Flood Risk Assessment

Historic Landfill Site Portlaw

June 2011

Waterford County Council
Comhairle Chontae Port Láirge

1. Introduction to Flood Risk Management

Ireland, with its high rainfall, low evaporation together with its flat, low lying interior and high maritime rim, is at a risk of serious flood events (www. jbaconsulting.ie). This has been evident over recent years with extreme flooding events occurring in various locations throughout the country. These flood events together with the introduction of the 2007 EU Floods Directive, and the recent publication, by the DEHLG and OPW, of the *2009 Guidelines for the Planning System and Flood Risk Management* have reinforced the importance of addressing flood risk in Ireland and ensuring that sustainable development occurs in line with recognised current and future flood risks.

The undertaking of Flood Risk Assessment is one tool in the management of flood risks associated with an existing site or future development. This report aims to assess the flood risks associated with an existing landfill site in Coolfin Portlaw and any potential future flood risk with its use as agricultural lands.

2. Site Description & Proposed Development

The site is a closed landfill located in the Townland of Coolfinn, just on the perimeter of Portlaw town (x: 247,450 & y: 114,930) and is 2 acres. The site is zoned for agricultural use/development as per the 2011 County Development Plan. The residential zoning extends to 135m from the southern boundary and amenity zoning extends to 230m also from the southern boundary. The site can be accessed from Shanahan Lane off the R680, Kilmeaden to Carrick-on-Suir road.

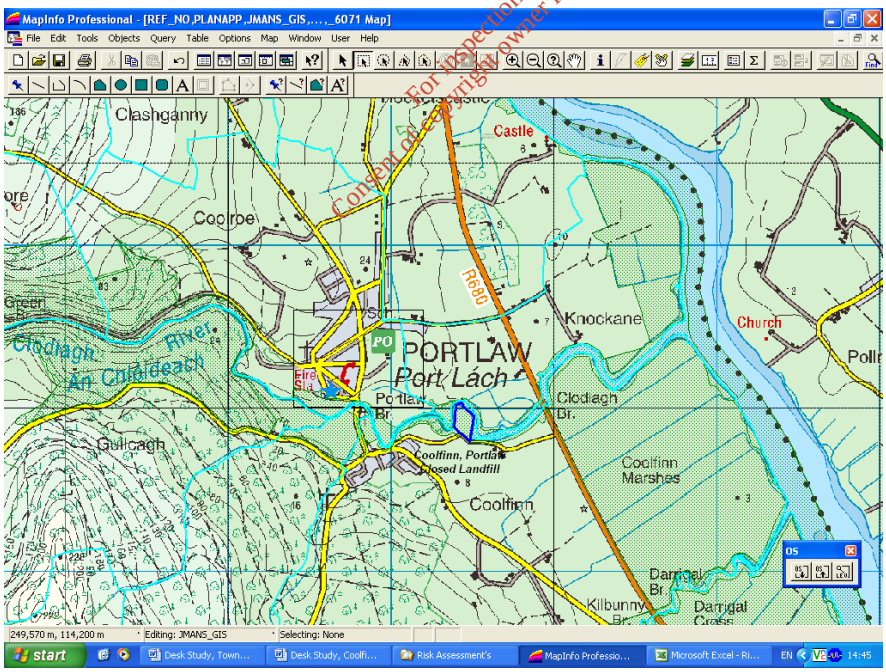


Fig 1: Site Location

The northern boundary of the site is the River Clodiagh, which is designated as a Special Area of Conservation. The site is also bound on the east and west by the River Clodaigh. A temporary farm and hardstand area for silage storage is located on lands immediately south east. To the southern boundary is Shanahan Lane (local access road) and within 20 meters proximity is a residential dwelling which has been present since 2004.

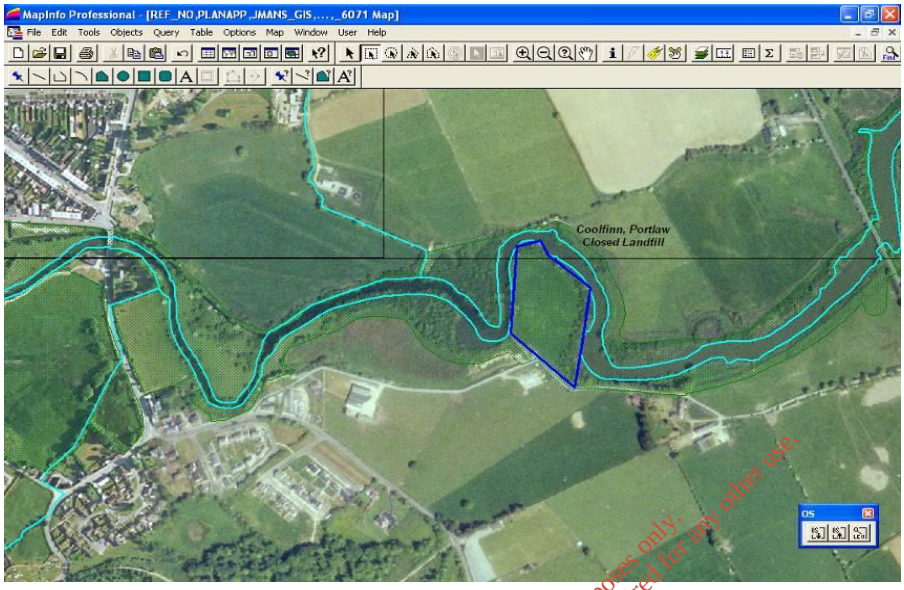


Fig 2. Location of River Clodiagh V Site

Upon closure (1994), the landfill was capped with approximately 300mm of soil & topsoil. It is now fully grassed over and used as grazing lands for horses.

3. Flood Risk Assessment

3.1 Introduction

The 2009 Guidelines for the Planning System & Flood Risk Management introduced comprehensive mechanisms for the incorporation of flood risk identification, assessment and management into the planning process. The Guidelines made provisions for flood risk actions at the national, regional, local authority and site-specific levels.

This report will aim to address the site specific flood risk associated with previous landfilling operations at Coolfin, Portlaw taking on board information from www.floodmaps.ie, historic flood records, hydrometric data and undertaking a sequential approach determination.

3.2 Flood Maps

The National Flood Hazard Mapping system, developed by the OPW, shows that the site forms part of lands referred to as 'Beneficial Lands'. These benefiting lands are designated by the OPW and are described as lands which may 'benefit from arterial drainage schemes and indicate areas which are typically low lying, adjacent to watercourses and subject to flooding or poor drainage'.

The Flood Maps are not, however, indicative of flood plain locations.

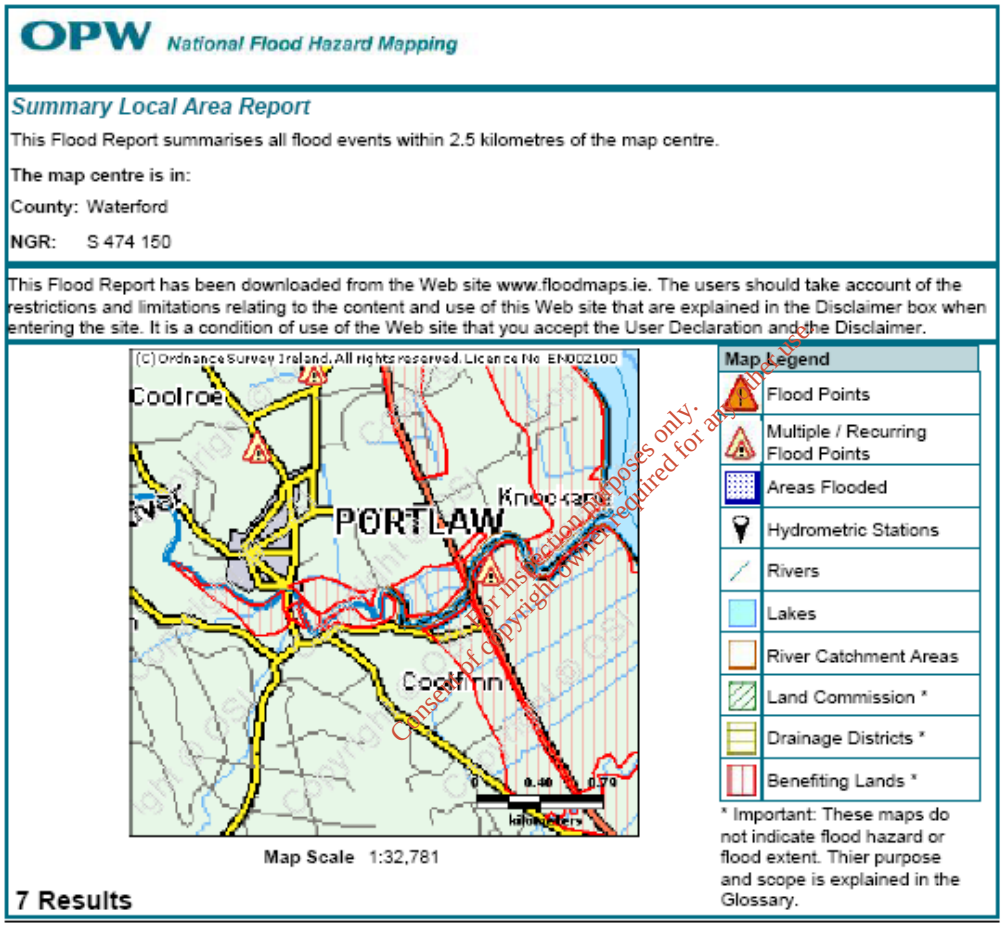


Fig 3: OPW Flood Map for Coolfin, Portaw.

3.3 Historic Flood Records

Historic records came from 3 sources:

- www.floodmaps.ie
- Report prepared by MCOS in 1995 from Portlaw Sewage Scheme
- Discussions with area staff

1978

I refer to a SS Preliminary Report prepared by MCOS in 1995 which refers to a heavy flood in Portlaw in 1978. Flood levels recorded by MCOS in 1978 were:

- 4.2 mOD upstream of Portlaw Bridge (upstream of site)
- 3.5mOD downstream of Portlaw Bridge (upstream of site)
  and
- 2.6mOD upstream of the Clodiagh Bridge (downstream of site)

I attach map showing indicative locations of these flood levels relative to the site. Existing levels on the site are approx 2.5-3mOD. However there are no records to suggest that flooding occurred on this site during the flood event of 1978.

1989

A memo from Waterford County Council on floodmaps.ie refers to a flood event in the county in December 1989. This memo refers to a breech in the River Clodiagh where the gas pipeline crosses. The public road was flooded.

No flood events were noted at the site however.

2004

I refer to a memo from Waterford County Council on flood maps.ie which outlines to a flood event on 29th October 2004. While Dungarvan was noted as being the worst affected area, some flooding was also witnessed in the Portlaw area.

No flooding reference was made to this site however.

Summary

The historic records associated with the flooding events on the River Clodiagh (www. floodmaps.ie) do not refer to this site as an area which was or is prone to flooding. All the historic flood events appear to refer to parts of the river which lie down stream of the site and at lower levels.

The only flooding known to have occurred in this area was referred to in a report prepared by MCOS on behalf of Waterford County Council in 1995. It referred to a flood event in 1978 where flood levels reached between 2.6 -4mOD along the River Clodiagh. The record however does not suggest that flood took place at the Coolfin site.

3.4 Sequential Approach

The sequential approach is a planning tool, outlined in the Guidelines as a key tool in ensuring that development is directed towards lands that are at a low risk of flooding. It is also used to ensure that the type of development proposed is directed to lands which are suitable for its proposals having regard to flood risks.

The sequential approach divides flood areas into 3 Zones:

Zone A- High Probability of Flooding- Most Development is considered inappropriate in this zone

Zone B- Moderate Probability of Flooding- High Vulnerable development such as hospitals considered inappropriate. Less vulnerable development such as agricultural uses considered acceptable.

Zone C- Low Probability of Flooding- Most development considered acceptable in this zone.

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

Table 3.2: Matrix of vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test.

Fig. 4 Sequential Approach & Matrix

Having regard to the above, the use of lands for agricultural developments is considered appropriate in both Zone B & Zone C. Assuming that the site lies in Zone B (moderate probability of flooding) the use of the site for agricultural purposes would be considered appropriate. No Justification Test is therefore required.

The land is currently used for agricultural purposes (grazing of horses). No additional developments are proposed for the site.

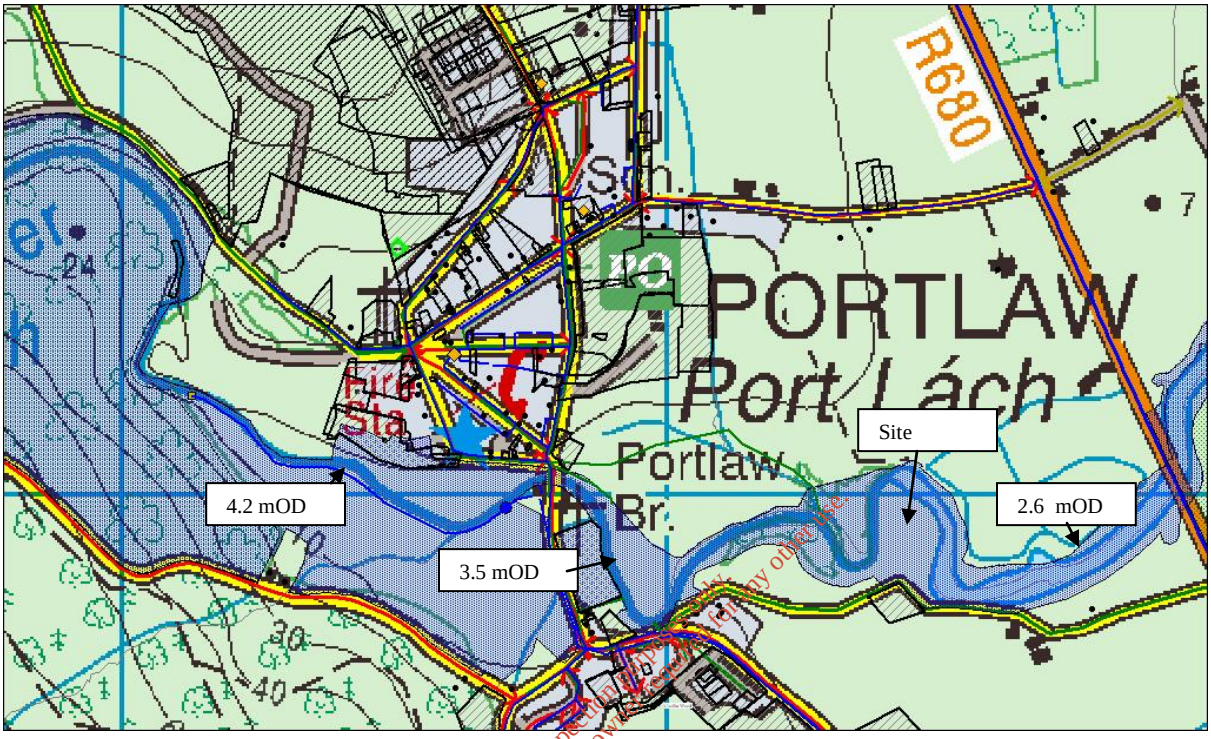
4. Conclusion

There is no current flood risk associated with this site and there is no evidence from previous research that the site was the subject of flooding in the past. As Waterford County Council does not propose to undertake any further development or capping on the site, it is considered that there is no flood concerns associated with the site.

In addition, it is noted that the existing site and proposed future agricultural use complies with the requirements of the sequential test, and the agricultural use is therefore considered appropriate for this site.

Appendix 1

Map showing Indicative Flood Levels at Portlaw 1978: Recorded by MCOS



Email Record from Kevin Power, RPS (previously MCOS)

From: Kevin Power [mailto:Kevin.Power@rpsgroup.com]
Sent: 16 November 2009 17:13
To: O'Flaherty, Aoife
Subject: Flood levels at Portlaw

Aoife,
On checking I found the following information in our office - reference Portlaw SS Preliminary Report July 1985 - there should be a copy in the Council's possession. Note levels to OD Malin Head.
Heavy flood in Clodiagh at end of April 1978 - Flood levels recorded by MCOS were
4.2mOD upstream of Portlaw Bridge.
3.5mOD downstream of Portlaw Bridge.
2.6mOD upstream of Clodiagh Bridge to East of Portlaw (1.1km east approx).
The worst flood in living memory was in 1947 - probably March - arising from heavy rain and large snowmelt due to a sudden thaw after a long cold snowy winter which gave rise to the worst in living memory floods all over the country.
Flood level upstream of Portlaw Bridge was recorded as 4.7m OD during that flood.
One can surmise that the flood level downstream of the bridge at that time would not have exceeded 4.0mOD.
Regards,
Kevin Power

Appendix 2 Local Area Report for Site in Coolfin

OPW *National Flood Hazard Mapping*

Summary Local Area Report

This Flood Report summarises all flood events within 2.5 kilometres of the map centre.

The map centre is in:

County: Waterford

NGR: S 474 153

Map Scale 1:31,175

Map Legend	
	Flood Points
	Multiple / Recurring Flood Points
	Areas Flooded
	Hydrometric Stations
	Rivers
	Lakes
	River Catchment Areas
	Land Commission *
	Drainage Districts *
	Benefiting Lands *

* Important: These maps do not indicate flood hazard or flood extent. Thier purpose and scope is explained in the Glossary.

7 Results

1. Clodiagh Portlaw Dec 1989	County:Waterford	Start Date: 16/Dec/1989 Flood Quality Code:3
Additional Information: Reports (2) More Mapped Information		
2. Portlaw Oct 2004	County:Waterford	Start Date: 27/Oct/2004 Flood Quality Code:3
Additional Information: Reports (1) More Mapped Information		
3. Clodiagh Bridge Portlaw Nov 1997	County:Waterford	Start Date: 01/Nov/1997 Flood Quality Code:2
Additional Information: Reports (2) Press Archive (1) More Mapped Information		
4. Portlaw Scrouty recurring	County:Waterford	Start Date: Flood Quality Code:4
Additional Information: Reports (1) More Mapped Information		
5. Portlaw north recurring	County:Waterford	Start Date: Flood Quality Code:4

Report Produced: 23-Nov-2010 14:51

Additional Information: Reports (1) Press Archive (9) More Mapped Information

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6. Portlaw Rocketscastle junction recurring

Start Date:

County:Waterford

Flood Quality Code:4

Additional Information: Reports (1) More Mapped Information

7. Pollrone Mooncoin Undated

Start Date:

County:Kilkenny

Flood Quality Code:3

Additional Information: Reports (1) More Mapped Information

Appendix 3: Waterford Co Co Report on Flooding Event 1989

JO'F/EW

Office of the County Engineer

WATERFORD COUNTY COUNCIL

ARUS BRUGHA
DUNGARVAN, CO. WATERFORD
TELEPHONE 058 41100

COUNTY MANAGER.

Our reference

Your reference

Date 21st Dec. 1989

Re: Storm Damage 16/17 December, 1989.

A combination of very heavy seas, high tides, gale-force south easterly wind and heavy rain resulted in extensive storm damage to coastal protection, marine structures, roads, car parks and amenity schemes over an area from Wicklow to West Cork. Severe inland flooding also occurred in a number of areas as a result of rivers bursting through embankments.

In County Waterford, extensive damage was caused along the entire coastal area, and in many areas the damage and consequential flooding was worse than anything in living memory. The extent and variety of damage, as well as the number of places affected, is so great that it is impossible yet to give a detailed and fully comprehensive list. The following is an indicative list of the type of damage caused:-

* very severe erosion and/or breaching of sand dune protective barriers
* demolition of sleeper protective barriers
* damage to, erosion of or breaching of sea walls and concrete aprons or slipways
* demolition of car parks and amenity areas
* ripping of road surfaces
* blocking of roads, car parks with sand, gravel, rocks
* extensive flooding of roads, car parks, caravan parks and private property

The worst affected areas were as follows:-

Whiting Bay
Ardmore
Cunnigar
Dungarvan
Clonea
Ballyvoile
Bunmahon
Annestown
Benvoy
Kilfarrassey
Garrarus
Tramore
Clohernagh
Creaden Head
Rathmoylan/Ballymacaw
Dunmore East
Woodstown
Passage East
Portlaw
Glencorran
Ballymacart

Two huge breaches, 120 m. and 80 m. in length were blown from the sand dunes at Bonmahon while the sleeper protective wall was completely demolished and the remainder of the dunes eroded and narrowed by 15 - 20 metres in width, thereby bringing into question their ability to withstand further storms. Severe flooding of the caravan park, car park, public road and private property also resulted necessitating attendance by the Fire Service and Area staff. Similar erosion or breaching of sand dunes and sea banks was caused at Woodstown, Tramore (Burrows), Clonea, Ardmore, Cunnigar, and Whiting Bay, and in all of these locations except perhaps the latter, consideration will have to be given to more permanent sea defence works such as concrete sea walls or rock armouring, if future catastrophic damage is to be avoided.

The sea wall was breached at Strand St. Lower, Tramore and extensive flooding resulted to the Tramore Failte property. A section of the concrete apron to the Ardmore sea wall was damaged and some movement and cracking took place in the wall itself.

Sleeper wall defences were demolished in many other locations, notably Whiting Bay, Curragh, Cunnigar.

A major breach occurred in an embankment to the Clodiagh at Portlaw, where the gas pipeline crosses same, causing flooding of the public road and private property. Bord Gais are dealing with this and estimate remedial works will take a week and cost £30,000, with the public road remaining closed in the interim.

Severe flooding occurred in Dungarvan, notably at Sea Park Estate, Youghal Road(N.25) Shopwell/Fire Station and the Pond/Strandside South. While the Cunnigar suffered much damage it was not breached, thereby saving Dungarvan from much worse flooding.

County roads K.43 (Benvoy), W.8 (Kilfarrassey) and W.70 (Garrarus) suffered significant damage, while many other road sections and car parks were ripped. The sea wall was breached at Clogherhagh - causing severe flooding of the public road and private property.

Areas where recent rock armouring protective works were carried out largely escaped serious damage. Rock armouring carried out in recent months at Passage East saved Beresford Row and possibly the entire village from calamitous consequences. Similarly Stradbally Cove escaped due to rock armouring placed in 1988, and Ballyvoile high sea wall escaped due to protective armouring placed some years ago. These facts, along with the serious erosion of sand dunes and embankments convince me that it is pointless replacing our defences to the previous standard at locations such as Ardmore, Cunnigar, Clonea / Ballyvoile, Bonmahon, Tramore, Woodstown and Whiting Bay. Rather, must we plan for more durable permanent sea defences such as concrete sea walls or rock armouring.

The immediate cost of remedial works is estimated at £325,000. However, the expending of such funds will not provide adequate future protection. Rock armouring at the critical locations listed above as well as remedial works at the many other locations would cost an estimated £4.75 m., while the provision of more costly sea walls at the critical locations would raise the cost to an estimated £11.5 m.

Our Estimates in 1989 and in 1990 allow £20,000 for Coast Protection, so obviously the cost of remedial works must be funded externally, from the State or the E.C.

Finally, I would inform you that mopping up and remedial works commenced immediately on Sunday morning (17 Dec.) and are continuing.