

<b>ISLE OF ANGLESEY COUNTY COUNCIL</b>	
<b>Report to:</b>	<b>Executive Committee</b>
<b>Date:</b>	<b>12<sup>th</sup> January 2015</b>
<b>Subject:</b>	<b>Update on Implementation of the Flood &amp; Water Management Act 2010</b>
<b>Portfolio Holder(s):</b>	<b>Councillor Richard Dew</b>
<b>Head of Service:</b>	<b>Mr. Dewi Williams</b>
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<b>Local Members:</b>	

<b>A –Recommendation/s and reason/s</b>
To note the contents of the report and to urge Dŵr Cymru to upgrade their sewerage and combined sewerage and surface water systems at some critical locations on the island.

<b>B – What other options did you consider and why did you reject them and/or opt for this option?</b>
N/A

<b>C – Why is this a decision for the Executive?</b>
The report is to inform the Executive of the progress made with this matter.

<b>CH – Is this decision consistent with policy approved by the full Council?</b>
Yes

<b>D – Is this decision within the budget approved by the Council?</b>
Yes

<b>DD – Who did you consult?</b>		<b>What did they say?</b>
<b>1</b>	<b>Chief Executive / Strategic Leadership Team (SLT)</b> (mandatory)	
<b>2</b>	<b>Finance / Section 151</b> (mandatory)	
<b>3</b>	<b>Legal / Monitoring Officer</b> (mandatory)	
<b>4</b>	<b>Human Resources (HR)</b>	
<b>5</b>	<b>Property</b>	
<b>6</b>	<b>Information Communication Technology (ICT)</b>	
<b>7</b>	<b>Scrutiny</b>	
<b>8</b>	<b>Local Members</b>	
<b>9</b>	<b>Any external bodies / other/s</b>	

<b>E – Risks and any mitigation (if relevant)</b>		
<b>1</b>	<b>Economic</b>	
<b>2</b>	<b>Anti-poverty</b>	
<b>3</b>	<b>Crime and Disorder</b>	
<b>4</b>	<b>Environmental</b>	
<b>5</b>	<b>Equalities</b>	
<b>6</b>	<b>Outcome Agreements</b>	
<b>7</b>	<b>Other</b>	

<b>F - Appendices:</b>
Appendix 1 – Update on Implementation of the Flood and Water Management Act 2010.

<b>FF - Background papers (please contact the author of the Report for any further information):</b>
Anglesey Local Flood Risk Management Strategy – November 2014

## **Update on the Implementation of the Flood and Water Management Act 2010**

### **1. Introduction**

- 1.1 Following a collaboration project with Conwy Council the Isle of Anglesey Local Flood and Risk Management Strategy was produced and the Welsh Minister for Natural Resources and Flood approved the document on the 15<sup>th</sup> April 2013. Previously the strategy had been approved by this authority's Scrutiny and Executive Committees, together with the full County Council.

Since June 2012 the Highway Section has acted as Lead Local Flood Authority for the Isle of Anglesey County Council by recording and reporting on all internal flooding incidents for both fluvial and coastal floods, whilst also acting as Consenting Authority for works in non main rivers.

This report will summarise the types of incidents and responses undertaken by the service and should be read in conjunction with the background paper, see FF, 'Anglesey Local Flood Risk Management Strategy' (ALFRMS) dated November 2014.

### **2. Background**

#### **2.1 Flood Investigation Reports**

A total of 81 no. incidents have been recorded since June 2012, with 41 no. Flood Investigation Reports having been completed. The location of each incident is shown in Fig 3.2 of the ALFRMS, but it should be noted that some of these Investigation Reports will refer to more than one property.

#### **2.2 Problem Areas**

The most serious issues arising are:-

- 2.2.1 Beumaris Coastal Flooding – Whilst only one house has been seriously affected, the situation could have been much more severe. It is hoped that a £1.5 million scheme (85% funded by Welsh Government) will commence in February 2015, to combat both coastal flooding from the Green to Gallows Point and fluvial flooding from Allt Goch and Castle Meadow.
- 2.1.2 Market Street and Victoria Road, Holyhead – at least 25 properties are affected by deficiencies in Dŵr Cymru's combined sewer and surface water systems at both these locations.
- 2.1.3 Nant Y Felin, Pentraeth – Fluvial flooding arising from poor development in the 1970s, with a totally inadequate underground drainage system catering for a large estate with many houses built on what was once a flood plain.

### 2.3 October 2014 flood

Fig 3.4 shows the locations affected by flooding during a major flood event on the 22<sup>nd</sup> and 23<sup>rd</sup> October 2004. Since then major schemes funded by Welsh Government have been implemented in Beaumaris (Mill Lane and High Street), Llanfaes, Llanfairpwll and Trearddur Bay. Additionally providing GPS trackers on gulley cleaners used for cleaning highway gulleys has proved to be a very efficient and cheap solution to reduce flooding problems.

## 3. Conclusion

- 3.1 There is no denying that global warming has become a problem which is likely to become worse as the severity of storms and rainfall increases. Recently 2012 was recorded as the third wettest year since records were kept and November 2013 was the wettest month on record. As part of the same problem 2014 has globally been the warmest year on record.
- 3.2 Whilst some major schemes have been completed, there are still major projects to be undertaken. There are serious deficiencies in Dŵr Cymru's combined systems infrastructure due to capacity and the age of the assets. Additionally, the cleaning of these systems is not undertaken on a regular basis.



# **Anglesey Local Flood Risk Management Strategy**

**UPDATE ON FLOOD AND WATER MANAGEMENT ACT 2010  
(INTERNAL FLOODING INCIDENTS)**

**November 2014**

**Isle of Anglesey County council**

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# Executive Summary

Following the introduction of the Flood and Water Management Act 2010 (FWMA) which received Royal Assent on the 8<sup>th</sup> April, 2010 every local authority in Wales had to produce a Local Flood Risk Management Strategy (LFRMS).

Isle of Anglesey County Council's Local Flood Risk Management Strategy was ratified by full Council on the 5<sup>th</sup> March, 2013 and we were notified that the Welsh Minister for Natural Resources and Food had approved our (LFRMS) on the 15<sup>th</sup> April, 2013.

The Local Flood Risk Management Strategy (LFRMS) produced has begun a new chapter for flood and coastal erosion risk management in Anglesey which will help towards understanding and managing flood risk within the County. It also highlights the steps that are to be taken to improve knowledge of flood risk on the island, to work better with organisations and the public towards reducing those risks whilst aiming to balance the need of communities, the economy and the environment.

As a Lead Local Flood Authority (LLFA), the Isle of Anglesey County Council (IoACC) will principally look to tackle 'local flood risk', i.e. flooding from surface water, groundwater and ordinary watercourses such as ditches and streams. Until now there has been little co-ordinated work to address these forms of flood risk; however the (LFRMS) has been produced to address this.

The following information gives a brief insight into what information is included within the actual (LFRMS), and also gives an update on how many internal flooding incidents have been experienced on the Island the (LLFA) is aware of since our new duties to record and investigate came into force under the (FWMA) at the beginning of June, 2012.

# 1. Introduction

**Around 220,000 properties in Wales, or about one in six buildings, are at risk of flooding, of which 64,000 are at significant risk. 97,000 of these are also vulnerable to surface water flooding with a further 137,000 properties susceptible to surface water flooding alone.**

*Flooding in Wales – National Assessment of Flood Risk  
Environment Agency*

## 1.1 Introduction

The increase in occurrence and severity of flooding in recent years including that of summer 2007 sparked a government-commissioned investigation into the flooding, known as the Pitt Review. It summarised the failings of historic flood management, resulting in an extensive set of recommendations which were transposed into the Flood and Water Management Act 2010 (FWMA). The FWMA created a responsibility for County and Unitary Councils to act as Lead Local Flood Authorities (LLFA's) which meant they were required to take leadership for the coordination and management of local flood risk.

Isle of Anglesey County Council (IoACC) has been designated as a LLFA in Wales, and is required under Section 10 of the FWMA to develop, maintain, apply and monitor a Local Flood Risk Management Strategy (LFRMS) in its area. The purpose of the LFRMS is to address potential flood risk arising from local sources within the boundaries of the Local Authority area. Local flood risk is defined as any flood risk from surface runoff, groundwater and ordinary watercourses. An ordinary watercourse is defined (in the Water Resources Act 1991) as any watercourse, including lakes and ponds that is not classified as a main river.

It is likely that changes in our climate, such as increased severity of storms and wetter winters, will increase the risk and impact of flooding. Flooding already poses a serious risk to the people, economy and environment of Anglesey and climate change is expected to increase this risk, as well as the rate of coastal erosion, in the coming decades. Communities at risk of flooding and coastal erosion can expect to see those risks realised more frequently and the magnitude of the impacts to be increased. It will not be possible simply to continue to build more and bigger drainage systems and defences in response to this increased risk; the response has to be rooted in the principles of risk management, providing a holistic approach to identifying flooding issues, and managing the risks, and their consequences.

Considering the current pressures on public funding, the money available for Flood and Coastal Erosion Risk Management is unlikely ever to be adequate to deal with all existing flood risks and the increasing future risk brought about by further development and a changing climate. As such flood risk management will need to be supplemented by everyone working together and by those at risk from flooding taking responsibility to protect and help themselves.

## 1.2 The Flood and Water Management Act 2010

Following Royal assent in April 2010 The Flood & Water Management Bill became an Act of Parliament. The Act reinforces the need to manage flooding in a holistic and sustainable manner and places a number of new roles and responsibilities on councils such as Anglesey, which is designated as a Local Lead Flood Authority under the FWMA extending their previous responsibilities for flood risk management.



There are two key drivers behind the new legislation; one being the review in to the summer 2007 floods by Sir Michael Pitt, most often referred to as the Pitt Review. The other key driver behind the Act is the EU Floods Directive which has been transposed into UK law by the Flood Risk Regulations, 2009. Both of which are summarised in the following sections:

### **1.3 The Pitt Review**

Sir Michael Pitt carried out an independent review of national Flood and Coastal Erosion Risk Management practices after the widespread and catastrophic floods during the summer of 2007, in which over 55,000 households were affected and damages exceeded £4 billion. The Pitt Review was published in June 2008 and called for urgent and fundamental changes to the way flood risk was being managed. The report contained 92 recommendations for the Government, Local Authorities, Local Resilience Forums and other stakeholders which were based around the concept of Local Authorities playing a major role in the management of local flood risk, through coordinating with all relevant authorities. Many of the recommendations contained in the Pitt Review have been enacted through the Flood and Water Management Act.

## 2. Flood Risk in Anglesey

### 2.1 Local Flood Risk

Anglesey is exposed to the combined potential risk from river, tidal, coastal flooding and reservoir inundation. Urban drainage and surface water problems have also contributed to the county's history of flooding.

The administration area of the Isle of Anglesey County Council is the 9<sup>th</sup> largest within Wales and covers an area of approximately 714 km<sup>2</sup>. The county falls into the Western Wales River Basin District.

IoACC has just over 200 km of coastline, 7.9 km of which is artificially protected; this comprises approximately 1/20<sup>th</sup> of the artificially protected coastline in Wales. IoACC serves a total resident population of 68,600 (2010), approximately 40% of whom are settled along the coast in the larger towns of Holyhead, Menai Bridge, Beaumaris, Benllech and Amlwch. Away from the coast, the area is predominantly rural, with small villages and a few larger settlements adjacent to rivers (Llangefni).

Most of the flooding on the island is attributed to surface water flooding, causing overload of the existing sewer systems which is particularly prevalent in Beaumaris, Holyhead, Dwyran and Llangefni. Llangefni and Dwyran are located on rivers and the flood risks here are from surface water run-off, sewer systems and also tidally influenced river flooding.

### 2.2 Types of Flooding

Flooding can be caused from a wide variety of sources and interactions between those sources. The FWMA defines 'local flood risk' as being a flood risk from:

- Surface water runoff;
- Groundwater; and
- Ordinary water courses.

These sources are defined below. It should be noted that in many cases these sources can be interrelated and flooding can be caused by a combination of sources including those not considered local sources such as main rivers or the sea. All types of flooding that may occur in the county and that are covered by both strategies (local and national) have been described in the following sections.

#### 2.2.1 Surface Water Flooding (pluvial)

Surface water flooding also known as runoff or pluvial flooding is caused by water flowing overland following periods of prolonged or intense rainfall, leading to flows or ponding of water. Surface water flooding can happen anywhere with very little warning and can disappear with a similar speed. Areas which have been historically subject to this type of flooding are likely to experience a higher probability of repeat flood events in the future according to climate change projections.

Simplistically surface water flooding is caused by the inability of rainwater to be absorbed into the ground quicker than it falls as precipitation, causing a build-up and flows across ground. Precipitation that has entered a watercourse, public sewer, or drainage system and overflows from there onto the surface is not within the definition of surface runoff.

Significant work has been undertaken by the LLFA team within IoACC to identify the risk and the probability of flooding from surface water under Section 10 of the FWMA. As part of their responsibilities the LLFA produced a Preliminary Flood Risk Assessment in 2011 to identify the areas within the county that are at risk from flooding. Figure 2.1 in the next section provides the locations of historical Surface Water Flooding in Anglesey.

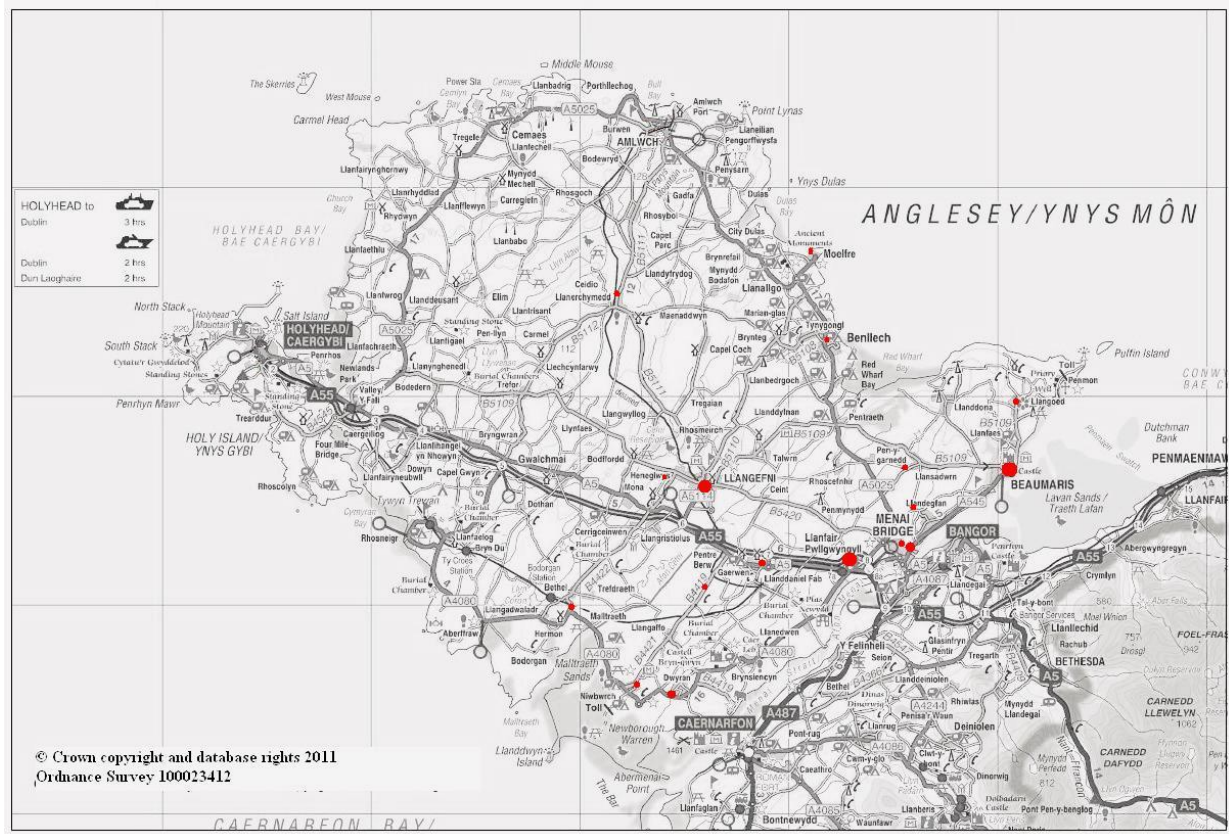


Figure 2.1: Risk of surface water flooding in Anglesey based on historical events taken from PFRA

## 2.2.2 Groundwater Flooding

Groundwater is the term used to describe water that is stored underground in permeable rocks which are known as aquifers. The aquifers are fed through the process of precipitation which percolates through the ground and includes all of the water that is not lost to surface water runoff and evapotranspiration. Groundwater forms the foundation of the base-flows of rivers and stream which are topped up by surface run-off. Groundwater flooding occurs when the water held underground rises above these levels. It is important to note that the term groundwater does not include any water that is carried in buried pipes or held underground in containers.

In Anglesey flooding attributed directly to groundwater is extremely difficult to apportion as groundwater flooding usually occurs in combination with pluvial and fluvial flooding. As groundwater flooding occurs in low lying areas, basements of residential housing are usually impacted by this type of flooding.

Residents may not even be aware that their property has been flooded or they are aware that flooding has occurred previously (and do not store valuable goods in basements) and do not report incidents

to the Council as limited damage to personal belongings has occurred. As such historical records relating to groundwater flooding within Anglesey are limited.

### 2.2.3 Fluival Flooding

Fluival flooding occurs when a river or ordinary watercourse reaches its capacity and overflows bursting its banks. This type of flooding can be influenced by a large number of factors, but usually occurs following prolonged and heavy rainfall within the rivers catchment area.

Under the Water Resources Act 1991, main rivers are defined on the main river map and Natural Resources Wales retains their powers relating to them. Overseeing the management of local flood risk from ordinary watercourses that are not designated Main River, is the responsibility of Local Authorities. In terms of ordinary watercourses the LLFA manages the risk from local flood under its responsibilities identified in the Land Drainage Act 1991 and the FWMA. There are notable risks in Anglesey from main rivers at Llangefni and also from smaller watercourses and tributaries at Llanfachraeth, Llandegfan, Dwyran and Beaumaris.

### 2.2.4 Sewer or Highway Flooding

Sewer or Highway flooding is caused when flows or volumes of surface water exceed the capacity of drainage infrastructure or where a blockage occurs. This type of flooding generally occurs following periods of intense rainfall leading to the drainage systems being overwhelmed.

Within IoACC, Dwr Cymru Welsh Water (DCWW) is the water company with the responsibility for managing and maintaining drainage systems (surface water and combined sewers). DCWW are required to record and report on property flooding within their management areas, as part of their service indicators known as Director General (DG) Registers. The register which records the flooding incidents within the county are known as DG5, which are provided to the Water Services Regulatory Authority, or Ofwat.



Figure 2.2: Historical Incidences of Surface Water Flooding in Anglesey

### **2.2.5 Coastal Flooding**

Sea flooding occurs when water levels or waves overtop the crest of the coastal defences, or when defences are breached or collapse. The probability of breach is dependent on four main factors: weather conditions (generating large waves); wind direction (on-shore); high tides (particularly during spring tides) and the condition of the coastal defences. When these conditions combine the risk of flooding can be greatly enhanced as the predicted tide level can be raised by several metres. This phenomenon is known as a storm surge where the sea defences are overtopped.

### **2.2.6 A Combination Event**

Detailing individual sources of risk does not imply that flooding can only ever occur for one reason. Any and all of these sources mentioned above can come together to produce what are called combination events.

An example of a combination flood is one occurring during a period of intense or prolonged rainfall. The rain would increase water levels in watercourses, saturate ground, increase flow through the drainage system and could enter the public sewerage system, increasing pressure. As all of these factors combine, watercourses, drains and sewers could all reach maximum capacity and with nowhere else to go the water could overflow from all of them, resulting in a combination of river, sewer and surface water flooding.

On the coast, a combination event could involve flooding from the sea where a storm delivers intense rainfall on the land and a storm surge and stormy seas, at the same time as a high tide. This results in an increase in tide and wave levels at the same time as flow from rivers to the sea increases. If the two meet, coastal communities could experience a mix of flooding from the sea and a river.

## 3. Managing the Likelihood of Flooding

### 3.1 The Risk Management Authorities in Anglesey

Managing local flood risk is the responsibility of IoACC as an LLFA. The Local Strategy must set out who the other Risk Management Authorities are in the area that also have legal responsibilities for the management of flood risk, these have been identified as:

- **Natural Resources Wales (formerly Environment Agency Wales)** is responsible for managing flood risk from **main rivers** and the **sea**, and also has a strategic overview role over all flood and coastal erosion risk management and for regulating the safety of **reservoirs**. EAW also has a key role in providing flood warnings to the public.
- **Isle of Anglesey County Council** as a lead local flood authority, is responsible for taking the lead in managing flood risk from all local sources, including **surface water, groundwater** and **ordinary watercourses**.
- **Dŵr Cymru – Welsh Water (DCWW)** is the regional water and sewage treatment company serving the Anglesey area. DCWW is responsible for flood risk from **sewers** and **burst pipes**.
- **Isle of Anglesey County Council as a Highways Authority** is responsible for managing flood risk on roads and **highways** within the area. Local Authorities in Wales act as highway authorities in respect of local roads.
- **UK Highways (UKH)** is responsible for the maintenance and improvement of the **A55 trunk road** across Anglesey on behalf of the Welsh Government. UKH must ensure that:
  - Road projects do not increase flood risk;
  - Road discharges do not pollute receiving waterbodies.

#### 3.1.1.1 Recording of Flood Incidents

One of the Authority's new measures is to assemble an accurate picture of flood risk across Anglesey which requires the collection of precise and useful records from actual flood incidents occurring across the County.

An LLFA has a duty to record all sources of significant flooding events. The national definition of significant is unavailable therefore the decision whether or not to record a flood is at the discretion of the LLFA. IoACC have set a standard to record every known flood incident that occurs in the county. A detailed investigation will be carried out when certain criteria are met, which is explained in more detail in the next section.

IoACC have already begun to assemble a record of flood incidents and database of land drainage investigations which is being imported into an infrastructure management software package known as Infonet. IoACC will continue to record and manage all future drainage investigations and flood incidents occurring across the county using this system. When combined with mapping of future flood risk in the county the historic records will help provide a picture of the highest flood risk areas in Anglesey.

### 3.1.1.2 Investigation of Flood Incidents

An LLFA has a duty to investigate all sources of significant flooding events. The national definition of significant is unavailable therefore the decision whether or not to investigate a flood is at the discretion of the LLFA and the comprehensiveness of the investigation will be adjusted to reflect the significance of the incident and the resources available. In the event of very widespread, significant flooding affecting large areas of Anglesey, our ability to investigate every incident in detail is likely to be severely limited.

The aim of flood investigations is to bring all useful information together in one place, providing an understanding of situations, outlining possible causes of flooding and potential long-term solutions to protect people and their homes from flooding. Further recommendations will also be made to highlight potential flood risk management actions. ***Reports will provide a clear and thorough understanding of flooding situations, but our duty to investigate does not guarantee that problems will be resolved and cannot enforce other authorities into action.***

A flood investigation will involve consultation with the relevant risk management authorities, landowners and private organisations involved, all of whom will be expected to cooperate and provide comments.

There are 4 stages of flood investigations for flooding incidents and land drainage issues in Anglesey:

- **Stage 1:** Carry out an initial assessment; including a risk evaluation analysis to determine whether a site inspection is deemed necessary or progression onto *Stage 2*;
- **Stage 2:** Carry out a detailed investigation (Flood Investigation Report) to identify the source of flooding, how many properties are affected, and what measures can be carried out to help manage the risk or prevent the flooding incident occurring in the future. The report will be published and a copy sent to all relevant parties involved;
- **Stage 3:** Apply for funding for a feasibility study of alleviation schemes; and
- **Stage 4:** Design and build the alleviation scheme (subject to funding).

All the Flood Investigation Reports undertaken on the Island to date are listed in the following table Figure 3.1 in the next section and also shown on a location map Figure 3.2. The information gathered on all internal flooding incidents recorded on Anglesey since this new responsibility came into force on 1<sup>st</sup> June, 2012 has also been analysed; and the type of flooding and the Risk Management Authorities involved has been shown as a percentage in pie chart format Figure 3.3. The map of the Island shown in Figure 3.4 shows all the reported flooding incidents recorded by the Highway Authority on the 22<sup>nd</sup> and 23<sup>rd</sup> October, 2004 which is one of the worst flooding events experienced on Anglesey in recent years when 100mm of rain fell within a 3 hour period.

Incident Ref.	Date	Location	No. of Properties Flooded		Type of Flooding	Risk Management Authorities				
			Residential	Commercial		NRW	IoACC (LLFA)	DC/WW	IoACC (HA)	NMWTRA
YM2012S19/01	05/08/12	23 Nant Y Felin, Pentraeth	1		Surface				Yes	
YM2012S19/02	05/08/12	10 Nant Y Felin, Pentraeth	1		Surface				Yes	
YM2012S19/03	25/08/12	Ty Capel, Rhosneigr (SARON)	1		Surface		Yes			
YM2012S19/04	25/08/12	Bodafon Cottage, Llangristiolus	1		Fluival		Yes			
YM2012S19/05	25/08/12	Arfor, Whispering Sands, Rhosneigr	1		Sewer			Yes	Yes	
YM2012S19/06	25/08/12	Newlands, Trearddur Bay	1		Sewer			Yes	Yes	
YM2012S19/07	25/09/12	13-15 Wellington Terrace, Llanerchymedd	3		Fluival		Yes			
YM2012S19/08	25/09/12	Penlon, Mynydd Parys, Amlwch	1		Surface				Yes	
YM2012S19/09	25/09/12	8 Alaw View Estate, Rhosybol	1		Surface				Yes	
YM2012S19/10	22/11/12	36 Bethesda Street, Amlwch	1		Surface		Yes			
YM2012S19/11	25/09/12	Copper Kingdom, Amlwch Port		1	Ground		Yes			
YM2012S19/12	25/09/12	Harbour Hotel, Cemaes		1	Ground		Yes			
YM2012S19/13	25/09/12	2 Riverside, Bwlch, Benllech	1		Fluival	Yes		Yes	Yes	
YM2012S19/14	22/11/12	Hen Siop, opposite Chwarel Gwyndy	1		Surface				Yes	
YM2012S19/15	22/11/12	Ty'n Ffrwd, Llannerchymedd	1		Fluival		Yes			
YM2012S19/16	14/12/12	1 Tros Yr Afon, Beaumaris	1		Coastal	Yes	Yes			
YM2012S19/17	22/11/12	11, 89 & 93 Nant Y Felin, Pentraeth	3		Fluival		Yes			
YM2012S19/18	22/11/12	7 Bridge Street, Llannerchymedd	1		Fluival	Yes				
YM2012S19/20	22/11/12	5 Traeth Coch Uchaf, Red Wharf Bay	1		Surface				Yes	
YM2012S19/21	22/11/12	Gongl Rhedyn, Rhosgoch	1		Fluival		Yes			
YM2012S19/22	22/11/12	Rose & Thistle, Brynsiencyn	1		Surface				Yes	

Figure 3.1: Flooding Investigation Reports carried out by the LLFA team within IoACC on Anglesey (Sheet 1 of 2)



Incident Ref.	Date	Location	No. of Properties Flooded		Type of Flooding	Risk Management Authorities				
			Residential	Commercial		NRW	IoACC (LLFA)	DC/WW	IoACC (HA)	NMWTRA
YM2013S19/01	05/08/13	ATS, Llangefni		1	Fluival		Yes			
YM2013S19/02	25/07/13	Market Street, Holyhead		5	Sewer		Yes	Yes		
YM2013S19/03	25/07/13	Bargains Galore, Market Street, Holyhead		1	Surface		Yes	Yes		
YM2013S19/04	25/07/13	Burnells, Market Street, Holyhead		1	Ground		Yes	Yes		
YM2013S19/05	05/08/13	Owain Glyn Dwr, Llanddona		1	Surface				Yes	
YM2013S19/06	05/08/13	Liverpool Arms, Menai Bridge		1	Ground		Yes			
YM2013S19/07	04/10/13	No.'s 2-18 London Road, Holyhead	9		Sewer		Yes	Yes		
YM2013S19/07A	04/10/13	No. 2, 3 & 4 Landsend, Victoria Road, Holyhead	3		Sewer		Yes	Yes		
YM2013S19/08	05/12/13	Various locations - Coastal Flooding	4	4	Coastal	Yes	Yes			
YM2013S19/09	3-6/01/14	Various locations - Coastal Flooding	5		Coastal	Yes	Yes			
YM2014S19/01	24/02/14	Glyndwr & Pendre, Rhydwyn	2		Fluival		Yes			
YM2014S19/02	19/05/14	Market Street, Holyhead	1	5	Sewer		Yes	Yes		
YM2014S19/03	09/10/14	8 Mountain View, Menai Bridge	1		Surface		Yes			
YM2014S19/04	16/10/14	8-10 Field Street, Station Road and Valley Mews, Valley	5		Fluival	Yes	Yes	Yes		
YM2014S19/05	16/10/14	7 Tyn Rhos, Caergeiliog	1		Surface				Yes	
YM2014S19/06	16/10/14	18 Zealand Park, Caergeiliog	1		Surface		Yes			
YM2014S19/07	16/10/14	The Old School House, Cemaes	1		Surface		Yes			
YM2014S19/08	16/10/14	Llainysbylltir, Rhoscolyn	1		Surface				Yes	
YM2014S19/09	16/10/14	55 Trearddur Road, Trearddur Bay	1		Surface		Yes			
YM2014S19/10	16/10/14	Harbour Hotel, Cemaes		1	Ground		Yes			
YM2014S19/11	01/11/14	Bridge Inn, Menai Bridge		1	Ground		Yes			

Figure 3.1: Flooding Investigation Reports carried out by the LLFA team within IoACC on Anglesey (Sheet 2 of 2)

**Figure 3.2: Location map showing all Flooding Investigation Reports carried out by the LLFA team within IoACC on Anglesey**

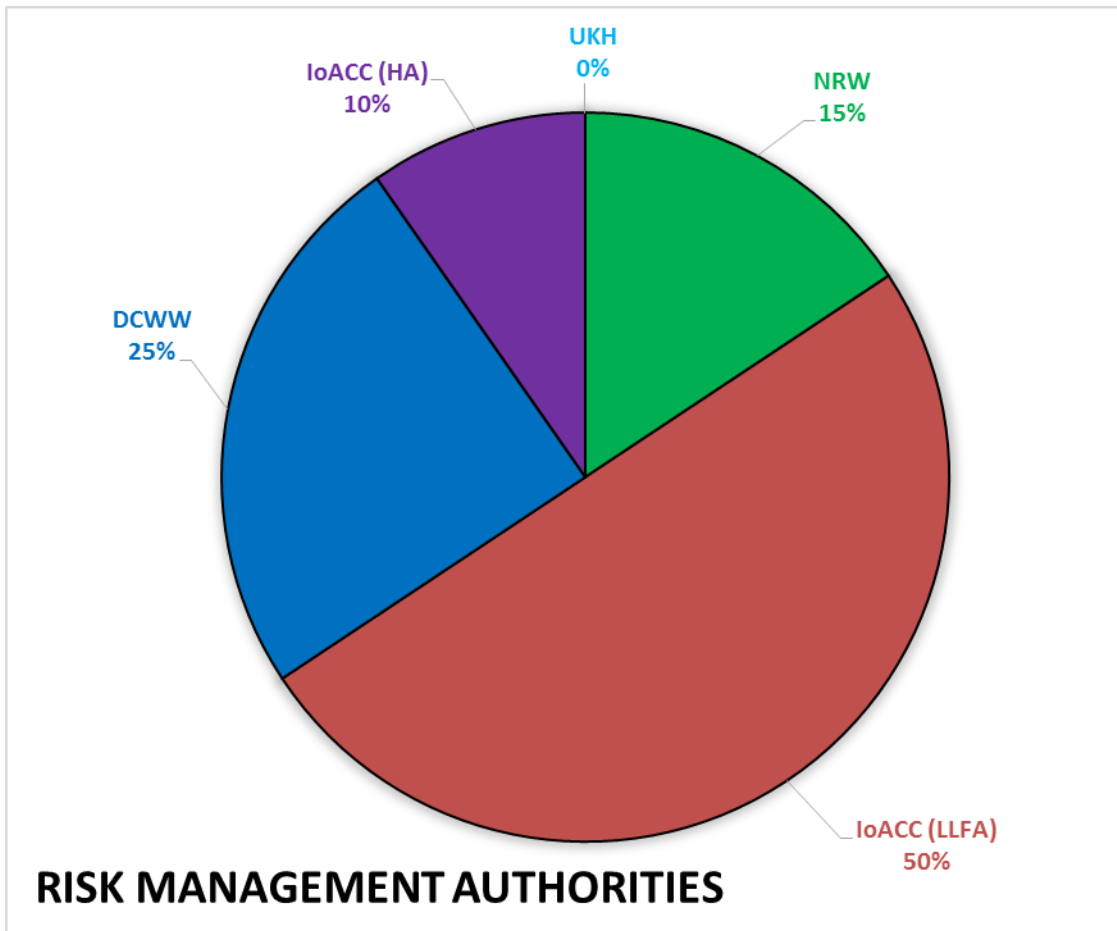
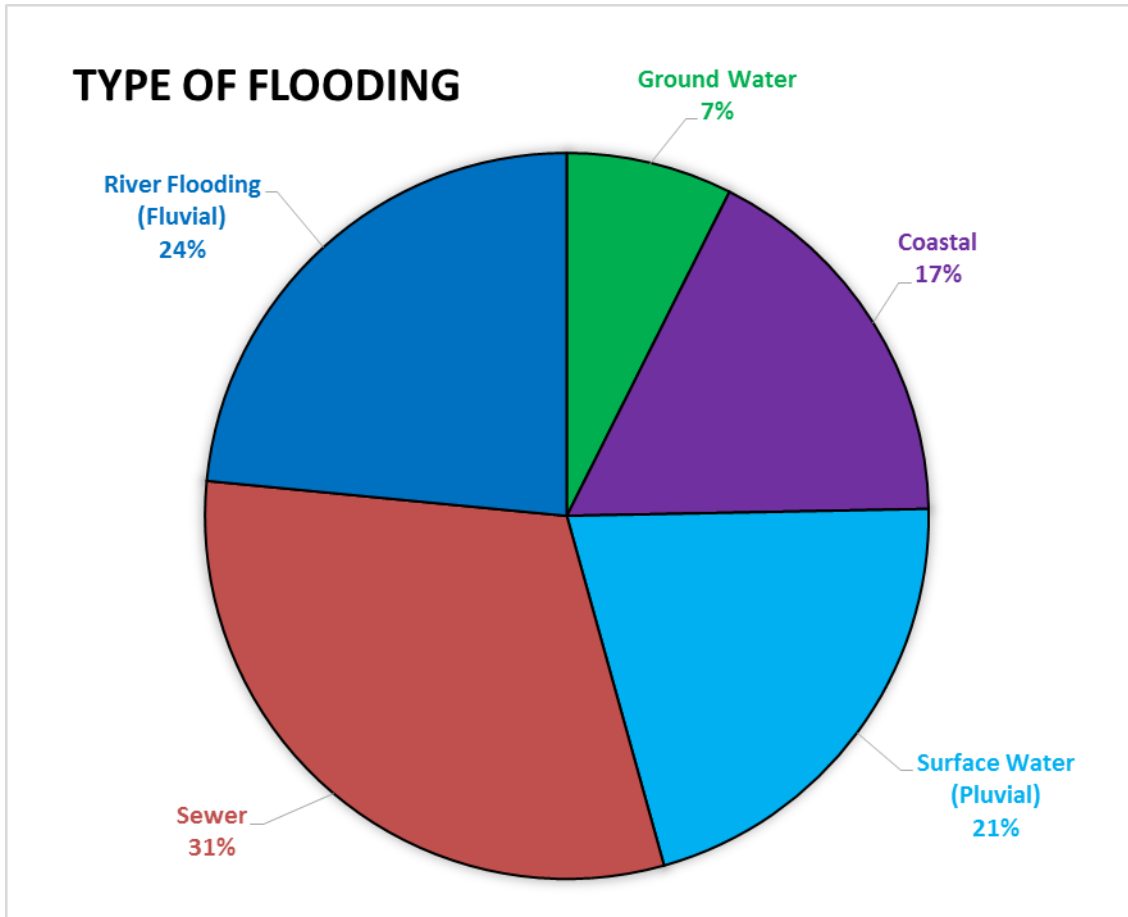


Figure 3.3: Flooding Investigation Reports carried out by the LLFA team within IoACC on Anglesey

**Figure 3.4: Location map showing all reported flooding incidents recorded by the Highway Authority (IoACC) on the 22<sup>nd</sup> and 23<sup>rd</sup> October, 2004.**

## 4. Conclusion

### 4.1 Internal Flooding Incidents

There have been a total of 81 no. properties internally flooded on the Island since our new duties as (LLFA) came into force under the (FWMA) to formally record and investigate all flooding incidents where deemed necessary at the beginning of June, 2012. There have been 58 no. residential properties and 23 no. commercial properties affected by the various types of flooding which is shown as a percentage in the pie chart in the previous section.

The majority of the individual internal flooding incidents experienced during this time which were spread across the whole Island occurred during the wet weather in November, 2012. Records later released by the Met Office confirmed that 2012 was the third wettest year experienced in Wales since records began in 1910 and that the week 20-26 November, 2012 was one of the wettest weeks for over 50 years. Therefore, it is also evident from Figure 3.1 that the types of flooding responsible for the internal flooding incidents during this time were mainly as a result of Fluvial, Surface Water (pluvial) and Groundwater flooding.

However, during 2013 and 2014 there were more substantial flooding incidents experienced which caused more than 1 property in an area to be affected, and the majority of these internal flooding incidents were as a result of Coastal or Sewer flooding.

Throughout December, January and February 2013/14, the UK has experienced an exceptional run of severe winter storms, culminating in the coastal damage and widespread flooding from January onwards. As was the case from mid-December to early January, the storms were caused by a powerful jet stream driving low pressure systems and associated storms across the Atlantic.

The storms which affected Anglesey's coastline in December 2013 and January 2014 caused widespread disruption and locally significant impacts, including flooding to property and infrastructure. What we already know is these storms were amongst the most serious to hit Wales in the last twenty years.

Sewer flooding can be caused by; blockages in the sewer pipe caused by root growth, a collapse or misuse, or vandalism; equipment failure, for example the pumps at a pumping station not operating due to electrical or other problems; and when the sewer is overloaded either because it is too small to deal with the amount of sewage in it (possibly because of increased development in the area) or during storm conditions when too much rainwater from roads and fields ends up in the sewer. The cause may be some distance away from where the flooding actually occurs.

Dwr Cymru / Welsh Water (DC/WW) is responsible for flooding from their foul and surface water sewers, and also from burst water mains. When sewage escapes from a pipe, through a manhole, drain or by backing up in the toilet this is known as sewage or sewer flooding, and all internal flooding incidents as a result of sewer flooding should be recorded on their 'DG5 Forms'.

The DG5 register is a register of properties and areas that have suffered or are likely to suffer flooding from public foul, combined or surface water sewers due to overloading of the sewerage system and their investment in the alleviation of sewer flooding is closely allied to the DG5 register.

The Flood and Water Management Act 2010 has placed a number of new statutory duties on the IoACC and managing local flood risk is one of the responsibilities which must be carried out in our new role as LLFA.

The flooding incidents recorded in October, 2004 during one of the worst flooding events recently experienced on the Island as shown on the map in Figure 3.4 is very similar to the locations where the Authority has carried out Flood Investigation Reports during the last two and a half years as shown in Figure 3.2.

Therefore, the comparison of maps and the known locations where flooding has been historically a problem has not changed and IoACC must continue to work with the other Risk Management Authorities in the area who have also legal responsibilities for the management of flood risk on the Island.

The ten objectives from the Local Flood Risk Management Strategy (LFRMS) are shown below:-

### **Objectives of the Strategy**

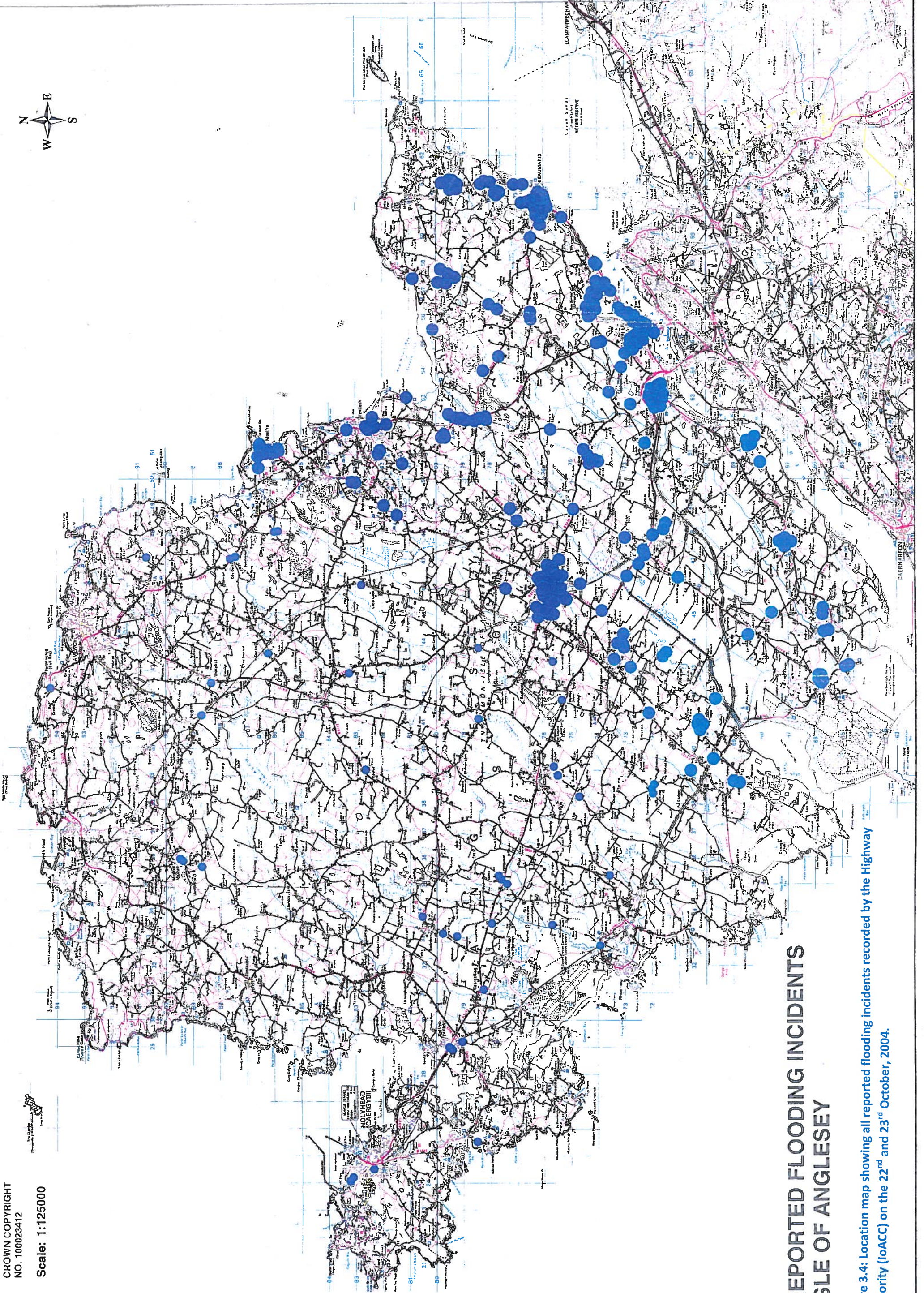
#### **Ten Objectives for Isle of Anglesey County Council**

- 1. To improve the understanding of local flood (surface water, groundwater and ordinary watercourses) and coastal risks;**
- 2. Increasing individual and community awareness and preparedness for flood and coastal erosion events and the impacts of climate change on flood risk;**
- 3. To work together (both FRMA, stakeholders and public) to reduce flood and coastal risks, sharing data and resources to the greatest benefit;**
- 4. To reduce the impact and consequences for individuals, communities, businesses and the environment from flooding and coastal erosion;**
- 5. To ensure that planning decisions are properly informed by flooding issues and the impact future planning may have on flood risk management and long term developments;**
- 6. Take a sustainable approach to flood risk management balancing economic, environmental and social benefits;**
- 7. Increase approaches that work sympathetically with natural processes;**
- 8. Ensure the development of skills required to implement effective and innovative flood risk management measures;**
- 9. Encourage maintenance of privately owned flood defences and ordinary watercourses, and minimise unnecessary constrictions in watercourses; and**
- 10. Work together with other Flood Risk Authorities to reduce the loading of combined sewers.**

IoACC has undertaken an assessment in the form of a compatibility matrix to make certain that these chosen objectives also fit in line with National Strategy objectives, Local Strategy guidance and EA key headings. The matrix also states which objectives are long and short term objectives and can be found in more detail within the Authority's actual Strategy Document.



Figure 3.2: Location of Flood Investigation Reports on Anglesey carried out by LLFA team within IoACC.



## REPORTED FLOODING INCIDENTS ISLE OF ANGLESEY

Figure 3.4: Location map showing all reported flooding incidents recorded by the Highway Authority (IoACC) on the 22<sup>nd</sup> and 23<sup>rd</sup> October, 2004.