



Report on the Development of the New Accident and Emergency Department at Letterkenny General Hospital, by Reference to and to advise Members on:

- 1) Any pre-existing reports advising of a flood risk at the hospital.**
- 2) The planning permission(s) granted in respect of the new Accident and Emergency Department Building and in respect of subsequent works carried out in relation thereto.**
- 3) Whether those permissions took account of the existing flooding risk and in what way they did so.**
- 4) Whether those permission(s) were fully complied with.**
- 5) Whether the Council has taken any enforcement action against the HSE either during the construction of the new Accident and Emergency Department Building or after its completion.**
- 6) Whether the Council considers that any further works should be carried out to prevent future flooding of the hospital and confirm what those precise measures are.**

**Development Management Section, Housing Corporate and Planning Services,
Donegal County Council**

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1.0 Executive Summary

Context

- The new Accident and Emergency Department was granted in 2007 under Plan. Ref. 07/80149.
- In 2009 a Flood Event occurred at the construction site of the Accident and Emergency Department when the trash screen at the inlet point to the newly extended 1350mm culvert became blocked with debris following a heavy rainfall event and the Sprackburn Stream overtopped its banks, flooding the A&E Construction site.
- The 2013 Major Flood Event occurred when the trash screens at the entry point of the Sprackburn Stream into the 1350mm culvert under the Hospital site became blocked with debris following a heavy rainfall event and the stream overtopped its banks causing major flooding to the hospital site.
- The 2014 Flood Event occurred as a result of the surcharging of a manhole connected to a 450mm piped stream on the northern boundary of the hospital site following heavy rainfall and the consequent discharge of the surface waters down gradient to the A&E Dept car park.

1) Any pre-existing reports advising of a flood risk at the hospital

- The Letterkenny Localised Flood Study (Donegal County Council, October 2002):
 - Highlighted a 'localised' flood risk at the hospital car park and access road and issues with the capacity of the 900mm pipe further downstream at the Fairgreen.
 - However said report did not highlight any issues with the capacity of the 1350mm culvert under the hospital.
- Consultations with current staff members of DCC who also worked with the Council at the time of the abovementioned reports indicate that they were not aware of the specific flood risks identified in the abovementioned reports.

2) The planning permission(s) granted in respect of the new Accident and Emergency Department Building and in respect of subsequent works carried out in relation thereto, and,

3) Whether those permissions took account of the existing flooding risk and in what way they did so.

07/80149 Accident and Emergency Dept. - Granted and Constructed

- No potential flood risk from either the Sprackburn Stream or any other source external to the hospital site was either identified or assessed during the assessment of this application.
- A condition was imposed in relation to steps to prevent surface water discharging from the R229 Regional Road onto the site but otherwise no conditions were imposed in relation to external flood risks.
- However surface water calculations were submitted in relation to the flood risk arising from surface water runoff from the car park and access road of the A&E Dept., a storm water attenuation tank was proposed and a condition was imposed in relation to same.

08/80143 Amended Design and Car Park for Mortuary Chapel - Granted and Constructed

- This permission provided for the extension of the original 1350mm culvert 80metres further northward/uphill. No potential flood risk arising from same was either identified or assessed during the assessment of the application.

13/80067 Storm Overflow Pipe – Granted and Constructed

- The purpose of this 1350mm pipe is to take all of the flow of the Sprackburn Stream in the event that the original 1350mm culvert under the hospital is blocked.
- Calculations submitted with the application showed that the original 1350mm culvert had the capacity (7m³/s) to deal with the peak flow (6.58m³/s) of the Sprackburn stream in the event of a 1:1000 year flood.

- Donegal County Council staff identified Deficiencies in the design of the proposed and existing trash screens upstream of the overflow pipe/culvert during the assessment of the application and revised plans providing for additional/improved trash screens were submitted following a further information request.
- Donegal County Council staff also raised other Potential Flood Risks to the Accident and Emergency Department namely; surface water discharging from:
 - Lands to the North of the Accident and Emergency Department.
 - The R229 Regional (Mountain Top) Road directly down the access road to the Accident Emergency Department.
 - The R229 Regional (Mountain Top) Road stormwater infrastructure which discharges to the Hospital's own stormwater infrastructure.

4) Whether those permission(s) were fully complied with.

- The following conditions have not been complied with:
 - Steps have not been taken at the junction of the R229 Regional road/internal access road (e.g. construction of a slotted drainage channel) to prevent surface water discharging from said regional road onto the site as required by Condition No. 4 of 07/80149 and No. 3 of 08/80143.
 - The HSE indicate that a storm water attenuation tank has been installed under the roundabout leading to the A&E Dept. This has been accepted by the Planning Authority and no further action is being considered in relation to this item.

5) Whether the Council has taken any enforcement action against the HSE either during the construction of the new Accident and Emergency Department Building or after its completion.

- The Planning Authority has not instigated any enforcement action under Part VIII of the Planning & Development Act, 2000 (as amended) against the HSE in relation to developments on the hospital campus. Issues requiring regularisation have been the subject of extensive discussion between the Planning Authority and the management of the Hospital to have outstanding matters addressed without recourse to formal proceedings. Having regard to the extent of these discussions The Hospital Management is currently (at the time of writing) preparing proposals to have any outstanding matters resolved.

6) Whether the Council considers that any further works should be carried out to prevent future flooding of the hospital and confirm what those precise measures are.

- The pending publication of the Flood Risk Assessment Group Report shall identify all potential Flood Risks at the hospital site and specific measures to prevent such risks. As indicated in item 5 above specific formal proposals to regularise any outstanding matters are currently being prepared for consideration by the Planning Authority.

2.0 Introduction

This report has been prepared by the Development Management Section of Housing, Corporate and Planning Services Directorate of Donegal County Council on foot of a motion submitted by Cllr Dessie Shiels and adopted by Donegal County Council on the 24th of November 2014 which required that:

"That this Council as the Planning Authority for County Donegal prepare as a matter of urgency a full report on the development of the new Accident and Emergency Department Building at Letterkenny General Hospital by reference to and to advise Members on:

- 1) Any pre-existing reports advising of a flood risk at the hospital.**
- 2) The planning permission(s) granted in respect of the new Accident and Emergency Department Building and in respect of subsequent works carried out in relation thereto.**
- 3) Whether those permissions took account of the existing flooding risk and in what way they did so**
- 4) Whether those permission(s) were fully complied with.**
- 5) Whether the Council has taken any enforcement action against the HSE either during the construction of the new Accident and Emergency Department Building or after its completion.**
- 6) Whether the Council considers that any further works should be carried out to prevent future flooding of the hospital and confirm what those precise measures are.**

This report is a specific response to the questions raised in the above motion and thus addresses each of the said questions in turn (See Section 4). By way of information the report also provides a context to the Flood Event, Planning History and Planning Context related to the Accident and Emergency Department at Letterkenny General Hospital (See Section 2). The report does record the findings of other Engineering reports regarding both the cause of said Flood Events at the hospital and measures to prevent flooding at the hospital in the future. However the report is a planning and not an engineering focused response to the abovementioned questions.

It is important to state that a separate report from the Flood Study Investigation Group is due to be published and will, inter alia provide detailed information on potential flood risks to the hospital site and specific measures which will be taken, and have been taken, to mitigate said flood risks.

The information in this report is based on, inter alia; report compiled by the HSE(Health Service Executive), Donegal County Council and the OPW (Office of Public Works), information contained within the relevant planning applications for the Accident and Emergency Department and other related developments at the hospital, and consultations with HSE and DCC staff members.

3.0 Context


Description of the Site




The subject site consists of the grounds of Letterkenny General Hospital which lies on a sloping site with a southerly aspect at between approximately 50m to 70m OD. The hospital site consists of a number of building complexes including, inter alia; the main hospital building in the southern portion of the site, the original hospital complex at the centre of the site and the new 4 no. storey accident and emergency department building and associated car park at the northern end of site.




The Sprackburn stream, which originates on the elevated lands to the north of the hospital runs north to south through the site entering along the northern boundary, entering a 1350mm culvert approximately 45m metres from the northern boundary of the site which thereafter runs underneath the hospital site (including underneath a number of the buildings within the site) almost to the southern boundary of the site. Said 1350mm culvert discharges to a twin 1000mm culvert which runs underneath the Circular Road (to the south of the hospital site) and thereafter discharges to 2 no. 900mm culverts laid underneath the Fair Green.


It is noted that the new Accident and Emergency department is at a lower elevation (62.59m OD) relative to both the lands to the north and the point at which the Sprackburn stream enters the abovementioned 1350mm culvert (approximately 65.3m OD) (Source: Site layout plan submitted with Plan. Ref. 07/80149)


List of Recent Planning Applications within the Grounds of Letterkenny General Hospital.

Plan. Ref.	Description/Decision	Location/Picture
06/80062	Health Service Executive Permission Erection Of A Single Storey Modular Short Stay Ward Located Adjacent To The East Wing Of The Multi Storey Block At Letterkenny General Hospital Granted subject to 4 conditions	This development is located immediately to the east of the main hospital building. 
07/80132	Health Service Executive Permission Erection Of A Stand Alone Single Storey Acute Mental Health Unit Located To The West Of The Main Hospital Via The Existing Single Storey Link Corridor. The Propsoed Building Will Replace The Exisitng Mental Health Building	This development is located between the Old Hospital Building and the Long Lane.

Plan. Ref.	Description/Decision	Location/Picture
	Granted by Letterkenny Town Council appealed to but Granted by An Bord Pleanala subject to the Removal of Condition No. 6	
07/80149	<p>Health Service Executive (West)</p> <p>Permission</p> <p>1 No. 4 Storey New Building, 2 No. 1 Storey New Building, 1 No. 1 Storey Addition, With Associated Carparking, Landscaping And New Road Lay Out. The Site Shall Have 1no. New Vehicular Access And Egress. The Total Gross Floor Area Will Be 6062m2. The Building Use Will Be Emergency Department Incl. Medical Wards Work Shops And Waste Building, Mortuary Chapel And Extension To Boiler House –</p> <p>Granted subject to 17 Conditions</p>	<p>This is the planning permission for the New Accident and Emergency Department.</p> 
07/80116	<p>Health Service Executive (West)</p> <p>Permission</p> <p>Erection Of Two Storey Modular Office Block Extension To The South End Of The Existing Pathology Block</p> <p>Granted subject to 6 Conditions</p>	<p>This development lies immediately to the south west of the existing pathology block.</p> 
08/80201	<p>Health Service Executive</p> <p>Permission</p>	<p>This development is located to the East of the New Accident and Emergency Department.</p>

Plan. Ref.	Description/Decision	Location/Picture
	<p>Development Which Will Consist Of The Provision Of A New Two Storey Entrance Stair Connecting Into The Exiting Staircore To The Rear Of The Building, Renovations To The Existing Ground Floor Waiting Area And Staircore, And Provision Of New Access Steps And Walkway To The Side And Rear Of The Building, With All Associated Site Works –</p> <p>Granted subject to 5 conditions</p>	
08/80143	<p>Health Service Executive</p> <p>Permission</p> <p>Development Which Will Consist Of 1). 3no. New Boiler Flues Serving The Existing Boiler House, 2). Construction Of 1 No. 1-Storey New Mortuary Chapel Building With Total Gross Floor Area Being 64sqm 3). Connection Of Proposed Foul Sewers To Existing Drainage System Within The Site Which Discharges To The Public Sewer At Kilmacrennan Road</p> <p>Granted subject to 15 Conditions</p>	<p>This development is located to the North West of the New Accident and Emergency Department.</p> 
12/80035	<p>Health Service Executive(North West)</p> <p>Permission</p> <p>The Following Works: (A) Removal Of The Existing 6000 Litre Liquid Oxygen Storage Vessel (V.I.E), Associated Services, Reinforced Concrete Retaining Wall And Hard Standing Area. (B) Construction Of A New Retaining Wall, Access Steps, Service Yard, Access Doors Into The Existing Medical Gases Plant Room And Associated Landscaping, (C) Construct 2no. Medical Gas Manifold Rooms, (D) Removal And Relocation Of Existing 2no. Lpg Gas Storage Tanks, Concrete</p>	<p>The development is located immediately to the north west of the Accident and Emergency department.</p> 

Plan. Ref.	Description/Decision	Location/Picture
	<p>Base And Perimeter Palisade Fencing, (E) Erection Of 2no. 10,000 Litre Liquid Oxygen Tanks (2.5m Diameter X 4.68m High) With 4no. Evaporators And Services, Manifold Room, Perimeter Palisade Fencing. Loading Bay And All Associated Site Works</p> <p>Granted subject to 5 conditions</p>	
13/80067	<p>Letterkenny General Hospital</p> <p>Permission</p> <p>Construction Of A Storm Flow Routing Pipe And All Associated Works – Granted subject to 2 conditions.</p> <p>Granted subject to 1 Condition</p>	<p>The Storm Flow Routing Pipe is located along the western boundary of the site.</p> 
14/50710	<p>Letterkenny General Hospital</p> <p>Permission</p> <p>Demolition Of A Flood -Damaged Temporary Building, Measuring 87m2, And Its Replacement With A Permanent One-Storey Extension To The Existing Pathology Department, Measuring 119m2, Accommodating An Immunossay Laboratory , On -Call Bedrooms With An En-Suite Bathroom, And Support Spaces; Upgrading Of The External Envelope Of The Existing Building To Improve Its Thermal Performance; And The Erection Of A Screen To Building Services On The Roof Of The Existing Building With An External Stairs And A Guarded Route Giving Access To It</p> <p>Granted Unconditionally</p>	<p>This development is an extension to the old hospital building.</p>

Plan. Ref.	Description/Decision	Location/Picture
14/50776	<p>Donegal Clinical Academy Trust</p> <p>Permission</p> <p>The Removal Of 37 Existing Carparking Spaces And The Construction Of A 1052m2 Medical Education And Research Academy Comprising: 230 Seat Auditorium Research Library, Clinical Skills Research Labs, Research Exhibition Spaces, Research Offices, Research Tutorial Rooms And A Plant Room On The Roof. The Development Will Also Consist Of Site Development Works Associated With Car Parking, Vehicular & Pedestrian Circulation, Hard & Soft Landscaping And Connection To Existing Site Services Infrastructure</p> <p>Decision to Grant notified to the applicant.</p>	<p>This is development would be located to the west of main hospital building.</p> <p>Development not commenced.</p>
Section 5 14/32	<p>Whether the Construction of a 220m long by 1m Deep Drainage Swale Is Or Is Not Exempted Development.</p> <p>The Planning Authority Issued A Declaration on the 15th of December 2014 that the Development Is Development and Is Not Exempted Development.</p> <p>The Hospital Management have indicated that an application to retain this feature is being prepared for submission and consideration by the planning authority.</p>	<p>This drainage swale is located along the northern boundary of the hospital site.</p> 

Significant Flooding Events at Letterkenny General Hospital

Flood Event during the Construction of the Accident and Emergency Department in 2009

A flood event occurred in 2009 at the Hospital site during the construction of the Accident and Emergency Department. This event does not appear to have caused significant damage. Consultations with Michael Martin of Hospital Management indicates that the flood occurred when the trash screen at the inlet point to the newly extended 1350mm culvert became blocked with debris following a heavy rainfall event, the Sprackburn Stream overtopped its banks, flooding the site of the accident and emergency department causing limited damage. It is evident that there was only 1 trash screen at the inlet point into the Culvert at that time.

Major Flood Event of the 26th of July 2013

A major flood event took place at Letterkenny General Hospital on the 26th of July 2013. Said flood event is described within the Office of Public Work's document entitled **Flood Event Report: Flooding at Letterkenny General Hospital, 26th of July 2013**. This Report is accessible via the OPW's floodmaps.ie website. Said report states inter alia that:

- The flood event started on 5pm Friday 26th of July 2013 and ended on 6pm Friday 26th of July 2013
- The source of the flood waters was a river (and the cause was a channel structure blockage) .
- Tributary of River Swilly, which is culverted under the site of Letterkenny General Hospital overflowed after a short term heavy rainfall. 2 No. trash grilles were blocked with debris which has washed downstream causing channel to overflow through car park, hospital grounds and into hospital.
- The maximum flood depth was 0.91 metres and the typical flood value was 0.5 metres .
- The flooding affected 'numerous buildings of Letterkenny General, including new A&E ward, radiology, outpatients, pathology, and medical records.

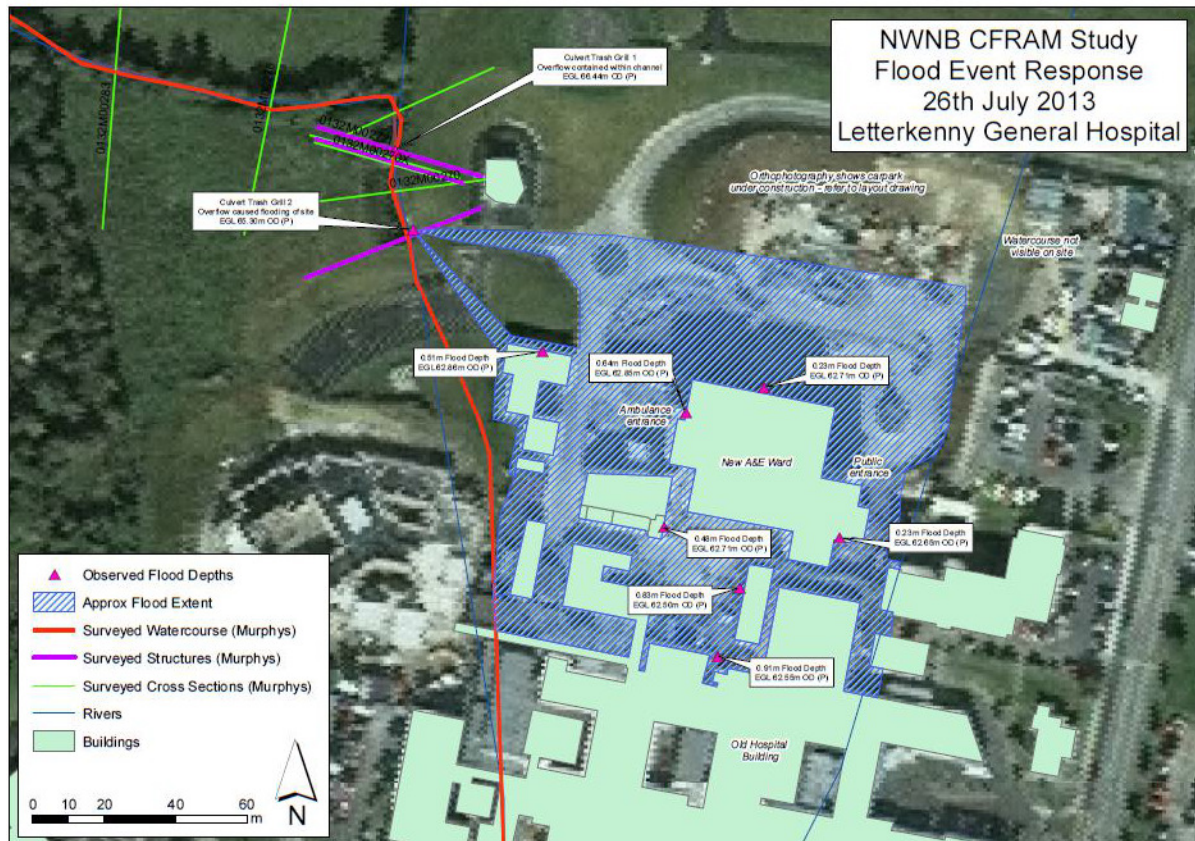
Said report is accompanied by pictures of inter alia the Culvert and associated Security and Trash Schemes in the aftermath of the flood. These pictures are shown below for information purposes.



*Photograph of Upstream End of Culvert taken in aftermath of Flood Event of the 26th of July 2013
(Source: Flooding at Letterkenny General Hospital, OPW Flood Event Report, OPW, P.3 refers)*



Photograph of Trash Grill Immediately Upstream of Upstream End Culvert taken in aftermath of Flood Event of the 26th of July 2013 (Source: Flooding at Letterkenny General Hospital, OPW Flood Event Report, OPW, P.4 refers)



Map of Extent of Flood of 26th of July 2013 (Source: Flooding at Letterkenny General Hospital, OPW Flood Event Report, OPW, P.9 refers).

In addition to the abovementioned OPW report additional Reports were prepared by Tobin Engineers on behalf of the HSE in relation to the engineering aspects related to the Flood Event of July 2013 flood namely:

- **Flooding at Letterkenny General Hospital Stage 2 Engineering Assessment (HSE, September 2013)** which stated inter alia that:

- The peak flow corresponding to the 1000 year flood event was found to be 5.48m³/s. Factoring in effects of climate change in the future, this rises to a peak flow of 6.58m³/s. (Executive Summary refers).
 - The result of a Hydraulic assessment indicate that, assuming water is not prevented from entering the culvert, from example, blockages at the protective screens, the existing 1350mm culvert has a capacity of the order of 7m³/s. Looking at the estimation of storm flows for various events it would suggest that the culvert has adequate capacity to cater for the 1000 year flood event (6.58m³/s) event (Executive Summary refers).
 - We would conclude that the primary reason for the flooding incident on the 26th of July 2013 was the fact that the screens became blocked and prevented water from entering the culvert. (Executive Summary refers).
- **Flooding at Letterkenny General Hospital Review of Screen Design (HSE, November 2013)** which stated inter alia that:
 - Given that the Spackburn catchment is characterised by a steep channel slope, with a woodland/urban land uses.....the probability of a significant debris load being generated by an intense rainfall event such as that which occurred on the 26th of July could be considered to be 'high'.
 - The downstream (security screen) did block on 26th of July 2013 as the upstream screen was overwhelmed by the amount of debris arriving at it, part of which transferred to the downstream screen'.



Photograph of Upstream Trash Screen after the 2013 Flood (Source: Flooding at Letterkenny General Hospital Review of Screen Design November 2013).

On the basis of the abovementioned reports it is considered that the cause of the major Flood Event on the 26th of July 2013 was the blockage of the security and trash screens upstream of the 1350mm culvert by debris and the consequent overflowing of the Sprackburn stream. There is no evidence within said report to suggest that said flood was caused by the diameter/capacity of the 1350mm culvert and indeed the report prepared by Toibin consultant indicates that said culvert has a capacity (assuming it is not blocked) of 7m³/s which is sufficient to cater for a 1:1000 flood of 6.58m³/s within the upstream catchment of the Sprackburn.

Flood Event of the 5th of August 2014.



Photograph of Flood Event of the 5th of August 2014 (Source: 'Letterkenny hospital flooded for second year running' the Irish Times, August 6th 2014)

On the 5th of August 2014 an additional flood event occurred at the hospital following heavy rain. Press Reports indicate that this flood event affected mainly the car park, and part of the reception area of the Accident and Emergency building at Letterkenny General Hospital.

Consultations with the Roads Directorate indicate that the Flood occurred as a result of the surcharging of a manhole connected to a 450mm piped stream on the northern boundary of the hospital site and the consequent discharge of the surface waters down gradient to the Accident and Emergency Dept. Said stream runs southwards through the eastern portion of the Errigal College site enters the north eastern corner of the hospital site, turns 90 degrees westwards at the abovementioned manhole and thereafter discharges to the Northern Tributary.

Summary

- **The new Accident and Emergency Department at Letterkenny General Hospital was granted under Plan. Ref. No. 07/80149. Amendments to the design of, and a new Car Park at, the associated Mortuary Chapel and an extension to the 1350mm culvert (to facilitate said car park) were permitted under Plan. Ref. 08/80143. After the major flood event in 2013 a storm overflow pipe (to take storm waters in the event the original 1350mm pipe was blocked) was permitted under 13/80067.**
- **In 2009 Flood Event occurred at the construction site of the Accident and Emergency Department when the trash screen at the inlet point to the newly extended 1350mm culvert became blocked with debris following a heavy rainfall event and the Sprackburn Stream overtopped its banks, flooding the site of the accident and emergency department causing limited damage.**
- **The 2013 Flood Event occurred when the trash screens at the entry point of the Sprackburn Stream into the 1350mm culvert under the Hospital site became blocked with debris following a heavy rainfall event and the stream overtopped its banks causing major flooding to the hospital site.**
- **The 2014 Flood Event occurred as a result of the surcharging of a manhole connected to a 450mm piped stream on the northern boundary of the hospital site following heavy rainfall and the consequent discharge of the surface waters down gradient to the Accident and Emergency Dept.**

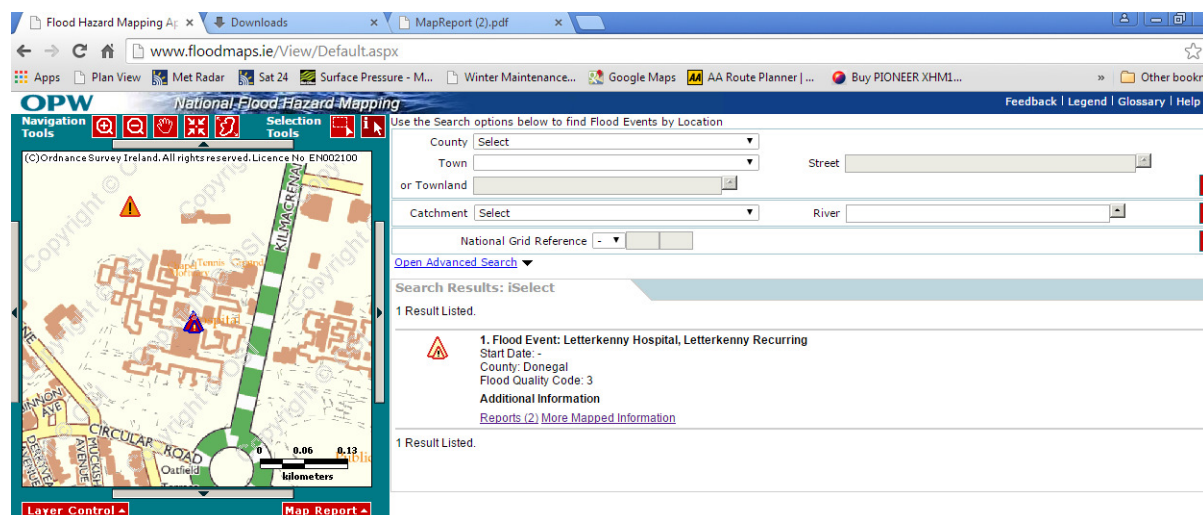
4.0 Response to Specific Questions Raised in the Council Motion.

4.1 Any Pre-Existing Reports Advising Of A Flood Risk At The Hospital.

The response to this specific question arise is based on; an assessment of reports and minutes of meetings referring to flooding at the hospital which were either published/held prior to the decision to Grant Permission to the Accident and Emergency Department under Plan. Ref. 07/80149 and consultations with current staff members of the Donegal County Council.

Letterkenny Localised Flood Study (Donegal County Council, October 2002)

This report is accessible on the floodmaps.ie by conducting a map search of the area, and using the Info tool to click on the flood map point over the hospital site and then clicking on the reports link. (see Screenshot below).



The brief and terms of reference for this study states that '*Donegal County Council and Letterkenny UDC have identified a number of Culvert locations around Letterkenny where localised flooding currently occurs. They have asked J B Barry and Partners Ltd to investigate the cause of flooding and to determine suitable mitigation measures*' (Section 1.1.1 refers).

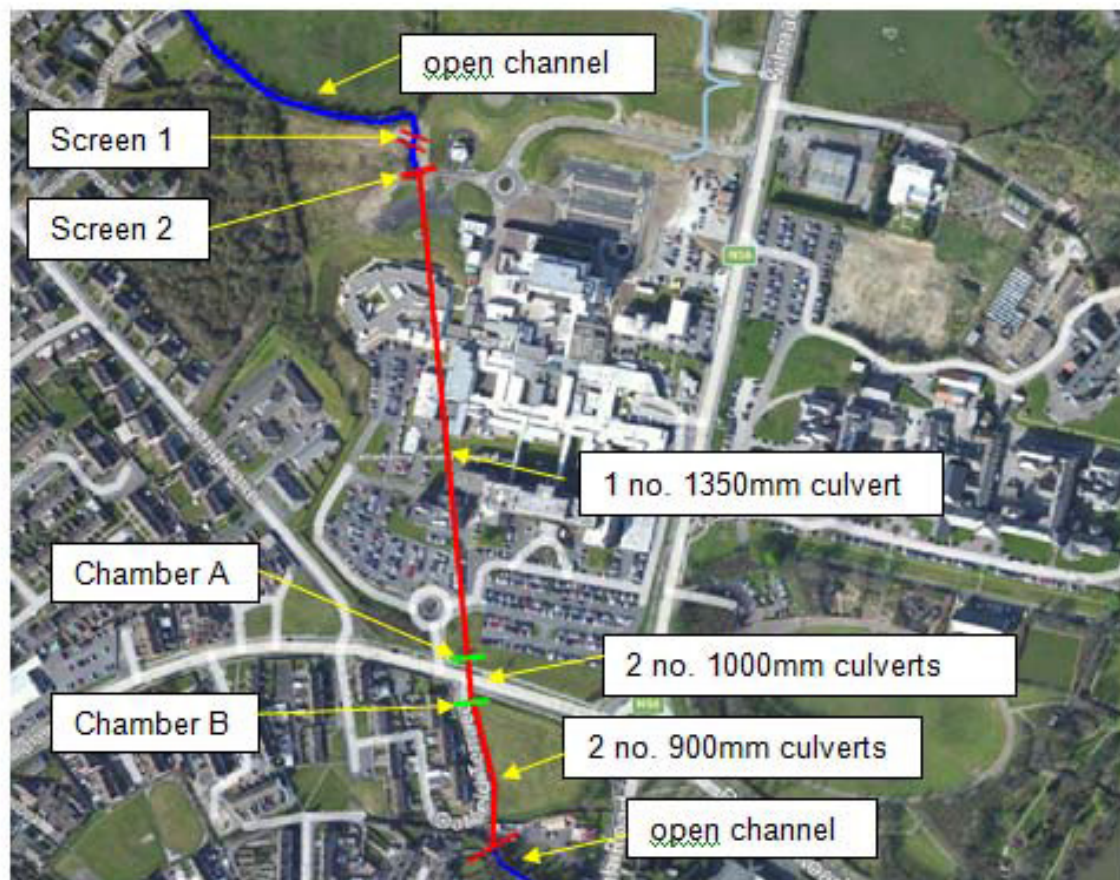
Section 3.5.1 of said report refers to Site No. 6 Sprackburn Tributary(of the Swilly) at the General Hospital and describes the problem as '*Donegal County Council has indicated that localised flooding of the car park and access road occurs during heavy rain and when some of the manholes surcharge*'.

Whilst the above statement does indicate that there was a 'localised' flood risk to a car park and access road at the hospital it does not identify the source or specific location of said flood risk. Internal consultations indicate that there was no awareness of any specific flooding risk at the hospital prior to the 2013 flood event.

Section 3.5.2 states that:

'The tributary of the Sprackburn commences north and West of Windyhall and flows through an open drain to a point just north of the General Hospital. The catchment area is approximately 1.25km².

At this location the surface water is culverted, via a 1.3m diameter pipe, under the hospital, under Circular Road and discharges from a 900m pipe into an open drain to the east of Beechwood'



It is specifically noted that the 900mm pipe referred to above concerns the original 900mm pipe within the Fair Green to the south of the hospital site and not to the 1350mm culvert which runs through the Hospital Site. Said 900mm pipe is connected to the 1350mm pipe under the hospital via a twin 1000mm pipe underneath the circular road. The abovementioned original 900mm pipe was augmented by another 900mm pipe, which also runs through the Fairgreen, prior to the major flood event in 2013.

Section 3.5.3 Flow and Capacity states that:

The upstream culvert is in good condition. However, the trash screen only stretches over the top half of the culvert so debris can enter the pipe at low flows. At the downstream exit point almost three quarters of the pipe is silted up – thus causing huge restrictions to the capacity of the system. The surface water from the hospital car park and access road, Circular Road, Beechwood and other housing estates all discharge through this culvert into the ditch. During rainfall events the blockages will cause backing up of the surface water system and hence the resulting flooding problems.

There are of the catchment feeding into the 1.3m diameter culvert under the hospital was assumed to be 66% (1.17km²) of the area contributing to Site 9..... The peak flow is therefore estimated to be 6.7m³/s rising to 8.4m³/s with the projected degree of urbanisation.

The 1.3m diameter pipe at the inlet has a capacity of 12.53m³/s whilst the 900mm diameter pipe at the outlet has a capacity of 4.8m³/s (assuming cleared of silt). The flow generated in the catchment

is greater than the capacity of the 900mm pipe. As discussed above, the 900mm diameter pipe is severely blocked at the downstream end, reducing its flow area and hence capacity.'

At face value the abovementioned report indicates that the inlet of the 1350mm culvert has sufficient capacity (12.53m³/s) but the 900mm pipe does not have sufficient capacity (4.8m³/s) to cater for the peak flow (6.7m³/s rising to 8.4m³/s) in the Sprackburn stream. However it is important to note that.

- The peak flow of 8.4m³/s refers to a projected degree of urbanisation which is not quantified and in any event there has been no significant increase in urbanisation within the Sprackburn catchment directly upstream of the hospital since 2002.
- The stated peak flow of 6.7m³/s is similar to the peak flow 6.58m³/s for a 1:1000 year flood stated in the calculations submitted by the planning application for the storm overflow pipe under Plan. Ref. 13/80067.
- The capacity of the downstream end of the 900mm pipe (4.8m³/s) is significantly less than any of the abovementioned peak flow figures. However said 900mm pipe is located significantly downslope and to the south of the hospital and consequently any surcharging of the pipe would have, at worst, resulted in flooding at the manhole at the entry point to said 900mm pipe (i.e. on the circular road). In any event the original 900mm pipe was supplemented by an additional 900mm pipe prior to 2013. Consequently it is not considered that the capacity of said pipe cited in the 2002 report could have been the cause of either the 2013 or 2014 flood events at the hospital.

In addition it is noted that the photograph of the inlet of the culvert in the abovementioned 2002 report is not the invert of the Culvert at which the 2013 flood occurred as the culvert had been extended significantly northward as part of the development permitted under 08/80143.

Section 3.5.4 of the abovementioned Report recommends that:

- The 900mm pipe should be cleaned out a matter of urgency.
- The cause of the siltation should be investigated further.
- A second 900mm diameter pipe should be installed to augment capacity in the system.

Consultations with current staff members who also worked with the Council at the time of the meeting indicate that they were not aware of a specific flooding risk arising from a stream at the hospital any time prior to the 2013 flood event.

Other Reports

It is noted that a study entitled the Letterkenny and Environs Development Plan Flood Study was published in January 2003. This study was associated with the Letterkenny and Environs Development Plan 2003-2009 and primarily investigated the flood risk arising from the River Swilly. The study did not cite any specific flood risk or flooding event at the Letterkenny General Hospital site.

Summary

- **The Letterkenny Localised Flood Study (Donegal County Council, October 2002)**
 - Highlighted a 'localised' flood risk in the Car Park and Access road however the report does not state the specific location or cause of said flood risk. However notwithstanding said comment current staff members who also worked with the council at that time were not aware of any flood risk.
 - Did not highlight any capacity issues at the inlet point of the Culvert (the stated capacity of the Culvert 12.75m³) being significantly greater than the stated peak flow of the Sprackburn.

- Highlighted capacity issues related to the 900mm pipe under the Fair Green which may have had the potential of cause flooding at that location. However it is not considered that said specific flood risk had the potential to cause either the 2013 or the 2014 floods which affected the Accident and Emergency Department which is much further north upstream.
- The issue of the capacity of the 900mm cited in the abovementioned report was in any event resolved prior to 2013 with the installation of a second 900mm across the green area in front of Oakfield Terrace prior to the 2013 flood event at the hospital.
- Current staff members who also worked with the council at that time were not aware of any flood risk.

4.2 The planning permission(s) granted in respect of the new Accident and Emergency Department Building and in respect of subsequent works carried out in relation thereto.

And

4.3 Whether those permissions took account of the existing flooding risk and in what way they did so.

The new Accident and Emergency Department at Letterkenny General Hospital was granted under Plan. Ref. No. 07/80149. Amendments to the design of, and a new Car Park at, the associated Mortuary Chapel and an extension to the 1350mm culvert (to facilitate said car park) were permitted under Plan. Ref. 08/80143. After the major flood event in 2013 a storm overflow pipe (to take storm waters in the event the original 1350mm pipe was blocked) was permitted under 13/80067.

Planning Application 07/80149 – Accident and Emergency Department.

The application was received by Letterkenny Town Council on the 13th of September 2007.

Development Description

Permission for 1 No. 4 Storey New Building, 2 No. 1 Storey New Building, 1 No. 1 Storey Addition, With Associated Carparking, Landscaping And New Road Lay Out. The Site Shall Have 1no. New Vehicular Access And Egress. The Total Gross Floor Area Will Be 6062m². The Building Use Will Be Emergency Department Incl. Medical Wards Work Shops And Waste Building, Mortuary Chapel And Extension To Boiler House.

Submitted Plans/Documentation

- Specifically The plans/documents submitted with the application stated/provided for/contained:
 - That the pre-existing ground levels at the location of the proposed accident and Emergency Department which was then occupied by an access road to the rear of the hospital and a tennis court ranged approximately between 63 and 67 metres Ordnance Datum.
 - The water level in the Sprackburn river at the original inlet point of the culvert as 63.03metres OD. It is noted that the 1350mm Culvert was subsequently extended uphill/upstream.
 - The removal/demolition of the existing rear access road, tennis court, tanks to the rear of the boiler room, hospital crèche, and existing access road to the helicopter pad.
 - A Four Storey Accident and Emergency building topped by a plant room with an overall height of approximately 20 metres with a link corridor to the existing hospital building with a Finished Floor level of 62.86metres. It is specifically noted that the proposed Finished Floor Level of the was at the same level of the level as the original hospital building to the south.
 - A new access road from the high road a roundabout and a 91 space car park to the north of the accident and emergency building.
 - An extension to the existing boiler house.
 - A dedicated workshop building and associated wasteyard to the west of the proposed Accident and Emergency Department.

- A single storey mortuary chapel to the northwest of the proposed accident and emergency department. The original site layout plan submitted with the application dated the 13th of September 2007 illustrated a hatched area immediately to the south of the mortuary chapel notated as 'Proposed car park for visitors of mortuary chapel'. It is noted that said car park lay partially within and partially outside the subject site. Moreover as the position of the car park lay directly over the route of the Sprackburn Stream it is considered that the construction of this car park would have implicitly required at least the partial culverting of the Sprackburn stream at this location.
- Contained surface water drainage calculations which calculated that 141.7m² of storm water storage will be required in the event of a 1:100 flood based on an impervious internal site area of 5616m². It is specifically noted that said surface water calculations only take into account the surface water runoff from said internal site area, make no reference to the culverted stream to the north west of the subject site and does not otherwise appear to take into account surface water originating from outside the site.
- A surface water drainage system for the car park with manhole with Invert Levels of between 63.09m OD and 61.76m OD.
- Surface water gullies and associated pipework along the access road.
- The connection of the abovementioned surface drainage system to a stormwater attenuation tank underneath the proposed new roundabout with a volume of 142m³ (invert levels 61.44m OD and 63.01m OD respectively).
- The connection of said attenuation tank via a 600mm pipe and through a series of manholes to an existing storm water manhole to the west of the original hospital building.

However it is specifically noted that the submitted plans do not provide for a slotted drainage channel or any other interceptor drain the junction of the access road and the R229 Regional (Mountain Top) road.

Referrals and Reports

The application was referred to:

- The Roads and Transportation Section of Letterkenny Town Council
- The Water and Environment Section of Letterkenny Town Council.
- The Chief Fire Officer Letterkenny Town Council
- The Road Design Section of Donegal County Council
- The National Road Design Office of Donegal County Council
- The Department of the Environment Heritage and Local Government.
- The National Roads Authority.
- The Northern Regional Fisheries Board.

The following reports were received on foot of referrals made.

- National Roads Authority received on the 26th of September 2007: This report stated inter alia it would rely on Letterkenny Town Council to abide by the National Policy in relation to frontage development on National Roads.
- Chief Fire Officer received on the 11th of October 2007: this report recommended Fire Safety Certificate be applied for and adequate fire fighting supply to be provided.
- Department of the Environment Heritage and Local Government received on the 24th of October 2007: This report recommended the imposition of Archaeological Monitoring Conditions on any grant of permission.
- Town Engineer received on the 26th of October 2007. This report stated inter alia 'Details of Attenuation to be agreed with Town Engineer prior to installation'. Subsequent consultations with the Town Engineer indicate that the 'detail of attenuation' referred to therein referred to

the storm water attenuation tanks proposed to be installed to cater for surface water runoff from the car park and the access road.

- Water and Environment Report DCC received on the 26th of October 2007. This report inter alia made recommendations in relation to Water supply connections and stated that the submitted plans indicated that the existing drainage system and the foul drainage system were partially combined on the site and a new storm drainage system should be installed which eliminated any section of combined sewerage within the site.
- Road Design Report DCC received on the 26th of October 2007. This report stated requirements in relation to car parking and raised concerns in relation to haphazard parking by users of the mortuary chapel.
- Road Design Report DCC received on the 11th of January (following the details received on the 10th of December 2007) stated that the mitigation of issues highlighted in letter dated 7th December 2007 were satisfactory.

Extension of Time and Additional Received on the 10th of December 2007

An Extension of Time was requested by the planning Agent (Todd Architects) on the 31st of October 2007). The planner's note indicates that said request was necessary to address issues related to access, parking and general traffic safety considerations. The appropriate period was extended by the Town Council on the 2nd of November 2007 until the 28th of February 2008.

A letter received from the planning agent on the 7th of December 2007 made points in relation to parking along the access road, use of the access road by pedestrians, lack of pedestrian access to the mortuary chapel, lack of car parking spaces for visitors of mortuary chapel and specifically stated that that: 'A temporary car park has been built a short distance from the new mortuary chapel'.

If the car park of the Mortuary Chapel had been constructed at this time any associated culverting of the Sprackburn Stream, would obviously have been unauthorised and any subsequent condition imposed in relation to the Car Park (such as Condition No. 2 of 07/80149) would have in effect been 'Ultra Vires' (i.e. unenforceable).

However as plans providing a detailed layout for the car park and explicitly providing for the extension of the Culvert of the Sprackburn Stream further northwards (underneath said car park) were included in both the Minor Amendment for 07/80149 and the submitted plans for 08/80143 it is considered most likely that contrary to the above statement the car park was not constructed and the culvert not extended prior to the Grant of Permission for 07/80149 (the accident and Emergency Dept.)

Planner's Recommendation of the 19th of February 2008

This recommendation inter alia:

- Noted nature of the development, the policy Context including specifically Policy CF1 and considered that the development was acceptable in principle.
- Noted that the Town Engineer's report had stated that 'Details of attenuation to be agreed with TE prior to installation'.
- Recommended Permission be Granted subject to 17 Conditions.

Said recommendation was signed off on/agreed by the area manager on the 20th of February 2014 without any alterations to the recommended conditions.

A Notification of Decision to Grant

A notification of decision to grant was issued on the 21st of February 2008 in accordance with the abovementioned Planners recommendation.

Notification of Final Grant

A notification of Final Grant was issued on the 14th of April 2008 this Final Grant contained the following conditions specifically in relation to surface water drainage:

Condition No. 4

No surface water from site to be permitted to discharge to public road and applicant shall take steps to ensure that no public road water discharges onto site.

Reason: To prevent flooding.

Condition No. 5

Prior to commencement of development precise details of proposed attenuation measures and the installation of the same shall be agreed in writing with the Town Engineer (Telephone: 074-9194222).

Reason: To prevent flooding.

Condition No. 4 relates specifically to surface water discharges from the site to the public road and from the public road to the site. It specifically requires that the applicant 'take steps' to 'ensure that no public road water discharges onto site'. Whilst the steps to be taken are not detailed it is considered that if said condition was fully complied with (e.g. by the construction of a slotted drainage channel) any flooding risk arising from flood waters coming directly from for example the R229 Regional (Mountain Top) Road would be eliminated.

Condition No. 5 refers to 'precise details of proposed attenuation measures'. As the only attenuation measures proposed as part of the application refer to the installation of storm water attenuation tanks associated with surface water runoff from the proposed car park and access road it is considered that Condition No. 5 refers to said specific flood risk and not to any other flood risk (including from the Sprackburn stream).

It is also noted that Condition No. 2 stated that:

Prior to first use of the development hereby permitted, temporary car park shall be constructed and high kerbs, double yellow lines and signage shall be provided, along the access road in accordance with details submitted on 10/12/2007. Precise details of the said works shall be agreed with the Executive Engineer for the area (Telephone: 074-9194200) prior to commencement of development.

Reason: To cater for orderly development and in the interests of traffic safety.

As stated above it is considered that this condition relates to the proposed car park for the Mortuary Chapel which was shown on the submitted layout plan to be located above the Sprackburn stream. (and not to any car park for the chapel which had previously been constructed). Whilst this condition would not have permitted the construction of a car park outside of the subject site (as provided for in the plans received with the minor amendment below) it certainly implies that the car park for the mortuary chapel was a permitted element of the development and this would in turn have implicitly required at least the partial culverting of the Sprackburn stream.

Minor Amendment received on the 29th of July 2008

On the 29th of July 2008 a Minor Amendment was received from Todd Architects in relation to the above application. The application for Minor Amendment specifically provided for inter alia:

- The extension of the existing culvert of the Sprackburn stream further upstream to a position approximately 75metres uphill.
- The construction of a 42 space 'temporary car park' for the Mortuary Chapel partially atop and partially outside the development site.
- Revisions to the plant room atop the Accident and Emergency building.
- Revisions to the work shop building.

A letter was issued on the 9th of October 2014 to Todd Architects which stated that:

You are advised that the planning authority has examined the revised details and drawings submitted providing for modifications to the plant room and workshop and have no objection to the same being considered as a minor amendment to the approved planning permission

With Regard to the new temporary car park you are advised that the same must be provided in accordance with condition No. 2 of the approved planning permission. However, you are advised that the said car park must be constructed with the site the subject of the application and cannot be carried out external to the site. Revised proposals for the car park should be forwarded to the Planning Authority for written approval prior to the commencement of development.

The response does show that a car park for the mortuary chapel was acceptable under the scope of the relevant permission and that minor amendment implicitly reiterates the planning authority previous consent for the Car park over the Sprackburn stream and therefore the partial culverting of the stream to facilitate said car park. In any event the partial culverting of, or the proposed extension of the culvert as proposed in the minor amendment, was considered in the assessment of said minor amendment.

Summary in Relation to 07/80149 (Permission for the Accident and Emergency Dept.)

- **No potential flood risk from the Sprackburn stream was identified through the assessment of Planning Application 07/80149 (i.e. the application for the accident and emergency department).**
- **No potential flood risks external to the site (e.g. from the lands to the north of the site or from the public road) was identified through the assessment of Planning Application 07/80149 (i.e. the application for the accident and emergency department).**
- **A standard condition was imposed in relation to steps to prevent surface discharging form the public road to the site which it is considered if implemented would have significantly reduced any flood risk to the Accident and Emergency arising from the flood waters discharging directly to the site from the public road.**
- **However as said permission implicitly provides for the construction of a car park for the mortuary chapel over the Sprackburn stream said permission also implicitly provide for a least the partial culverting of said stream to the north to the north of the original inlet point of the culvert.**

Planning Application 08/80143

This application was received on the 28th of August 2008.

Development description:

Development Which Will Consist Of 1). 3no. New Boiler Flues Serving The Existing Boiler House, 2). Construction Of 1 No. 1-Storey New Mortuary Chapel Building With Total Gross Floor Area Being

64sqm 3). Connection Of Proposed Foul Sewers To Existing Drainage System Within The Site Which Discharges To The Public Sewer At Kilmacrennan Road.

Submitted Plans/Documents provided for inter alia:

- A 'temporary car park' for visitors of mortuary chapel extending directly over part of the Sprackburn stream.
- The culverting of the Sprackburn stream between culverting of the original inlet point of the Stream into the 1350mm culvert to a point approximately 80metres further north. The site layout plan specifically states 'New Culvert see Engineers details'. However the application does not appear to have been accompanied by any Engineers details for said culvert.

Referrals/Reports

The application was referred to the County Fire Officer and the Town Engineer. Whilst a report was received from the County Fire Officer no other reports were received.

Planner's Recommendation of the 3rd of October 2008

- Does not mention the extension of the culvert or the proposed car park.
- Recommended Grant subject to 15 conditions.
- The recommendation was subsequently endorsed without significant modification.

Decision to Grant issued on the 7th of October and Notification of Final Grant issued on the 17th of November 2008.

The development was granted subject to 15 Conditions. The Grant of Permission contained the following Conditions related to surface water and or the culverting of the Sprackburn Stream.

Condition No. 1

Prior to First use of the development hereby permitted, temporary car park shall be constructed and high kerbs, double yellow lines and signage shall be provided, along the access road in accordance with details submitted on the 10/12/2007 under planning ref. no. 07/80149. Precise details of said works shall be agreed with the Executive Engineer for the area (Telephone: 074 9194200)

Reason: To cater for orderly development and in the interests of traffic safety.

Condition No. 3

No surface water from the site to be permitted to discharge to public road and applicant shall take steps to ensure that no public road water discharges to the site.

Reason: To Prevent Flooding.

Condition No. 4

Prior to commencement of development precise details of proposed attenuation measures shall be agreed in writing with the Town Engineer (Telephone: 074 9194200).

Reason: To Prevent Flooding.

No conditions were attached in relation to the culverting of the Sprackburn Stream shown in the site layout plan submitted with the application. Accordingly it is considered that the Grant of Permission for Plan. Ref. 08/80143 implicitly provides for the extension of the 1350mm culvert from its original location to the current inlet point beside the mortuary chapel as illustrated on the site layout plan. In any event the abovementioned Condition No. 1 implicitly provides for the construction of the car park over and therefore at least the partial culverting of said stream. It is considered that the

abovementioned Condition No. 3 does require the taking of steps (e.g. the installation of a slotted drainage channel) to prevent surface water discharging from the R229 Regional (Mountain Top) Road into the site which would in turn reduce the flood risk to the Accident and Emergency Department from said source. It is unclear what attenuation measures Condition No. 4 refers to as no attenuation measures were proposed/submitted with the application. It is possible that said Condition refers to attenuation tank proposed as part of planning application 07/80149 and was added as a standard condition to reflect the details indicated in submitted plans and proposals.

Summary in relation to 08/80143 (Boiler Flues, Mortuary Chapel and Car Park for Mortuary Chapel).

- **This Grant of Permission provided for the culverting of the Sprackburn stream from the original inlet point of the Stream into the 1350mm culvert to a point approximately 80metres further north. However no details/specifications for said culvert were submitted with the application and no conditions were imposed in relation to same.**
- **Condition No. 3 of the Grant of Permission would have required the taking of steps to prevent surface water discharging from the R229 Regional (Mountain Top) road onto the site and would therefore have reduced the potential flood risk to the Accident and Emergency Dept. from said source.**

Planning Application 13/80067 Storm Overflow Pipe

This application was received by Letterkenny Town Council on the 13th of September 2013 (i.e. after the Major Flood Event of July 2013).

Development Description:

Permission For Construction Of A Storm Flow Routing Pipe And All Associated Works

Submitted Plans/Documentation:

The plans/documentation submitted with the application stated/contained/provided for:

- A 1500mm storm water overflow pipe starting just to the side of the inlet point of the 1350mm culvert of the Sprackburn stream (at a level of 63.69m OD), routing around the western perimeter of the hospital site and reconnecting with the abovementioned 1350mm culvert at the southern end of the hospital site (at a level of 50.12m OD), with a fall of 1:21,1:33, and 1:273 in the upper, middle and lower sections respectively.
- A Design summary for the Proposed Storm Routing pipe which stated that:
 - The design flood for the catchment upstream of the culvert was estimated using the Flood Studies Report (FSR) Method for ungauged catchments.
 - The peak flow corresponding to the 1,000 year flood event was found to be 5.48m³/s. Factoring in the effects of climate change in the future, this rises to a peak flow of 6.58m³/s.
 - The CIRIA Culvert Design Manual 168:1997 estimates the maximum capacity of the proposed culvert to be 11.84m³/s. (Note: However the size of the proposed storm overflow pipe was later revised to 1350mm and the further information response received in December 2013 stated that the existing 1350mm culvert had a capacity of 7m³/s).

Referrals:

The Application was referred to the Executive Engineer Roads, the National Roads Design Office, the National Roads Authority, the Office of Public Works, and the Town Engineer Letterkenny Town Council.

Report from Roads and Transportation Section Donegal County Council – received on the 25th of September Recommended a Further Information request noting that:

- Very poor details were given in the application,
- There was no analysis of downstream pipe to show its able to take the additional flow at peak times.
- The proposal only shows 5 manholes on the site layout plan but there are 7 elbow locations at which potential blockages could occur and revisions were therefore needed
- There are no details are given at storm water manhole SW1 where this 1500 pipe meets the existing stream.
- Expresses concern that loose debris could have ended up down in front of either of the two grids and recommended that a concrete apron is put down on the culvert channel between the two grids to prevent erosion of the stream base and for a distance upstream of the top grid. This concrete apron should be deepened to act a sump as well.
- Concrete wing walls and grids should also be provided.
- No manholes details are given and as chambers are very deep they will need platform and caged ladders.
- The sides of the 2 streams above the upper concrete grid is very loose and any flow will end up eroding into the banking, resulting in further stone/clay debris washing down into the grids. The sides should be protected by boulders/concrete band bags.

Report from Roads Section Donegal County Council – dated September 2013.

- Highlighted the following deficiencies in the application:
 - Question 18 of the application form does not refers to the previous flooding which took place in 2009 which was apparently unrelated to the existing culvert and which is not mitigated against in his proposal.
 - The submitted design refers to the CIRIRA Culvert Design Manual 1997 rather than the Culvert Design and Operation Guide 2010.
 - It is not clear from the submission whether the flow will be in both pipes at once.
 - Proposed location of SW1 shown in differing locations on the plans.
 - There are no details submitted for Storm Water Chambers and full constructions details should be provided including how the proposed overflow pipe is incorporated into the existing Storm Water Chamber SW5.
 - The overflow pipe should avoid area of future expansion for the hospital.
 - No reference is made to the proposed work methodologies and reinstatement specifications.
 - Questioned whether the step method of construction would be feasible.
- Highlighted the following design issues:
 - There is no designed headwall and channelling apron to the inlet of the proposed overflow pipe. Current detail shows the inlet sticking out of the earthen stream embankment which is subject to erosion. Design should show reinforced concrete wingwalls and apron floor channelling the water to both inlets with the possible inclusion of a 'sump' silt trap for preventing debris from entering the system.
 - There is no grating(trash/security screen) designed for the proposed overflow pipe inlet.
 - There is no inspection/maintenance access or working platform provided to the overflow pipe of existing pipe inlet.

- It would be prudent to incorporate some form of 'primary' overtoppable trash screen upstream of the pipe inlets to ensure that overflowing of the blocked primary would spill back into the Sprackburn.
- There is no security fencing to prevent unauthorised access.
- Following the recent cleaning out of the Sprackburn the embankments are left exposed to potential erosion and consideration should be given to erosion protection for a distance upstream.
- The proposed overflow pipe incorporates 9 changes in direction with consequent performance and maintenance issues.
- The proposed overflow pipe incorporates 3 access chambers but there should be an access chamber for every change in direction.
- The proposed design provides for a 1350mm pipe and a 1500mm pipe to discharge into 2 no. 900mm pipes outside the hospital perimeter thus theoretically transferring any potential flooding to the adjacent residential areas outside the hospital grounds.
- Cited the following indirect issues
 - The HSE has stated that the proposed flood mitigation solution is 'with planning' the following appears not be addressed in the [current] application and thus applies to this report.
 - Minor Flooding of the A&E building in 2009 unrelated to the culvert overflowing suggest that any mitigating solution should address other sources of runoff and potential flooding that enters the hospital boundary.
 - As the A&E is located at the bottom of gradient which extends through much of Windyhall, Knocknamona and Carnamuggagh and much of the surface water runoff currently doesn't make its way to the Sprackburn but instead flows overland to the new A&E. and some form of longitudinal intercepting drainage should be incorporated into the design, at a location along the northern boundary of the hospital.
 - At the entrance to the A &E there are no measures to prevent surface water runoff running down the access road and discharging to the car park of the new A&E. Stormwater interception from the regional road should be incorporated into the top of the access road the new A&E.
 - Survey data showing the layout to the existing R229 regional road stormwater infrastructure, as supplied recently to the HSE, indicates that the road storm water infrastructure is interlinked with the hospital stormwater infrastructure. Measures to divert this stormwater from entering the hospital infrastructure should be incorporated into the overall mitigating solution.
 - Given the location of the A&E and the past flooding that took place here, any mitigating solution should include engineering calculations verifying the adequacy of the existing stormwater infrastructure around the locus of the A&E to cope with the design peak flow.

Recommended that the above points be incorporated into any design for which planning permission is granted.

Associated with the consideration of this application - Notes of Meeting which Took Place on the 9th of October 2013 between Planning and Roads Staff of Donegal County Council, Tobin Consulting Engineers and HSE Staff.

The abovementioned minutes states that:

DCC stated that the Council had a number of serious concerns in relation to the following matters:

- The application did not refer to the previous flooding event in 2009.

- The application made reference to the 1997 CIRIA Culvert Design manual which was superseded by the 2010 Manual.
- The Level of details on drawings.
- The Design of Culvert.
- It is not clear from the application documentation whether the pipe was intended to operate as an overflow pipe or whether water would flow through both pipes at once.
- there was conflicting information on the submitted drawings for manhole SW1.
- No construction details were provided in relation to any of the stormwater chambers and full details of same would be required.
- Proposed extensions of the hospital were not indicated in the plans.
- No reference was made to any specifications within the plan.
- The proposed 9m deep excavation which was not possible with trench boxes.
- Inconsistencies on the submitted drawing.
- There was no design headwall and channelling apron to the inlet of the proposed overflow pipe.
- No grating, trash security screen was proposed at the inlet of the overflow pipe.
- No inspection/maintenance access was provided for the proposed pipe inlet.
- A Primary screen upstream needed to be considered.
- There was no security fencing.
- There was a need for erosion protection on the embankments.
- The pipe had 9 bends but only 3 access chambers and stated that access chambers were needed at each change in direction.
- Calculations were missing for hydraulic capacity of the proposed system in addition to the hydraulic capacity of the connecting pipes.
- Longitudinal drawings shows variant gradient.
- DCC further advised that the installation of the proposed overflow pipe may not necessarily address all flooding issues at the hospital including:
 - Measures required to look at run off from lands up gradient of the Hospital.
 - No preventative structure to prevent road run off from entering the new Accident and Emergency entrance – a requirement of previous planning application.
 - Given that the road drainage infrastructure and the hospital water drainage infrastructure are interlinked this should be addressed in any mitigating solution.

Tobin Engineers advised that:

- They were contracted by the HSE to progress the design of the installation of the overflow pipe only and it was not their remit to address potential flooding around the remainder of the hospital.
- Whilst acknowledging that the planning application did not contain as much detail as it should the existing pipe was capable of taking the full flow for a 1:1000 year flood and the new 'routing pipe' was to be utilised only in the event that the existing pipe became blocked.
- They acknowledged that the 9m deep excavations were not feasible and a redesign was underway.
- Clarification would have to be sought in relation to drains north of Pramerica.
- They estimated that the return period which resulted in the 2013 flooding was in the order of 24-26 years.

Revised Plans and Details Dated October 13

Revised plans were submitted which provided for:

- Revisions to the route of the Culvert with 7 stormwater manholes (marked SW1-7) with straight sections between the manholes with gradients of 1:50, 1:38, 1:44, 1:54, and 1:100 respectively.
- A 1350mm diameter pipe for the first 360ms of the culvert and a 1500mm wide by 1000mm high box culvert for the last 25ms of the culvert.
- The retention of the existing 200mm trash screen.
- Stone gabions walls at Confluence of the Sprackburn stream and the northern Tributary.
- A coarse trash screen with 300mm bar spacing further upstream
- Detailed plans for each of the abovementioned Storm water manholes.

The above plans were accompanied a document entitled 'Design Summary for the Proposed Routing Culvert' which stated that:

- The purposed storm routing culvert was to mitigate the repeat of the Flood Event of the 26th of July 2013.
- The culvert would come into operation in the event of a blockage of the existing culvert and for this reason it will be designed to pass the entire flow during a design storm and will not operate in parallel with the existing culvert.
- The catchment to the new culvert is limited to that upstream of the entrance to the existing culvert. The drainage area contributing to immediate connection points to the existing culvert, for example road drainage from the Kilmacrennan road will continue to discharge to the old culvert in the event of a blockage at the Culvert entrance.
- The full diversion afforded more protection around the hospital ground in the event that the existing culvert becomes blocked or silted up.
- The peak design flow corresponding to the 1 in 1000 year flood event was found to be 5.48m³/s rising to a peak flow of 6.58m³/s with climate change.
- It is proposed to construct the storm routing pipe in 2 sections:
 - Section 1: from chainage 0 to chainage 359 1350mm diameter circular concrete pipe.
 - Section 2: from chainage 359 to chainage 422 1500mm*1000mm box culvert.
- Specifications in relation to bedding, haunch and surround materials
 - Noted the following specifications for the Culvert Gradient and capacity.
 - Entry invert level 63.69mOD
 - Invert level at end point (SW7): 50.22mOD
 - Total Length: 4264m (It is assumed this should have read 426.4m)
 - Design Flow: 6.58m³/s (for 1:1000 year flood event).
 - The new culvert will terminate 25ms from the end of the existing 1350mm culvert.
 - Dimensions for the storm water manholes varied between 1350mm and 1500mm
 - Capacity for the storm water manholes varied between 7.33m³/s and 9.42m³/s.
 - The capacity of the twin 1000mm pipes was calculated at 8.5m³/s.
 - The capacity of the twin 900mm pipes was, with a siltation of 10%, 6.8m³/s.
- Proposed the following screen modifications
 - A robust maintenance plan is to be put in place to maintain the screens largely free from debris. This plan incorporates both manual inspection and regular raking of screens, plus CCTV and water level monitoring.
 - A new coarse trash screen is to be constructed approx 30m upstream of the confluence of the Sprackburn tributary and secondary feeder stream to prevent large objects from passing and causing blockage of downstream stream screens.
 - The existing trash screen 20m upstream of the culvert will be retained.
 - A security screen is to be retained at the entrance to the culvert.

- The total trash screen area provided will be 18.5m² which is 13 times the culvert cross sectional area of 1.43m². The minimum requirement is 9 items the design culvert area of 13m².
- Access platforms with a working depth of 2m and hand railing will be provided at all screens to allow manual raking.
- All three screens will have both CCTV and ultrasonic water level monitoring installed including a new CCTV camera and an ultrasonic water level monitor at proposed coarse trash screen.

DCC relating to the Additionally Submitted Information from Tobins Consulting Engineers dated 29th of October 2013:

- Stated that the design summary still does not include any consideration with respect to the twin 900mm pipes or calculations for the catchment area of Glencar which flows into the system, the road drainage from the Kilmacrenan road which discharges to the old Culvert and the adequacy of the twin 900mm pipes to carry this combined flow is still not demonstrated.
- Questioned the specifications referred to in the additionally submitted information.
- Noted that the following issues had either been addressed or partially addressed, by the additionally submitted information.; reference to previous flooding events, the incorrect culvert design manual, the level of detail on drawings, the design of the culvert, the question whether the water would flow in both pipes at once, details of manhole marked SW1, construction details on Storm water chambers, full construction details, avoidance of future expansion areas, design head wall and channelling apron at the inlet, grating, trash security screen at inlet, inspection/maintenance act for pipe inlet, primary screen upstream, embankments, the number of bends and access chambers, varying gradient,
- However also noted that the following issues had not been addressed: concerns re 9m deep excavation, cross section of pipe showing 1350mm radius not diameter, calculations for hydraulic capacity of the proposed system in addition to the hydraulic capacity of the connecting pipes outside the hospital.
- Noted that the additional matters in relation to water runoff entering the hospital grounds are not related to this application.

Internal communication from Roads Directorate to Planning on the 30th of October

- Stated that he concurred with Fergal Doherty analysis of the additional documentation submitted but stated that a small number of points had not been addressed namely;
 - 1) Specifications in relation to backfill material.
 - 2) Details on Security fencing.
 - 3) Details of Deep excavation.
 - 4) Calculation of the 2 no. 900mm pipes outside the hospital.
- Stated that Items No. 1 to 3 could be address by planning condition but item No. 4 was more complicated. Noted that the Tobins considers it beyond the scope of their work but whether the application goes ahead or not the quantity of water arriving at the twin 900mm pipe has not and will not change.

Report from Town Engineer - received on the 31st of October 2013 stated inter alia that:

- The submission refers to the capacity of the 2 no. 900mm diameter receiving pipes (6.8m³) downstream in Fair Green being marginally above the estimated runoff (6.5m³) however notwithstanding the 10% additional capacity which could be gained by the desilting of the 900mm pipes this calculation does not include for 'runoff from the kilmacrenan Road' and runoff from the Long Lane Area which both enter these pipes from the within the Hospital Grounds.
- The 900mm pipes are not in great condition.

- Is there not a duty on the applicant to ensure that the receiving downstream network is capable of receiving the flow from the proposed development.
- Whilst there is not a history of flooding in the 900mm pipes it would be good practice to upgrade the 2 no. 900mm diameter culverts as part of this work or a contribution be made to the council to carry out the works.

Planner's Recommendation dated 6th of November 2013 noted/stated that:

- The inlet was higher than the level of the hospital buildings.
- PolicyCF1 Provision of Health Services of the Letterkenny and Environs Development Plan 2003-2009 and considered that the development was in acceptable in principle.
- Concerns raised; in the Executive Engineer's Report of the 25th of September 2013, on the Senior Executive Engineer's report of the 27th of September 2013 and that a meeting was held on the 9th of August 2013, between the HSE, Tobin Engineers, and staff of DCC and LKTC at which it was acknowledged that the level of detail on the application was poor and Tobins undertook to submit more information.
- Unsolicited information was received by the PA on the 25th of October 2013.
- The points made in the various reports.
- *The suitability of the receiving pipe network located downstream of the hospital complex is also pivotal to this application and the assessment of the proposal. The details of the functioning of the existing SW network in relation to the proposed pipe; and the impact of both pipes individually at the outfall to the receiving network, requires further detail and accommodation.*
- Recommended further information as below

Further Information Request of the 7th of November 2013:

1. a. *Applicant to submit a competent report, supported by plans and sections to an appropriate scale and carried out by a suitably qualified person, which evidentially documents and identifies the following:*
 - i. *the extent, specifications, pipe sizes and gradient of the existing network of cumulative storm drains within the grounds of Letterkenny General Hospital discharging to the existing receiving storm water network at the Fairgreen south of the hospital complex,*
 - ii. *the maximum volume and rate of water which will discharge from this existing arrangement to the existing receiving storm water network at the Fairgreen south of the hospital complex, at any time, in the event of a 1 in 100 year storm.*
 - iii. *the capacity (volume of water and time of retention) of this existing network to attenuate storm waters in the event of a 1 in 100 year storm prior to discharge to the existing receiving storm water network at the Fairgreen south of the hospital complex,*
- b. *Applicant to submit an assessment from a suitably qualified person which considers whether or not the receiving storm water network at the Fairgreen south of the hospital complex can cater for the maximum loadings arriving from the existing storm water network identified in response to item no. 1a. together with that associated with the proposed over-flow pipe in accordance with the necessary standards, in the event of a 1 in 100 year storm and without giving rise to a flood risk.*

Advice to Applicant:

Applicant is advised on receipt of a response to Item No.1. the Planning Authority will consider the maximum storm water loadings discharging to the receiving storm water network at the Fairgreen

from both the Hospital site and from Long Lane and Circular Road. Applicant is advised that if it is established that the receiving storm water network cannot cater for the maximum storm water loadings then it is likely that it will be necessary to augment same if the proposal is to be considered further. However the Planning authority will correspond with you separately in respect of this matter as and if necessary, subsequent to receipt of your further information response. Applicant is advised without prejudice that this may or may not result in the imposition of a special development contribution.

2. a. *Applicant to demonstrate that any overtopping of the proposed screening arrangements will not result in flooding of adjacent third party lands or otherwise.*
- b. *Applicant to demonstrate that there is adequate scour protection provided for the river bed and its embankments.*

Response to Further Information Request received on the 11th of December 2014:

Question 1a(i)

- Noted that the majority of the surface water from the northern part of the site is conveyed to the 1350mm culvert via a 600mm connection while that from the main car park to the south enters the culvert via a number of smaller connections.
- Provided Estimates for all surface waters entering the 1350mm culvert (including from the Hospital Site) and stated that 95% of all surface waters entered the culvert at its inlet point.

Question 1a(ii)

- Stated that the maximum rate at which water will discharge from the 1350mm culvert to the receiving storm network is 6.58m³/s in the event of a 1:1000 year flood.

Question 1a(iii)

- The existing storm network on the hospital site provides negligible attenuation in the event of a 1:100 year storm however is some attenuation on the from the roof of the new A&E Dept. and from an attenuation tank (142m³) located underneath the roundabout.

Question 1B Receiving Network.

The capacity of the 900mm culverts that the hospital drainage discharges to has been calculated as 7.1m³/s, if the full capacity is available. However given that one of these pipes was found to be silted by 10% a capacity of 6.8m³/s is calculated. This is marginally above the 1:1000 year storm flow of 6.58m³/s. The flow from the proposed overflow pipe is not relevant as this culvert is designed to operate only in the event of a blockage occurring at the existing entrance to the culvert and as such there will be no net increase in peak flows.

Question 2A Proposed Screen Arrangements:

- The screen design has been revised such that all trash screens are designed to be overtopped in the event that they are completely blinded.
- The screen arrangements forms part of the overall flood management strategy for the hospital.
- The following screens will now be provided:
 - Screen 1: A new coarse trash screen with 300mm bar spacing.
 - Screen 1A: A New fine trash screen with 200mm bar spacing.
 - Screen 2A: A new fine trash screen downstream of the confluence of the Sprackburn and the Northern Tributary with 200mm bar spacing.
 - Screen 3: Replacement of the existing security screen (100mm bar spacing) with a 140mm bar spacing.
 - Screen 4: A security screen with 140mm bar spacing will be installed at the overflow culvert.

Revised design provides for a 1m high embankment to ensure that storm flows are retained with the stream channel in the event of a storm event.

Question 2B Scour Protection:

Proposed a precast concrete structure in the vicinity of the confluence of the Sprackburn and the northern Tributary.

- The FI response also contained supporting documentation including a hydrological assessment of existing and proposed culverts, a design summary for proposed storm routing culvert and inlet screens. In particular it is noted that said hydrological assessment stated that using the 'CIRIA Culvert Design and Operation Guide 689:2010' the existing 1350mm culvert had a capacity in the order of 7m³/s.
- The FI response also contained detailed plans for the abovementioned security/trash screens, scour protection at confluence of the Sprackburn stream/northern tributary, the existing surface water drainage network within the hospital site.

Report from Roads Directorate dated 18th of December 2013 stated that:

The hydrological assessment of existing and proposed culverts still does not refer to the additional inflow from the long lane/circular road or the inflow from the existing attenuation chamber in o the hospital.

Report from Town Council dated the 19th of December 2013 stated that:

Stated that the capacity of the twin 900mm culverts would be nearer to 6m³/s but there would be still sufficient capacity in the 900mm pipe in the event of a 1:100 year flood for both surface water from the hospital site (3.96m³/s) and longlane/circular road (0.4m³/s). The pipe referred to on Long Lane Circular road would not have a bearing on potential of hospital as it is downstream from the culvert which runs beneath the hospital.

Planner's Recommendation of the 9th of January 2014 considered that the revised plans submitted on the 13th December 2013 constituted significant further information and therefore requested revised public notices in accordance with A.35. Said revised public notices were subsequently published.

Report from Roads Directorate 27th of March 2014

- Stated that the twin 900mm pipes at the Fairgreen had a maximum capacity of 6.46m³/s and would therefore not have sufficient capacity to cater for the 1:1000 year flow (6.58m³/s) plus the potential catchment from the long lane/circular road (1.25m³/s)
- Although the catchment of long lane and circular road meets the hospital system at the lower end of the hospital there is still the potential to either back up the hospital system or flood the road housing estate opposite the hospital.
- Recommended that the twin 1000mm pipes should be upgraded to two 1000mm pipes or an equivalent sized single/box culvert.

Planner's Recommendation of the 2nd of April 2014

- Stated that the storm over flow re-routing arrangements was a responsible remedial measure by the hospital for the purpose of mitigating the flood risk.
- expressed concern that the that the proposed development may provide for the quicker discharge of storm waters to the receiving 900mm pipes at the Fairgreen.
- Noted that the pipes at the Fairgreen had, in reality a maximum capacity of 6.46m³/s and therefore did not have the capacity to cater for the 1:1000 year flow (6.58m³/sec) plus the

potential catchment from the long lane/circular road(+1.25m³/s) and recommended that the twin 900mm pipes at the Fairgreen be 2 no. 1000mm pipes.

A Notification of Decision to Grant was issued on the 2nd of April 2014 and a Final Grant Issued on the 9th of May 2014 subject to 1 condition regarding adherence to the plans submitted on the 11th of December 2013.

Status of Development:

An inspection carried out on foot of this report in January 2014 indicates that the proposed development has been fully completed including:

- The Storm overflow pipe and associated inspection chambers.
- The Trash and Security Screens Upstream of the Storm Overflow Pipe and original Culvert and associated monitoring equipment.
- The embankment around the area of the Culvert and Trash/Security Screens.

Summary in Relation to 13/80067 (Storm Overflow Pipe)

- The purpose of the Storm overflow pipe was to take all of the water from the Sprackburn stream in the event of the original 1350mm becoming blocked with debris as happened in the 2013 Flood Event.
- The detailed flood calculations submitted as part of the application indicated that the original 1350mm culvert had the capacity (i.e. 7m³/s) to cater for a 1:1000 year flood from the Sprackburn catchment (i.e. 6.58m³/s)
- Donegal County Council staff identified Deficiencies in the design of the proposed and existing trash screens upstream of the culvert during the assessment of the application.
- Revised plans providing for additional/improved trash screens were submitted following a further information request.
- Donegal County Council staff also raised other Potential Flood Risks to the Accident and Emergency Department not dealt with by the application during the course of the assessment of the application namely from: Surface water discharging from
 - Lands to the North of the Accident and Emergency Department.
 - The R229 Regional (Mountain Top) Road directly down the access road to the Accident Emergency Department.
 - The R229 Regional (Mountain Top) Road stormwater infrastructure which discharges to the Hospital's own stormwater infrastructure.but as these fell outside the scope of the application the Planning Authority were not in a position to seek the construction of same as part of the proposed development.
- The planning authority also raised concerns in relation to effect that the faster discharge of the water from the Storm overflow pipe would have on the existing twin 900mm pipes at the Fairgreen (i.e. outside the Hospital Site).
- Further Information was sought in relation to inter alia the Impact of the Storm Overflow Pipe on the abovementioned twin 900mm pipes.
- An Inspection of the Site carried out on foot of this report indicated that all aspects of the development have been completed including:
 - The Storm overflow pipe and associated inspection chambers.
 - The Trash and Security Screens Upstream of the Storm Overflow Pipe and original Culvert and associated monitoring equipment.
 - The embankment around the area of the Culvert and Trash/Security Screens.

4.4 Whether those permission(s) were fully complied with:

This section of the report specifically considers whether those aspects of the approved plans for, and conditions imposed on, Plan. Ref. Nos. 07/80149, 08/80143 and 13/80067 which are related to a potential flood risk at the Accident and Emergency Department were fully complied with:



Ref:	Aspect of Permission	Compliance Y/N/Other	Description of Compliance/Non Compliance
07/80149 Accident and Emergency Department. Note: This development has been completed.			
1	Surface Water Drainage System within Car Park for Accident and Emergency Dept.	Y	A visual inspection of the car park indicates that all of the surface water manholes have been installed at the locations indicated on the site layout plan of the surface water drainage system submitted with the application.
2	Surface Water Gullies/Drainage on Access Road from Regional Road to Car Park.	Y	A visual inspection of the car park found that surface water drainage gullies have been installed along the access road leading to the Accident and Emergency Car park.
3	Storm Water Attenuation Tank underneath Roundabout.	Y	Consultations with Mr. Michael Martin of the HSE Estates Office indicates that the Storm Water Attenuation tank has been installed underneath the car park.
4	Condition No. 4: <i>No surface water from site to be permitted to discharge to public road and applicant shall take steps to ensure that no public road water discharges onto site.</i>	N	An inspection of the junction of the access road/public road found that no steps (e.g. the installation of a slotted drainage channel or similar) have been taken to prevent surface water discharging from the R229 Regional (Mountain Top) road onto the site.
5	Condition No. 5: <i>Prior to commencement of development precise details of proposed attenuation measures and the installation of the same shall be agreed in writing with the Town Engineer (Telephone: 074-9194222).</i>	N	An inspection of the planning file found that no details of the proposed attenuation measures (i.e. the details of the storm water attenuation tank underneath the roundabout) were ever submitted to the planning authority - This matter has.....

08/80143: Mortuary Chapel and Associated Car Park.


Note: This Development has been completed.

1	Condition No. 3 <i>No surface water from site to be permitted to discharge to public road and applicant shall take steps to ensure that no public road water discharges onto site.</i>	N	An inspection of the junction of the access road/public road found that <u>no</u> steps (e.g. the installation of a slotted drainage channel or similar) have been taken to prevent surface water discharging from the R229 Regional (Mountain Top) road onto the site.
2	Condition No. 4 <i>Prior to commencement of development precise details of proposed attenuation measures and the installation of the same shall be agreed in writing with the Town Engineer (Telephone: 074-9194222).</i>	N	An inspection of the planning file found that no details of the proposed attenuation measures (i.e. the details of the storm water attenuation tank underneath the roundabout) were ever submitted to the planning authority

13/80067 Storm Overflow Pipe.

1.	Overall Construction of Storm Overflow Pipe	Y	<p>A visual inspection found that the storm overflow pipe has been fully completed inclusive of:</p>  <p>Trash Screen 1 with 200mm Bar Spacing</p>  <p>Trash Screen 1A with 200mm Bar Spacing CCTV,</p>
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			<p>Water Level, Probe and Lighting.</p>  <p>Precast concrete scour protection to embankments. (However it is noted that stone pitching on base of stream does not seem to have been constructed).</p> <p>Trash Screen2A 200mm Bar Spacing</p>  <p>Screen 3 (At Inlet to Original Culvert) 140mm Bar Spacing</p>  <p>Screen 4 (Inlet to Storm Water Overflow Pipe).</p>
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			 <p>Embankment Around Inlet Points.</p> <p>Storm Manholes 1-7</p>
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In addition to the abovementioned issues of non compliance with approved planning permissions it is noted that a 220m long by 1m wide drainage swale has been constructed along the northern boundary of the hospital site. This development was subsequently the subject of an Application for a Section 5 Declaration Ref: (S5 14/32) lodged on the 18 November 2014 wherein the applicant Tobin engineers on behalf of the HSE sought a declaration as to whether said drainage swale is or is not exempted development. The above submission noted that a second flooding event took place on the 5th of August 2014 as a result of surcharging of a manhole on the northern boundary of the hospital and stated 'as part of the emergency response to that incident' the drainage swale was constructed to 'intercept any surface water that breaches this manhole during an extreme rainfall event'. In the assessment and determination of this requested determination under Section 5 of the Planning & Development Act, the planning authority subsequently declared that the proposal is development and is not exempted development. This has been the subject of direct intervention with the Hospital Management who have appointed the necessary expertise to prepare and submit an application to retain the drainage swale for consideration by the Planning Authority.

Summary

The following Works/Conditions have been complied with

- A surface water drainage system has been installed in the Car Park of the Accident and Emergency Department in accordance with the approved plans for 07/80149.
- Surface Water gullies have been installed along the access road leading to the Accident and Emergency in accordance with the approved plans for 07/80149.
- The Storm Water Overflow Pipe inclusive of Upstream Trash and Security Screens, CCTV and Water level Monitoring equipment, Upstream Scour Protection Works at junction of Sprackburn Stream and Northern Tributary (with exception of stone pitching to stream base), and Stormwater Manholes appears on visual inspection to have been constructed in accordance with the approved plans for 13/80067

The following conditions have not been complied with:

- No steps have been taken at the junction of the public road/internal access road (e.g. construction of a slotted drainage channel) to prevent surface water discharging from the R229 Regional (Mountain Top) road onto the site as required by Condition No. 4 of 07/80149 and No. 3 of 08/80143.
- The HSE indicate that a storm water attenuation tank (to attenuate storm water from the Car Park and Access Road for the Accident and Emergency Department) has been installed


underneath the roundabout leading to said A&E Dept. This has been accepted by the Planning Authority and no further action is being considered in relation to this item.





4.5 Whether the Council has taken any enforcement action against the HSE either during the construction of the new Accident and Emergency Department Building or after its completion

The Planning Authority has not instigated any enforcement action under Part VIII of the Planning & Development Act, 2000 (as amended) against the HSE in relation to developments on the hospital campus. Issues requiring regularisation have been the subject of extensive discussion between the Planning Authority and the management of the Hospital to have outstanding matters addressed without recourse to formal proceedings. Having regard to the extent of these discussions The Hospital Management is currently (at the time of writing) preparing proposals to have any outstanding matters resolved.

As part of this preparation of this report the Planning Authority has conducted a thorough site inspection of the hospital site relating to the planning permissions cited in Section 3 of this report. This assessment has identified the following physical developments within the hospital site which the Planning Authority considers require but does not currently have the benefit of Planning Permission. This inspection, coupled with the direct engagement with Hospital Management, has identified outstanding matters that require to be regularised. Many of these are relatively minor in nature, often relating to storage facilities across the campus or small scale works within the site that are not directly related to the issue of flood risk and surface water drainage. Examples of these are shown in the table below for information purposes.

At the time of writing, the Hospital Management have indicated that clear proposals to regularise any outstanding matters will be presented for consideration in the coming weeks.

Ref.	Development Description	Picture
1	220m long by 1m wide drainage Swale along the northern boundary of the Hospital Site.	

2	Single Storey White Portacabin Building to the Left Hand Side of the Front Elevation of the Main Hospital Building and 2 no. associated generators.	
3	Single Storey Grey Portacabin Building to the Right Hand Side of the Main Hospital Building.	
4	Single Storey Grey Portacabin Building immediately outside the entrance to the Old Accident and Emergency Department and 3 no. Associated Containers.	
5	Grey Storage Container on Concrete Platform on elevated ground to the east of the new Accident and Emergency Dept.	

4.6 Whether the Council considers that any further works should be carried out to prevent future flooding of the hospital and confirm what those precise measures are

The Council has been actively working with the HSE through the Flood Risk Assessment Group to inter alia identify all potential Flood Risks to the hospital and specific measures to prevent such risks. The Report of this working group is due to be published shortly. It is therefore considered premature to specify in detail what further works may be carried out to prevent future flooding of the hospital at this time.