

**Environment and Transportation Department,
Block 2, Floor 6,
Civic Offices,
Dublin 8.
20th September 2017**

**To Each Member of the
Environment Strategic Policy Committee**

Environment & Transportation Department. Rainfall Monitoring.

Since 2000 there have been a number of very significant weather events which have resulted in extensive flooding throughout the city ranging from tidal, to river flooding and pluvial flooding where the capacity of the drainage network cannot cope with the sheer scale of rainfall. There was extensive flooding in October 2011 when over 1,000 houses and over 100 businesses were flooded. On 1st February 2002, the highest tide on record at that time flooded over 1,250 buildings in Dublin City. An even higher tide occurred on 3rd January 2014 and had this record high tide been accompanied by strong easterly winds there would have been extensive flooding at Clontarf and Sandymount. These areas remain extremely vulnerable to future flooding.

Since 2000 there has been a rise of 120 millimetres in sea level in Dublin Bay. There has also been an increasing level of very high intensity rainfall and increased thunderstorm activity over the City in the last 10 years with rainfall intensities of up to 8 millimetres being recorded in a five minute period.

Against this background of flooding Dublin City Council in conjunction with the OPW and others is continuing to carry out extensive flood alleviation works throughout the City. These have included:

- Significant flood protection measures have been constructed along the length of the River Dodder and River Tolka costing around €50m to date.
- Spencer Dock Flood gate has been constructed at a cost of €6m.
- The River Wad/Clanmoyle Road Flood Alleviation scheme has been completed (€4m).
- Swales have been constructed at Glendhu Park, Park Road, Killala Road, Drumcliffe Road and Glasanaon Road. (€0.7m).
- The South Campshire flood alleviation Scheme is at substantial completion stage (€5m).
- A large number of upgrades have been carried out to the surface water drainage system (€5m).
- On average 2 or 3 river bank collapses have been repaired every year.

Dublin City Council has in place a Flooding Advisory Group (FLAG) who meet following weather warnings from Met Éireann and other sources to risk assess these forecasts from a flooding viewpoint. High tides, when taken in conjunction with high wind speeds and wind directions, are also assessed. The outcomes of these risk assessments can be the deployment of Dublin City Council's limited staff resources and equipment at various key locations throughout the city, media releases where necessary, the update of the City Council website and activation of the Councillors Communications Plan and information to the Local Area Managers and others. These deployments

have significantly reduced the potential detrimental effect of flooding in Dublin City over the last 15 years.

Historically Dublin City Council has used a number of different monitoring systems and is currently installing a new system called Dublin City Rainfall which has amalgamated these real time rainfall and water level monitoring systems together on one web based digital platform. This enables Dublin City Council to monitor rainfall events in a much more efficient manner. The number of monitors has also been expanded upon with currently 32 monitors in the City, 14 outside of it and another 25 monitors planned for installation over the next year.

In addition to the construction of Flood Alleviation Schemes and reactive responses Dublin City Council has in place a Sustainable Urban Drainage Systems (SuDS) policy for new and existing developments. Dublin City Council's SuDS policy allows for continued residential and commercial developments in city while minimising the risk of flooding occurring. SuDS are a suite of alternative drainage systems to the traditional system of catching rainfall as quickly as possible and carrying it to the nearest open river or tidal area. It is not feasible to design drainage networks for the increased rainfall intensities that currently happen making an alternative means of dealing with rainfall essential. These systems are implemented to reduce local flooding and reduce dilute combined sewerage discharges to nearby watercourses. There are many different types of SuDS, the most common being:-

- Flood detention basins, water butts, Swales, Retention Ponds, Permeable paving, Filter drains, Infiltration trenches/Soakaways, Bio-retention, Stormwater wetlands, green roofs and modifications to the existing drainage network. SuDS are part of the Greater Dublin Strategic Drainage Study (GSDS) outcomes of 2005 which form part of the City Councils Development Plan.
- Many of these systems can be installed with new development where the 100 year flood event, except for existing green field discharges, has to be retained within the development boundary. Retro fitting is usually more difficult and can usually only be carried out in public areas.

In October 2011 there was widespread flooding across the Dublin City region which arose from very intense rainfall in a relatively short period of time. This intense rainfall caused rivers to flood and the drainage systems to become inundated to such an extent that they overflowed, causing flooding to streets, properties and to basements with shallow sewer connections. Over 1,000 homes and premises in Dublin City flooded and many more gardens (estimated 10,000), car parks, streets and roads were also flooded. Should this type of rainfall event occur again, a high proportion of these same homes and premises would most likely flood again. While the City Council continuously works to maintain and improve the existing drainage infrastructure, the householders and basement property owners in particular must also play a key role in protecting themselves and their property from flooding. In the event of a major flooding incident occurring citywide access for emergency staff throughout the City is inevitably difficult, highlighting the onus on property owners to protect their own property.

Dublin City Council has prepared a guidance document on Individual property protection and is available online at:

<http://www.dublincity.ie/sites/default/files/content//WaterWasteEnvironment/WasteWater/Documents/Flood%20Product%20Guide%20rev%201%20aug%202013.pdf>

In conclusion since the tidal and fluvial flooding events of 2002 much has been done to reduce the flood risk to people, property and infrastructure in Dublin City. With rising sea level and more intense rainfall events inevitably there will be occasions when there will be resulting flooding.

There is a Memorandum of Understanding at an advanced stage in place with Irish Water that deals with flooding, whether from the drainage network or from the rivers and streams. This Memorandum of Understanding gives clarity on the roles of both Dublin City Council and Irish Water and allows for the expansion of the role of Dublin City Council's Surface Water and Flood Management Services Division. Individual property protection is the key to the successful preparation for the inevitable flooding.

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