effect on flood levels in Limerick city. Flows in the River Shannon result from discharges by the ESB at Ardnacrusha and uncontrolled flows from the Mulcair and other tributaries. While the river is in flood the water level in the Shannon may be higher than parts of the quays and other low-lying areas which means that in the absence of pumping local rainfall also contributes to flooding.

Flood Event - Christmas 1999

Spring tides were predicted to occur from Tuesday 21st December to Sunday 26th December 1999 with the highest tide predicted to occur on the morning of Friday 24th December. The level that this high tide was predicted to reach was 2.8 m AOD. This was not a particularly high tide as similar tides occurred in October and November. On this occasion however the high tides coincided with a period of very low atmospheric pressure and also strong westerly winds, which had the effect of increasing the level of the high tide to approximately 4.1m AOD as recorded by the Shannon Ports gauge at Limerick docks. The wave action caused by the strong westerly winds increased this height further to give an effective height of approximately 4.3 m AOD. In addition flows in the River Shannon were very high at this time. Prior to the heavy rainfall before Christmas the ESB had hoped to keep total discharges from Ardnacrusha and Parteen to approximately

550cu.m/sec. In the event discharges increased to approximately 700cu.m/sec on 27th December. The heavy rainfall also increased flows in local tributaries adding over 100cu.m/sec to the flows in the River Shannon.

It was the combination of this heavy persistent rainfall and the high tide influenced by the climatic conditions that caused the Shannon and Abbey rivers to reach the levels which they did within the city and hence cause the flooding.

It is considered likely that while the berms constructed under the Limerick Main Drainage works did not cause the flooding, they may have caused flood waters to be retained in the Abbey River area during periods of ebbing tides.

History of events

23/12/99

Water level exceeded 3.5m AOD in the Abbey river during period of high tide in the morning and similarly in the evening. As a result the upper berm (between Sir Harry's Mall and Lock Quay) was over-topped and the works in the Abbey river were flooded. This flooding however was alleviated by pumping between periods of high tide.

The road along Sir Harry's Mall was flooded by water coming from the Abbey river up through storm drains and road gullies.

The road along Clancy's Strand also experienced slight flooding while the tide was at its highest. Uniform Construction Ltd. provided protection to the Court House by way of sand-bags.

24/12/99

The water level in the Abbey river again exceeded 3.5m with the morning tide and the Limerick Main Drainage works were again flooded. Due to the increased flow in the Shannon together with the local rainfall the pumps could not cope with the amount of water now coming into the works. The water level in the Abbey river remained high with the ebb tide as the Shannon was now in full flood condition. The amount of rainfall occurring throughout the entire catchment area of the Shannon had now significantly increased the flow passing through Limerick.

Sir Harry's Mall area was now experiencing serious flooding with properties being threatened. Clancy's Strand experienced similar flooding to previous day. This was because of the level of the tide being higher than that of the road which resulted in water coming up through gullies etc.

With the flood tide in the evening the water level rose to 4.2m AOD. Flooding now extended to George's Quay and upstream of O'Dwyer bridge. The Fire Brigade was in attendance at Athlunkard Street where properties were being flooded.

Along Clancy's strand the roadway was now impassable and properties were being threatened. Uniform Construction Ltd. placed protection to properties along Clancy's Strand.

25/12/99

The water in the Abbey river over-topped the Quay wall. Merchants Quay together with an area surrounding the Civic offices was flooded. From George's Quay along Sir Harry's Mall to Athlunkard Street was completely submerged and impassable with serious flooding to properties. The road along Sir Harry's Mall was under almost 1.0m of water. This however receded with the ebb tide. Athlunkard Street was also impassable with flooding occurring on both sides of the river at O'Dwyer Bridge. This also caused flooding of the Corbally road. Fire Brigade were in attendance here once again.

Almost the entire stretch of Clancy's Strand was flooded as well as part of O'Callaghan Strand. Properties were not effected however the road was impassable. This flooding again receded with the ebb tide.

The evening tide did not reach the same level as the morning tide did however properties from Sir Harry's Mall to Athlunkard Street were still suffering severe flooding with the fire services remaining in attendance all day.

26/12/99

Minor flooding occurred at George's Quay coinciding with the morning high tide. A large area between Sir Harry's Mall and Athlunkard Street was still flooded with the fire services still in attendance.

Flooding also occurred along Clancy's Strand coinciding with the high tide. Limerick Corporation and Uniform Construction Ltd. held a meeting with regard to flooding in the Abbey river. There was a general agreement however that no action could be taken while water levels were as high as they were.

27/12/99

The road along Sir Harry's Mall flooded. Clancy's Strand was flooded for duration of high tide only. A meeting was held between Limerick Corporation, Limerick Main Drainage and Uniform Construction Ltd. and as a result of concern that the berms on the Abbey River were preventing flood waters from receding along Sir Harry's Mall it was decided that the berms between Sir Harry's Mall and Lock Quay should be breached. A 1.0m deep channel was excavated through each berm. This work was completed by midnight.

28/12/99

The road along Sir Harry's Mall was still flooded however flood waters on Athlunkard Street receded. A further meeting was held between Limerick Corporation, Limerick Main Drainage and the contractor where it was agreed that no further action could be taken in the meantime.

29/12/99

The berm between Sir Harry's Mall and Lock Quay was reduced further in order to try and reduce the water level in the Abbey river. The road along Sir Harry's Mall still flooded. Limerick Corporation met with representatives of the residents to discuss action to be taken. Residents were generally dissatisfied with the situation with respect to the blocking off of the Abbey river which they claim was the cause of the flooding. Limerick Corporation were made aware that the residents would be claiming compensation for damage caused to their properties by flooding.

30/12/99

Further reduction to the berm took place as instructed by Limerick Main Drainage. The road along Sir Harry's Mall was still flooded. Water level in Abbey river remaining high and not receding with tide.

31/12/99

A further meeting was held to discuss if any further action could be taken with regard to high water levels in the Abbey river. A representative from the ESB was in attendance to clarify their position with regard to controlling flows in the Shannon. Limerick Corporation were successful in pumping the flood water from the road at Sir Harry's Mall into the Abbey river.

Damage to Property

A number of houses were flooded with resulting damage to property. It is understood that the residents/owners will be seeking compensation