Newcastle Local Area Plan

- Initial Strategic Flood Risk Assessment -



South Dublin County Council

6th June 2012

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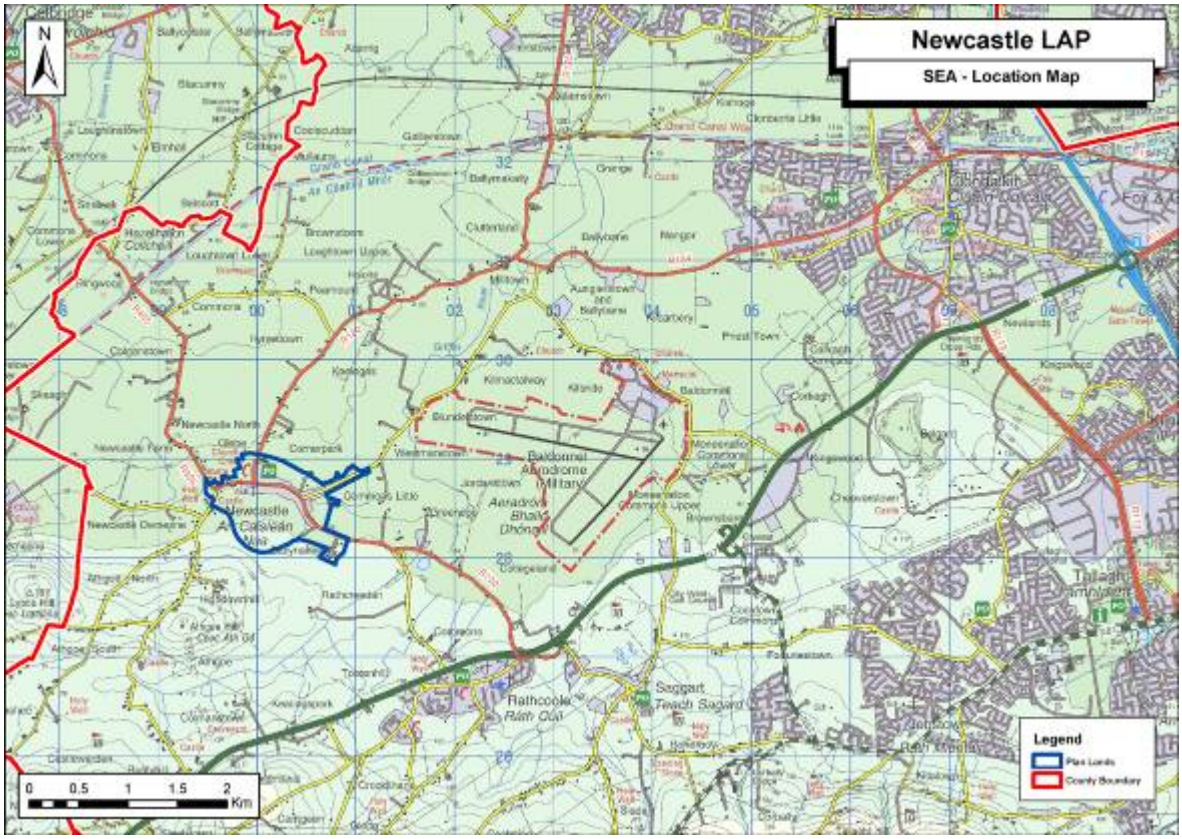
NEWCASTLE LOCAL AREA PLAN - INITIAL STRATEGIC FLOOD RISK ASSESSMENT

1 INTRODUCTION AND BACKGROUND

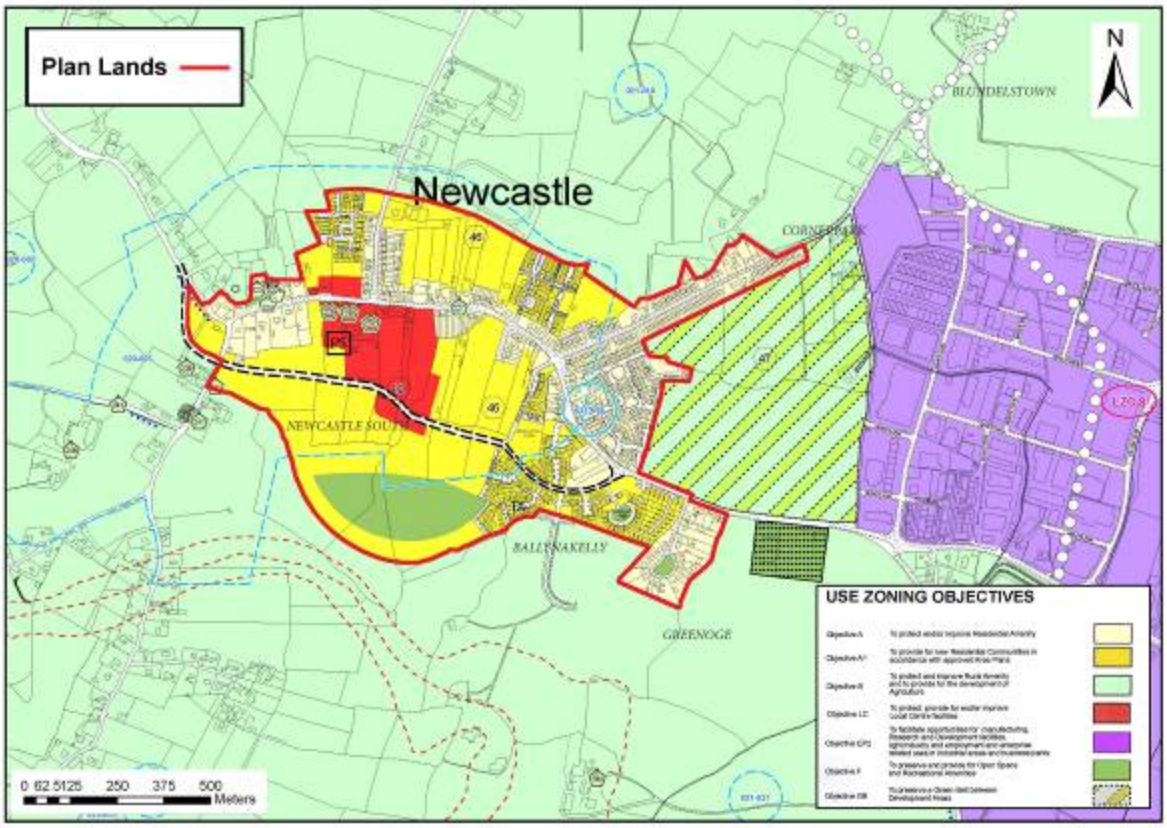
1.1 Introduction and Context

This report is the Initial Strategic Flood Risk Assessment[1] of the Newcastle Local Area Plan (LAP). The assessment is a requirement for Local Area Plans as set out in *"The Planning System and Flood Risk Management – Guidelines for Planning Authorities 2009"* and the ", Regional Planning Guidelines for the Greater Dublin Area 2010~2022".



[1] It is important to note that compliance with the requirements of *The Planning System and Flood Risk Management - Guidelines for Planning Authorities*, and of the Floods Directive 2007 60/EC is a work in progress and is currently based on emerging and incomplete data as well as estimates of the locations and likelihood of flooding. In particular, the assessment and mapping of areas of flood risk awaits the publication both of Catchment-based Flood Risk Assessment and Management Plans [CFRAMs]. As a result, this Initial Strategic Flood Risk Assessment for the Newcastle Local Area Plan is based on currently available information.

Accordingly, all information in relation to flood risk is provided for general policy guidance only. It may be substantially altered in light of future data and analysis. As a result, all landowners and developers are advised that South Dublin County Council and its agents can accept no responsibility for losses or damages arising due to assessments of the vulnerability to flooding of lands, uses and developments. Owners, users and developers are advised to take all reasonable measures to assess the vulnerability to flooding of lands in which they have an interest prior to making planning or development decisions.



The Plan Lands were largely identified for the preparation of a revised Local Area Plan on the basis of:

- The expiration of the Newcastle-Lyons Local Area Plan (2003) and the intention of South Dublin County Council to continue its programme of preparing Local Area Plans under Paragraph 0.3.20 of the South Dublin County Council Development Plan, 2010 – 2016.

- The boundary of lands zoned in Newcastle under the South Dublin County Council Development Plan 2010 – 2016 for residential amenities and communities (Objective A, Objective A1), local centre facilities (Objective LC) and open space and recreational amenities (Objective F).

- The substantial extent of lands that remain undeveloped including circa 32.5 hectares of lands zoned for new residential communities (Objective A1), circa 8 hectares of lands zoned for local centre facilities (Objective LC) and circa 6 hectares of lands for open space and recreational amenities (Objective F).

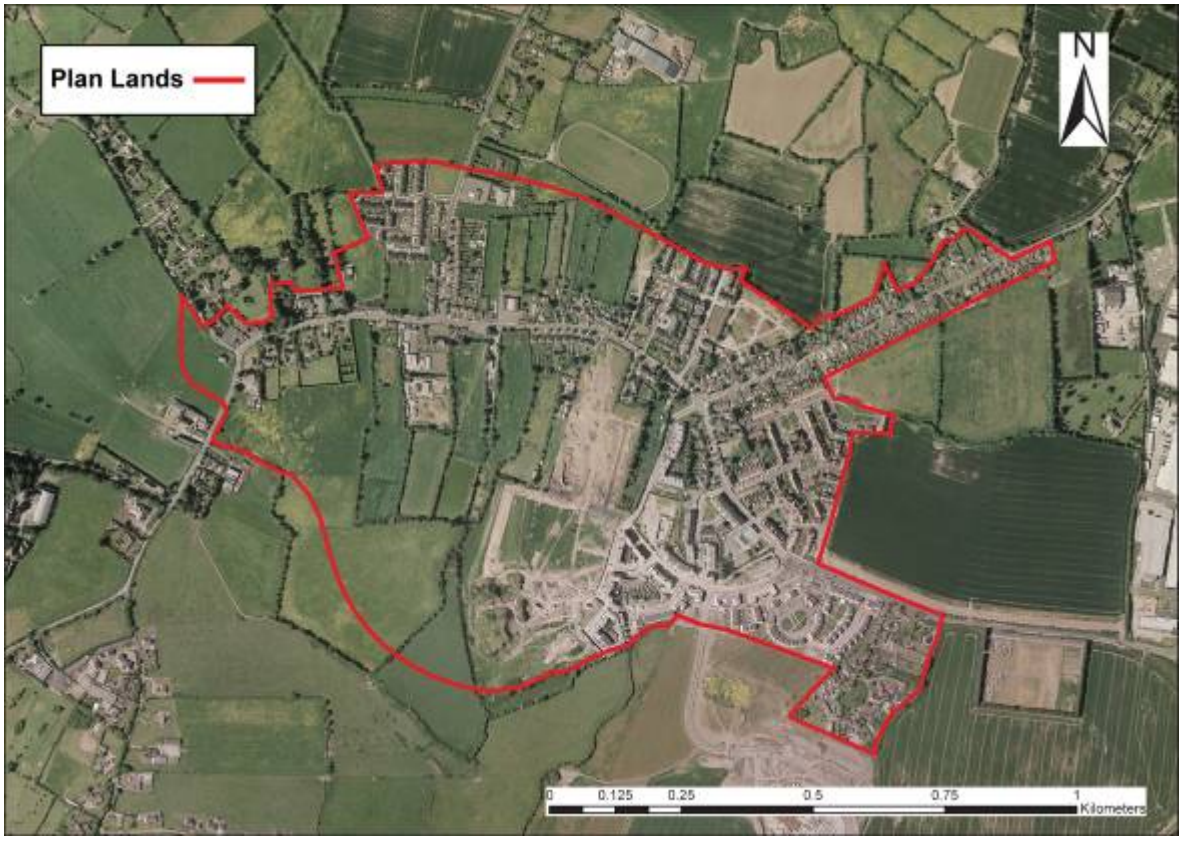
- The opportunities presented by the existence of circa 12.5 hectares of A1 zoned lands that are subject to extant permissions for substantial residential development that have not commenced or have ceased construction.

- The substantial development that has recently occurred around Newcastle in a manner where community, education and recreational facilities has not kept apace with residential development.

- The need to address the challenges presented in the development of a village such as Newcastle with its rich history and heritage; the existence of elements of significant heritage and potential biodiversity

value including the burgage plot field system; area of archaeology potential, protected structures and historic monuments.

• The need to ensure that any further development retains much of the village's character and sensitively addresses the contrast between existing and new development granted prior to and after the adoption of the Newcastle – Lyons Local Area Plan (2003).



1.2 Policy Framework

1.2.1 EU Floods Directive

European Directive 2007/60/EC, on the assessment and management of flood risks, aims to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The Directive applies to inland waters as well as all coastal waters across the whole territory of the EU.

The Directive requires Member States to carry out a preliminary assessment by 2011 in order to identify the river basins and associated coastal areas at risk of flooding[2]. Flood risk maps are required to be drawn up for

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The OPW have prepared Preliminary Flood Risk Assessment (PFRA) maps and these have gone on display nationally in 2011 as part of a public consultation exercise.

such zones by 2013. Flood risk management plans focused on prevention, protection and preparedness must be established by 2015.

The Directive is to be carried out in coordination with the Water Framework Directive and Flood Risk Management Plans and River Basin Management Plans.

1.2.2 Flood Risk Guidelines

The recently released *"The Planning System and Flood Risk Management – Guidelines for Planning Authorities 2009"* provide the policy framework for Local Authorities. These Guidelines were issued by the Minister of the Environment, Heritage and Local Government[3] under Section 28 of the Planning and Development Act 2000 whereby Planning authorities are required to have regard to the Guidelines in carrying out their functions under the Planning Acts.

The core objectives of the Guidelines are to:

- Avoid inappropriate development in areas at risk of flooding;
- Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water run-off;
- Ensure effective management of residual risks for development permitted in floodplains;
- Avoid unnecessary restriction of national, regional or local economic and social growth;
- Improve the understanding of flood risk among relevant stakeholders; and
- Ensure that the requirements of EU and national law in relation to the natural environment and nature conservation are complied with at all stages of flood risk management.

The key principles that should be adopted by regional and local authorities, developers and their agents should be to:

- Avoid the risk, where possible,
- Substitute less vulnerable uses, where avoidance is not possible, and
- Mitigate and manage the risk, where avoidance and substitution are not possible.

Issues raised in the Guidelines include: -

- Need to identify and safeguard flood plains;
- Implementation of Sustainable Drainage Systems;
- Flood risk is to be considered in Development and Local Area Plan SEA documents as key environmental criteria.
- The sequential approach to managing flood risks utilizing flood zones is to be undertaken.
- A justification test[4] for development proposed within zones of flooding probability is to be provided.

The Guidelines provide an outline of the stages of a Flood Risk Assessment as follows;

Stage 1 Flood risk identification – to identify whether there may be any flooding or surface water management issues related to a plan area or proposed development site that may warrant further investigation;

Stage 2 Initial flood risk assessment – to confirm sources of flooding that may affect a plan area or proposed development site, to appraise the adequacy of existing information and to determine what surveys and modelling approach is appropriate to match the spatial resolution required and complexity of the flood risk

[3] Now reorganized as the Department of the Environment, Community and Local Government

[4] The Development Management Justification Test from *"The Planning System and Flood Risk Management – Guidelines for Planning Authorities 2009"* is replicated in Appendix 1

issues. The extent of the risk of flooding should be assessed which may involve preparing indicative flood zone maps. Where existing river models exist, these should be used broadly to assess the extent of the risk of flooding and potential impact of a development on flooding elsewhere and of the scope of possible mitigation measures; and

Stage 3 Detailed risk assessment – to assess flood risk issues in sufficient detail and to provide a quantitative appraisal of potential flood risk to a proposed or existing development, of its potential impact on flood risk elsewhere and of the effectiveness of any proposed mitigation measures. This will typically involve use of an existing or construction of a hydraulic model of the river cell across a wide enough area to appreciate the catchment wide impacts and hydrological processes involved.

1.2.3 Greater Dublin Area Regional Planning Guidelines

The Regional Planning Guidelines for the Greater Dublin Area 2010~2022 give regional effect to the National Spatial Strategy and guide the development plans in each Local Authority area. The guidelines have effect for six years.

The Guidelines contain a Regional Flood Risk Appraisal (RFRA), which is a high-level broad-brush appraisal of flood risk across the entire regional authority area, based on existing available information. The impact of flood risk within the context of the Regional Planning Guidelines and decisions regarding future directions of growth is recognised and has been incorporated into the policies of the RPG's, both within the main document and within the Strategic Environmental Assessment process associated with the preparation of the Guidelines as set out below.

Strategic Policy FP1
That flood risk be managed pro-actively at all stages in the planning process avoiding development in flood risk areas where possible and by reducing the risks of flooding to and from existing and future development.

Strategic Recommendations
FR1 New development should be avoided in areas at risk of flooding. Alongside this, the Regional Flood Risk Appraisal recognises the need for continuing investment and development within the urban centres of flood vulnerable designated growth towns and the City and for this to take place in tandem with the completion of CFRAM Studies and investment in comprehensive flood protection and management.

FR2 Development and Local Area Plans should include a Strategic Flood Risk Assessment and all future zoning of land for development in areas at risk of flooding should follow the sequential approach set out in the Departmental Guidance on Flood Risk Management. All Flood Risk Assessments and CFRAM studies should take place in coordination and consultation with adjoining local authorities and regions and in coordination with the relevant River Basin Management Plans.

FR3 Local authorities should take the opportunities presented to optimise improvements in biodiversity and amenity when including policies and actions in development plans/local area plans (such as flood plain protection and SuDS) for existing and future developments.

FR4 Plans and projects associated with flood risk management that have the potential to negatively impact on Natura 2000 sites will be subject to a Habitats Directive Assessment (HDA) according to Article 6 of the Habitats Directive and in accordance with best practice and guidance.

Role of Local Authorities
Local Authorities must take account of the issues raised in the Regional Flood Risk Appraisal and undertake Strategic Flood Risk Assessment for future plans in line with the Department's Guidance on the Planning System and Flood Risk Management Guidelines.

The RPG's seek to emphasise the need to protect across the GDA the natural flood plains and riparian corridors of all rivers that have not already been built on, and seek that this is explicitly stated and spatially designated in all future Development and Local Area plans following the completion of CFRAMs for the area in question or through using other data from the OPW and existing studies and historical information available, and, where necessary, through additional studies or investigations.

In Preparing Plans
In the preparation of future Development and Local Area Plans, Local Authorities are advised to:

- *Identify and consider at the earliest stage in the planning process flood hazard and potential risk.*
- *Identify flood risk areas on the Development Plan and Local Area Plan maps.*
- *Review existing Development Plans and Local Area Plans to ensure that issues of Flood Risk has been addressed in a manner consistent with the Flood Risk Management Guidelines. Where lands are already zoned for housing or other vulnerable development in flood risk areas, the Council should undertake a re-examination of the zoning in accordance with the sequential approach. RPGs may need to identify Plans which will require a variation to take account of FRA.*
- *Include policies which ensure that flood risk areas targeted for development following the sequential approach should be planned, designed and constructed to reduce and manage flood risk and be adaptable to changes in climate.*
- *Include policies to ensure that flood risk and impact is considered as a key element in the assessment of future waste and mineral planning strategies and developments.*
- *Include policies that ensure that the location of key infrastructure will be subject to FRA.*
- *Include policies on the importance of the inclusion of Sustainable Drainage Systems (SuDS) in future developments, in accordance with the recommendations of the Greater Dublin Strategic Drainage Study Guidelines and Appendix B of the Flooding Guidelines published by the Department and the OPW.*

Protecting Key Assets
Flooding events, whether widespread or extremely localised, can cause serious damage to key infrastructure (e.g. power stations, sub-stations, communication hubs, wastewater treatment plants etc.). The cost of such disruption is significant to business, causes hardship to residents and also can place people in at risk situations. For this reason, it is recommended that on completion of CFRAMs and the identification of areas of high flood risk in each Council area, that key infrastructure suppliers are advised of the risk to such installations and encouraged to assess current infrastructure for risk and stress test future projects against flood risk, where this has not been previously undertaken.

1.2.4 South Dublin County Development Plan 2010-2016

South Dublin County Council aim "*to facilitate and guide the sustainable development of the County in suitable locations through the continued improvement of water and drainage infrastructural services and appropriate environmental protection and management.*" One of the Council's principal strategies for this is to " *Ensure that existing and proposed developments are not subject to undue risk of flooding*". A series of policies and objectives are outlined in the County Development Plan as follows;

2.3.9 Ground and Surface Waters.
Applications for large to very large developments shall: Include an assessment of the impacts of climate change on their development and to make provision for these impacts in particular relating to drainage design.

All developments should incorporate:
• Designs and layouts for basements and underground car parks that do not result in any potential for them to flood from within or without;
• Sustainable Urban Drainage Systems (SuDS) that balance the impact of urban drainage through the achievement of control of run-off quantity and quality and enhance amenity and habitat. The website www.irishsuds.com should be consulted for guidance.

The Planning Authority will:
• Discourage culverting of streams unless considered absolutely necessary. Where culverting of a stream is unavoidable it shall be required to obtain a consent from the Office of Public Works in accordance with S.50 of the *Arterial Drainage Act*, 1945;

• Require in developments adjacent to watercourses, that any structure must be set back a minimum distance of 10m from the top of the bank to allow access for channel cleaning and maintenance, unless otherwise agreed with the Planning Authority. This may be increased depending on the size of the watercourse and any particular circumstances;

• Only permit development when satisfied that new and existing developments are not exposed to increased risk of flooding and that any loss of flood storage is compensated for elsewhere in the river catchment;

• When considering planning applications which include significant hard surfacing, attach conditions which seek to minimise and limit the extent of hard surfacing and paving as well as requiring the use of sustainable drainage techniques, including in particular permeable paving or surfaces such as gravel or slate chippings. The aim generally being to reduce run-off rates and flow volumes from parking areas as well as access roads

2.3.12.ii Policy WD6: Sustainable Urban Drainage Systems (SuDS)
It is the policy of the Council to ensure that all development proposals incorporate Sustainable Urban Drainage Systems (SuDS).

2.3.21 Risk of Flooding
One of the effects of climate change that can be anticipated, and a key adaptation issue, is the management of water and the maintenance of quality standards as the global temperature increases and rainfall patterns change. Flood risk needs to be considered at all stages of the land-use planning process and managed in an environmentally sensitive way.

The Planning System and Flood Risk Management: Guidelines for Planning Authorities (2009) are intended to ensure a more rigorous and systematic approach to integrating flood risk management in the preparation of Development Plans, Local Area Plans and in the determination of planning applications. The Guidelines describe good practice in the consideration of flood risk in planning and development management and aim to integrate flood risk management into the overall planning process from strategic consideration to site specifics.

The core objectives of the Guidelines are to:
• Avoid inappropriate development in areas at risk of flooding;
• Avoid new developments increasing flood risk elsewhere, (including that which may arise from surface run-off);
• Ensure effective management of residual risks for development permitted in floodplains;
• Avoid unnecessary restriction to national, regional or local economic and social growth;
• Improve the understanding of flood risk among relevant stakeholders and Ensure that the requirements of EU and national law in relation to the natural environment and nature conservation are complied with at all stages of flood risk management.

The key principles of a risk-based assessment to managing flood hazard and potential risk in the planning system are based on a sequential approach as set out in the Guidelines. The sequential approach involves:
• Avoiding development in areas at risk of flooding;
• If this is not possible, consider substituting a land use that is less vulnerable to flooding and
• Only when both avoidance and substitution cannot take place should consideration be given to mitigation and management of risks. Possible exceptions to restriction of development due to potential flood risks are provided for through the use of a Justification Test, whereby the overriding planning need and the sustainable management of flood risk to an acceptable level can be demonstrated.

Based on best practice the Council will promote the following objectives:
• To preserve riparian strips free of development and of adequate width (minimum of 10m from the top of the bank) to permit access for river maintenance;
• To integrate comprehensive flood risk assessment and management in the overall planning process to include forward planning and development management;
• To avoid flood risk to people and property, where possible;
• To seek to manage the risks to acceptable levels through the use of flood relief schemes, and/ or flood-resistant and flood-resilient construction methods, where avoidance is not possible and
• To address flood risk management in the detailed design of development, as set out in Appendix B of the Guidelines.
• To ensure the protection, management, and as appropriate, enhancement, of existing wetland habitats where flood protection/management measures are necessary.

2.3.22 POLICY
2.3.22.i Policy WD13: Risk of Flooding
It is the policy of the Council to fulfill its responsibilities under the Flood Risk Directive 2007/60/EC and to implement the recommendations of the Planning System and Flood Risk Management: Guidelines for Planning Authorities (2009) including using the Guidelines to assess applications for planning permission.

2.3.23 Identified Flood Risk Areas
Where development has to take place in identified floor risk areas, in the case of urban regeneration for example, the type of development has to be carefully considered and the risks should be mitigated and managed through location, layout and design of the development to reduce flood risk to an acceptable level.

Planning applications for development in areas where flood risk may be present will be assessed in accordance with the provisions of The Planning System and Flood Risk Management: Guidelines for Planning Authorities (2009). Where flood risk is potentially considered to be an issue a flood risk assessment should be carried out that is appropriate to the scale and nature of the development and the risks arising. Information on flood risk assessments and the sources of information are contained in the Guidelines.

Where flood risk is present an applicant should address flood risk by adopting a sequential approach in terms of location of uses in areas of lower risk, the consideration of less vulnerable use types and other mitigation through design measures. Sustainable drainage should be integral to the design and formulation of proposals. The Guidelines provide information on how new development in flood risk areas should be planned, designed and constructed to reduce and manage flood risk and be adaptable to changes in climate.

Minor proposals in areas of flood risk, such as small extensions to houses, and most changes of use of existing buildings, are unlikely to raise significant flooding issues, unless they introduce a significant additional number of people into flood risk areas or obstruct important flow paths. A brief assessment of the risk of flooding should accompany any such applications to demonstrate that they would not have adverse impacts or impede access to a watercourse, floodplain or flood protection and management facilities. Where new development in flood risk areas is granted permission, the applicant shall supply details of the flood risk, mitigation measures and residual risk to the major emergency management committee (MEMC) of this local authority for inclusion in their major emergency risk assessment protocols.

2.3.24 POLICY
2.3.24.i Policy WD14: Identified Flood Risk Areas
It is the policy of the Council not to permit development in identified flood risk areas, particularly floodplains, except where there are no alternative and appropriate sites available in areas at lower risk that are consistent with the objectives of proper planning and sustainable development.

2.3.25 Flood Risk Assessment and Management Plans
Any recommendations and outputs arising from the Catchment Flood Risk Assessment and Management Plans (CFRAMS) for the County will require to be incorporated into the Development Management process. In

partnership with other organizations, the Office of Public Works is developing a series of country-wide CFRAMS. These Plans will establish long-term strategies and programmes for managing flood risk within the relevant river catchment. These Plans will identify areas of floodplain importance for conveyance and natural storage and areas where flood risk management measures may need to be implemented. CFRAMS have commenced for the Dodder and Liffey catchments.

It is an objective of the Council that flood alleviation schemes shall be assessed to ascertain compliance with the requirements of The Planning System and Flood Risk Management: Guidelines for Planning Authorities (2009).

2.3.26 POLICY

2.3.26.i Policy WD15: Flood Risk Assessment and Management Plans

It is the policy of the Council to assist and co-operate with the Office of Public Works in developing Catchment-Based Flood Risk Assessment and Management Plans.

3.2.13.ii Policy EE14: Biodiversity, Flora and Fauna within Employment Priority Areas

It is the policy of the Council to protect and preserve the biodiversity value and significant landscape and cultural heritage features of lands rezoned for Enterprise Priority Two and Three employment uses through requiring design frameworks, which have been informed by site analysis, the location of biodiversity corridors and site features and will provide for new landscaping and a cohesive approach to treatment of roads, footpaths and boundary treatments.

It is an objective of the Council that should further proposals to rezone land for Enterprise Priority Three use arise that this proposal be subject to a Sustainability Assessment.

3.2.13.iii Policy EE15: Natural Features in Enterprise Priority Areas

It is the policy of the Council where existing streams, watercourses, are located on land zoned for Enterprise Priority One, Enterprise Priority Two and Enterprise Priority Three purposes, they should be protected and incorporated within the overall design for the area, thereby contributing to and connecting into the overall green network policy for the County. Riparian corridors should be kept free from development and be used as amenity for workers and visitors on the site, taking due care to protect and enhance the corridor's native biodiversity resource.

3.2.13.iv Policy EE16: Enterprise Priority Areas and Sustainability

It is the policy of the Council that areas zoned as Enterprise Priority One, Enterprise Priority Two and Enterprise Priority Three employment uses, contribute towards greater sustainability.

Industrial plots may often be characterised by large expanses of hard paving and in order to mitigate the problems associated with this resulting in drainage issues, increased runoff and flooding, proposals are required to incorporate Sustainable Urban Drainage Systems (SUDS) and other measures that address adaptation to climate change including the creation of integrated wetlands, the construction of green/living roofs whereby opportunities for exploiting solar energy and wind energy are taken.

4.3.7.xix Policy LHA21: River and Stream Management

It is the policy of the Council to implement a strategy (prepared on a regional basis) for the management of rivers and streams throughout the County.

The purpose of the strategy is to implement an integrated programme for the management of rivers and streams, dealing with the creation of riparian zones, issues such as nature conservation, flood control, pollution control, general recreation, walking and angling. It will facilitate monitoring of changes in water quality and aquatic habitats, and assist in the preparation of landscape improvement schemes for existing rivers and streams. The strategy will be prepared in consultation with local community and environmental groups, angling organisations and fisheries authorities and should have regard to the *"E.U. Water Framework Directive",(2000)* and the *"EU Floods Directive", (2007).* With respect to river and stream management it is an objective of the

Council that existing County flood plain management policy seeks to limit development in identified floodplains and to preserve riparian corridors. Development proposals in river corridors will only be considered providing they:

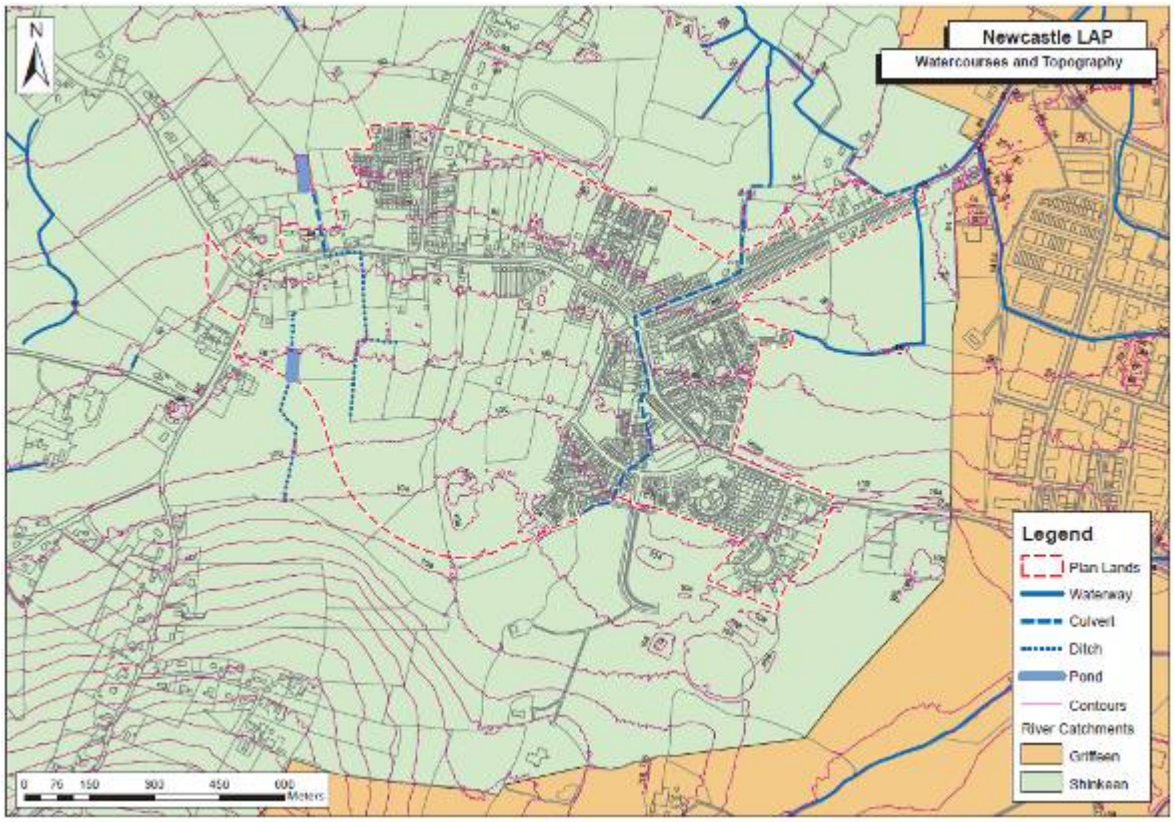
• Dedicate a minimum of 10m each side of the waters edge for amenity, biodiversity and walkway purposes where practical. This may be increased depending on the size of the watercourse and any particular circumstances;
• Do not have a negative effect on the distinctive character and appearance of the waterway corridor;
• Preserve the biodiversity of the site;
• Do not involve land filling, diverting, culverting or re-alignment of river or stream corridors.

4.3.7.xx Policy LHA22: Watercourses
It is the policy of the Council to protect, maintain, improve and enhance the natural and organic character of the watercourses in the County and to promote access, walkways and other recreational uses of their associated public open space, subject to a defined strategy of nature conservation and flood protection.

SLO 7. Areas of Flooding Potential – Assessment of Planning Applications:
The areas of flooding potential as indicated in the Dodder Catchment Flood Risk Assessment Management Study (CFRAMS) and the OPW alluvial soils floodplain maps are to be taken into account along with the requirements of Section 5 of The Planning System and Flood Risk Management Guidelines (November 2009) when assessing planning applications, with a view to restricting or, if necessary, refusing development proposals within such areas in order to avoid flooding events.

2 .SURFACE WATER AND STREAMS

The Newcastle LAP area is predominantly within the Shinkeen Stream catchment with the eastern part of the LAP area being within the Griffeen River catchment: both water-bodies are tributaries of the River Liffey.



Watercourses and Topography

The Shinkeen Stream and its tributaries form just to the north and north-west of Newcastle Village and outside the boundaries of the LAP. The Newcastle LAP lands slope down gradually from South (108m) to North (84m) with the higher lands of Athgoe Hill (177m) just within one kilometer to the south-west. The route of surface water drainage to the Shinkeen Stream follows the contours and dry ditches and water is directed, from the higher lands in the south, northwards. There is a substantial retention area at the western end of Newcastle South townland, see photo below and Section 3.1.1. There is at least one culvert which emerges along Main St for a short section of stream before re-entering a culvert/pipe under the Main St and emerges to feeds a lake in the grounds of Glebe House. A natural swale exists to the north of the village, just outside of the Plan lands, which leads to the origins of part of the Shinkeen Stream system which crosses the Peamount Road approximately 1km from the centre of the village. There has been recent interference to this swale (as result apparently of creating access to a agricultural field) on a 20-30 metre section of ditch which is causing surface water ponding.

The Griffeen[5] rises in Saggart Hill (395m OD) 3 km to the south of Rathcoole and Northwest of Brittas. It is fed by nearby streams which rise near Athgoe in Lyons Hill (197 mOD) and Athgoe Hill (177 mOD) just Southwest of Newcastle. It flows from there northwards through comparatively flat lands, through the xxxx Business Park and into an open channel alongside the Alymer Road. It continues flowing north eastwards to the west of Baldonnel Aerodrome to the Grand Canal and on into the Liffey at Lucan.

The recent residential development at the eastern end of Newcastle resulted in the culverting of a section of one of the tributories of the Griffeen. Provision for dealing with the surface water within these developments included the construction of a number of underground retention tanks.

Retention area at the western end of Newcastle South townland

[5] A full description of the Griffeen River catchment is provided in Appendix v. It is taken from the *"Report On Flood Event 5/6th November 2000 In The River Griffeen Catchment"* J B Barry And Partners Ltd. March 2001.

Main Street


Alymer Road

STRATEGIC FLOOD RISK APPRAISAL FOR NEWCASTLE

3.0 Introduction

The Newcastle LAP area is within the Shrinkeen Stream and Griffeen River catchments. The flood risk information in relation to the catchments is limited to provisional data (OPW initial Preliminary Flood Risk Assessment - PFRA), alluvial soils as a surrogate for Flood Risk and OPW recorded Flood Events. Recent flood events for the Griffeen include 1986, 1993 & 2000.

3.1 Identification of flooding incidences within the Local Area Plan area.

3.1.1 Review of OPW National Flood Hazard Mapping website-find and identify flood zone maps.

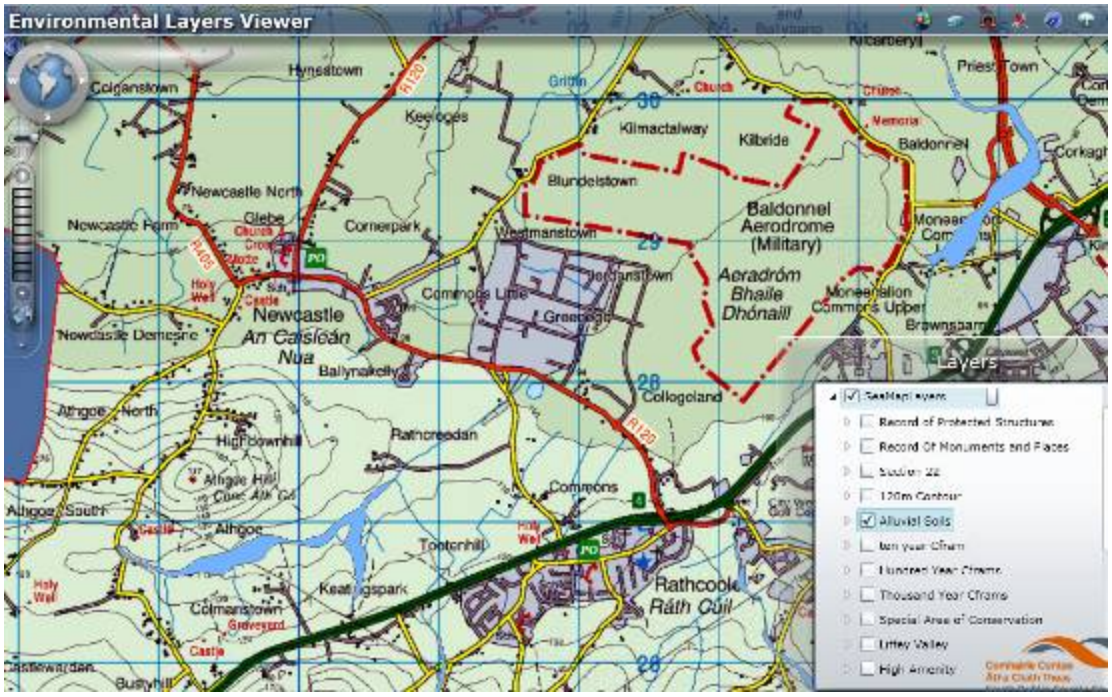
A review of the OPW National Flood Hazard Mapping website has been undertaken. A number of flooding points were identified in the Newcastle area. These points are identified on the attached OPW Summary Local Area Report, see Appendix II. Flood Mapping Website).

The website also includes information on a range of flood surrogate information. There are no “Benefiting Lands” or “Land Commission and Drainage District Maps” indicated within the area.

A desk study review of older Ordnance Survey maps (25” and 6”) was also undertaken, with a view to noting areas where ‘liable to flood’ had been recorded. None of the maps for the Newcastle area indicated such places. The early OS Newcastle Parish Map, see below, was also reviewed and details of water retention areas indicated on the map were investigated on site.

3.1.2 Mineral Alluvial Soil Mapping

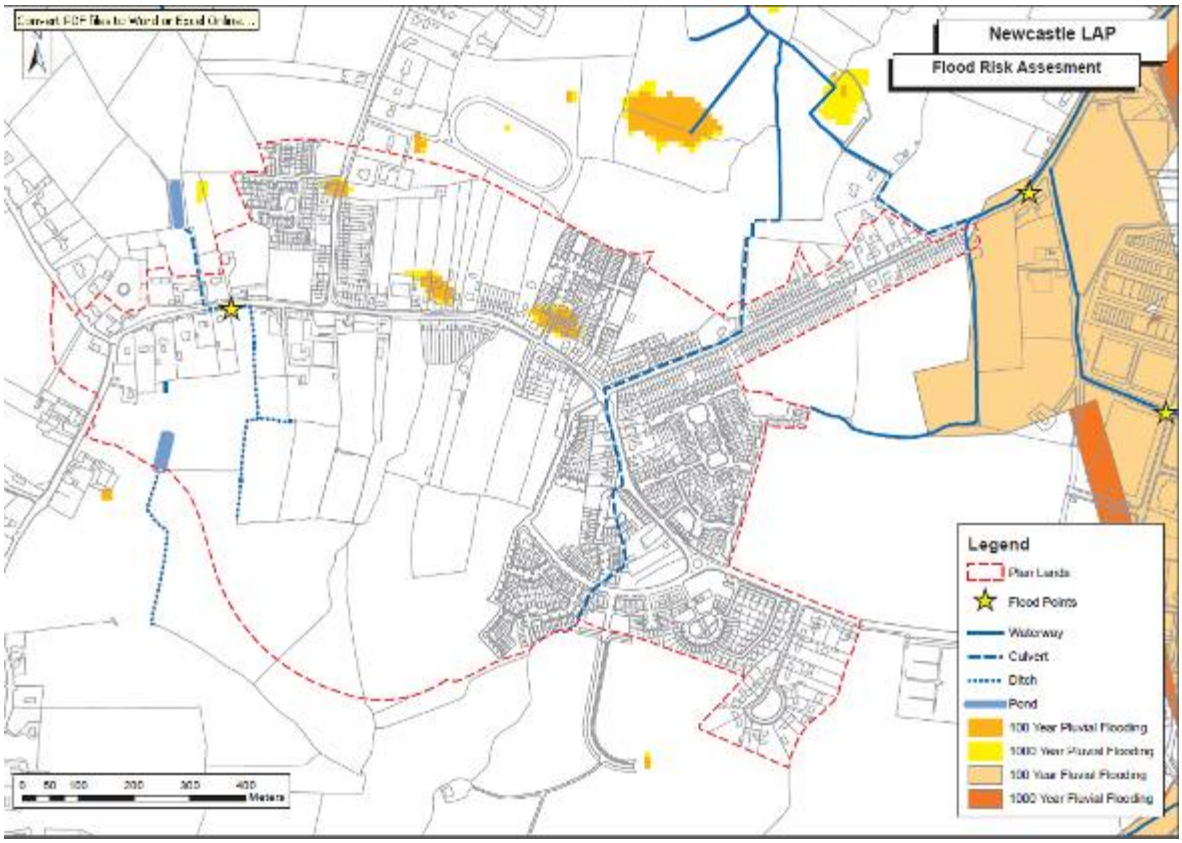
Soils and subsoils maps were created by the Spatial Analysis Unit, Teagasc in May 2006 and these maps were a collaboration between Teagasc, the Geological Survey of Ireland, the Forest Service and the EPA. The presence of alluvial soils can indicate areas that have flooded in the past (the source of the alluvium). There is no indication of alluvial soils in the Plan area but they do occur south of the Ballinakelly and Athgoe Hill areas.



Alluvial Soils: Source Geological Survey of Ireland

3.1.3 OPW Preliminary Flood Risk Assessment (PFRA)

The EU 'Floods' Directive requires that Member States undertake a national preliminary flood risk assessment by 2011 to identify areas where significant flood risk exists or might be considered likely to occur. The OPW have prepared Preliminary Flood Risk Assessment (PFRA) maps and these have gone on display as part of a public consultation exercise.



Map X. Surface Water, Culverts and OPW Preliminary Flood Risk Assessment (PFRA)

The Office of Public Works PFRA maps have identified a number of areas in and around the plan lands which would be areas of potential flood risk, both fluvial and pluvial (Figure X above). To the northeast of the plan lands, along the Alymer Road, fluvial data identifies a 1% Annual Exceedance Probability (AEP) 100year event occurring in this area, running in a northeast to southwest direction, within the River Griffeen upper catchment area: a marginal section of the plan lands is within this area. The pluvial data records identifies a 1% AEP 100year event occurring on a smaller scale in a number of locations along the Main Street within the plan lands. Flood events have been recorded by the OPW as occurring on the Alymer Road to the northeast of the plan lands and also along Main Street in the village (adjoining the one section of open stream), which occurred in November 2000. It has also highlighted some reoccurring flooding that has occurred in these areas.

The National Preliminary Flood Risk Assessment (PFRA) Overview Report records of number of properties flooded during past floods[6], although these refer predominantly to lower reaches of the respective water-bodies.

[6] From The National Preliminary Flood Risk Assessment (PFRA) Overview Report August 2011

County	Flood Name - Location	Start Date	No. of Properties Flooded
Dublin	Shinkeen Hazelhatch River Road	November 2000 05/11/2000	3
Dublin	Griffeen	November 2000 05/11/2000	107

3.1.4 Additional Information on historical flooding in the Griffeen Upper Catchment - College Lane/Aylmer Road and Newcastle Treatment Works[7]

The flooding in the upper catchment was not as severe as the flooding that occurred in the mid catchment and lower catchment.

Localised flooding occurred in the vicinity of College Lane and Aylmer Road. The gardens to two houses along Aylmer Road were flooded.

3.1.5 Major Flooding Emergency of 24th / 25th October 2011[8]

The average 81.4mm of rain that was recorded at a number of South Dublin County Council rain gauges on 24 October 2011 was 216% of the total rainfall recorded at Casement for the entire month of October 2010.

Despite the intensity of rainfall there was only one recorded incidence of flooding in Newcastle – one house on the Peamount Road.

3.1.6 LAP Area Walk-through

Ground observation within the area show routes the route of surface water drainage to the Shinkeen Stream follows the contours and hedge ditches and water is directed, from the higher lands in the south, northwards. There is a substantial retention area at the western end of Newcastle South townland, see photo below and Section 3.1.1. There is at least one culvert which emerges along Main Street for a short section of stream (source of flooding on Main St in 2000) before re-entering a culvert/pipe under the Main St and emerges to feeds a lake in the grounds of Glebe House. A natural swale exists to the north of the village, just outside of the Plan lands, which leads to the origins of part of the Shinkeen Stream system which crosses the Peamount Road approximately 1km from the centre of the village. There has been recent interference to this swale (as result apparently of creating access to a agricultural field) on a 20-30 metre section of ditch which is causing surface water ponding.

The opportunity exists to provide a surface water drainage system based on the principal of SuDS on the undeveloped zoned land within the LAP. A series of hedgerows, some with accompanying ditches or swales, can be utilized in this approach.The retention area at the western end of Newcastle South townland should be part of this system.

3.1.7 Forthcoming Information

The EU 'Floods' Directive requires Member States to prepare catchment-based Flood Risk Management Plans (FRMPs) by 2015 that will set out flood risk management objectives, actions and measures. The OPW

[7] Extract from *"Report On Flood Event 5/6th November 2000 In The River Griffeen Catchment"* J B Barry And Partners Ltd. March 2001

[8] October Interim Flooding Report 2011 Summary, SDCC

in co-operation with various Local Authorities are producing Catchment Flood Risk Assessment and Management Studies. These CFRAMS aim to map out current and possible future flood risk areas and develop risk assessment plans. They will also identify possible structural and non-structural measures to improve the flood risk of the area.

This Initial Strategic Flood Risk Assessment is based on currently available data and in accordance with its status, it will be subject to modification by these emerging datasets of maps and plans as they become available.

3.1.8 Down-stream improvements on the Griffeen and Shinkeen

The Griffeen River Flood Alleviation Scheme involved both mid-catchment and lower catchment works and was completed in 2005. The scheme provided for the deepening and widening of the Griffeen river channel from the river Liffey to the Grand Canal and provision of culverts under Griffeen Avenue and the railway.

There was also a Flood Relief Schemes on the Shinkeen Stream at Hazlehatch directly implemented by OPW in 2001 costing €1.13m (no further details at this stage).

SECTION 4 NEWCASTLE LAP FLOOD RISK MANAGEMENT POLICIES

Following on from the policy context outlined in Section 1 and from the information currently available to South Dublin County Council in relation to Flood Risk in the Newcastle area, Section 2, the information and objectives in relation to Flood Risk at present in the Draft Newcastle LAP[9] is detailed below.

It should be noted as previously described in Section 1.1, the lands within the LAP boundary are already zoned for development and as a consequence, the proposed use of the Justification Test is confined to the Development Management Justification Test[10] only.

Extract from Proposed Newcastle LAP

"3.4.2 Flood Risk

Flood risk information in relation to Newcastle Village and the LAP lands is limited to provisional flood risk assessment data, alluvial soils as a surrogate for Flood Risk and OPW recorded flood events.

By using fluvial (river and stream) data and pluvial (geological) data, the Office of Public Works (OPW) Draft Preliminary Flood Risk Assessment (PFRA) has identified a number of areas located in around Newcastle Village that could be at risk of potential flooding.

Fluvial data identifies the potential for a 1% or 1 in a 100 year event occurring within the catchment of the River Griffeen running from the south-east to the east and the north-east of Newcastle Village and the LAP lands. This includes for a substantial section of the Aylmer Road to the north-east of the village. Pluvial data identifies the potential for small scale 1% or 1 in a 100 year events occurring in a number of locations along the Main Street.

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[9] It should be note that the full range of policies and objectives contained within the South Dublin County Council Development Plan 2010 – 2016 will apply to all development proposals within the Newcastle Local Area Plan.

[10] The Development Management Justification Test from *"The Planning System and Flood Risk Management – Guidelines for Planning Authorities 2009"* is replicated in Appendix 1

Flood events have been recorded by the OPW as having taken place in November 2000 along the Alymer Road to the northeast of the village and also within the village along Main Street between Hazelhatch Road and Peamount Road. The OPW records indicate that these flood points have been subject to reoccurring floods. There are no alluvial soils indicated within or around Newcastle Village and the Plan Lands.

5.3.5 Water and Water Management
5.3.5.1 SUDS
The collection and on-site storage of surface water for delayed discharge at surface level to local water catchments is required to meet the requirements of the Greater Dublin Drainage Strategy. The Drainage Strategy sets out to ensure that development sites do not generate any additional discharge of surface water over the baseloads of existing greenfield sites.

It is therefore proposed that this Local Area Plan introduces the need to incorporate comprehensive Sustainable Urban Drainage Systems (SUDS) within all new developments in Newcastle. This will require surface water drainage to occur naturally at surface level by following the contours provided by Newcastle's sloping topography. The SUDS network will require minor modification to permitted developments that are yet to be built and the utilisation of burgage plot boundaries.

By utilising a SUDS network, water will be conveyed slowly from elevated lands to the south of Newcastle Village in a northerly direction through a series of ditches, swales (new and existing) and surface water wetlands, depressions and meadows (where appropriate) developed to permeate the village before flowing into further SUDS elements in low lying parkland to the north of Main Street.

Existing ditches and swales provide ideal routes for the conveyance of water given that they have largely been developed over time to follow the natural flow of water and support a range of flora and fauna that benefit from the presence of water.

Water that flows through and is generated by new development will be conveyed through Newcastle's Green Infrastructure via existing ditches found at the edges of the Burgage field system and along swales that follow green routes and traverse parklands. All parks will contain incorporate SUDS and the larger parks will include surface level retention ponds and/or wetland areas.

The on-site retention of surface water through landscaped SUDS will also provide a valuable resource for the community by providing a water source for public realm maintenance and landscape works and creating attractive water features.

Various SUDS features to be utilised in tandem with swales, ditches, retention ponds and wetlands are detailed in the standards section of this Local Area Plan. It is therefore an objective of this Local Area Plan:

- *To promote the sustainable collection and on-site retention of surface water for delayed discharge to the local water system and for use as an on-site resource and as a means of creating a biodiversity network that will retain and develop existing flora and fauna. (Objective GI11)*
- *That a linked SUDS network shall be implemented fully across the Plan Lands in accordance with national and regional SUDS requirements including the Greater Dublin Strategic Drainage Study and all proposed developments shall contribute to the achievement of this integrated network in order to reduce surface water run-off and to minimise the risk of flooding of the Plan Lands and surrounding lands. This shall include for a large attenuation wetland area to form part of a neighbourhood park to the north of Main Street, which will collect the remaining surface water from the developed SUDS network to the south prior to it feeding the stream system to the north of the village. (Objective GI12)*
- *That all development shall incorporate on site SUDS technologies detailed in the standards section of this Local Area Plan such as porous grass paviors, green roofs, rainwater recycling systems and soakaways. (Objective GI13)*
- *That Existing natural swales and ditches shall be retained to form an integral part of the overall SUDS network. (Objective GI14)*

• *That SUDS elements such as swales, detention and retention basins and other landscape based attenuation features be planted with suitable riparian vegetation and water tolerant tree planting that will clean and attenuate surface water flow. The planting of such species will be particularly required within parkland areas and along the east-west running SUDS elements in order to help intercept and direct waterflows. (Objective GI15)*

• *That all swales utilised within the SUDS network shall be of an appropriate (shallow and wide) dimension to allow for ease of maintenance including mowing and be designed in the interest of health and safety where practical. (Objective GI16)*

- *Ensure that any proposals on lands adjoining the larger retention pond identified at the western end of the Newcastle South Townland under the Newcastle Parish Ordnance Survey Map, 1865 (see Fig. 4.3), shall seek to incorporate this feature and be accompanied by reports from suitably qualified persons on both the surface water management and historic significance of this feature. (Objective SF5)*

5.3.5.2 Flood Risk Management

The requirements of the 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' (2009), need to be taken into account in order to ensure that flooding within the Plan Lands does not impact on human health, property, the ability to meet the requirements of the EU Water Framework Directive, and the need to protect biodiversity.

In assessing development proposals in areas identified at risk of flooding (see OPW Flood Risk Data Map in Section 3), South Dublin County Council will adopt a risk-based sequential and balanced approach, while at the same time allowing consideration of appropriate and necessary development, including the application of the Justification Test in accordance with Polices WD13 (Risk of Flooding) and WD14 (Identified Flood Risk Areas) of the South Dublin County Council Development Plan. It is therefore an objective of the proposed Local Area Plan that:

• *All planning application for residential and/or commercial floorspace on sites in areas at risk of flooding shall be accompanied by a Flood Risk Assessment that is carried out at the site-specific level in accordance with 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' (2009). The scope of flood risk assessment shall depend on the type and scale of development and the sensitivity of the area. (Objective GI17)"*

5. CONCLUSION

The content of this Initial Strategic Flood Risk Assessment is based on currently available information as well as estimates of the locations and likelihood of flooding. In particular, the detailed assessment and mapping of areas of flood risk awaits the publication both of Catchment-based Flood Risk Assessment and Management Plans [CFRAMs]. Despite this, the Flood Risk mapping does indicate areas where flood risk may exist and where more detailed assessment should be undertaken and indicates areas where the Development Management Justification Test and Site –Specific Flood Risk Assessments will be required in the event of development proposals. The proposed Newcastle Local Area Plan has incorporated policies to reflect the requirements of the 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' (2009) in relation to Flood Risk and the use of SuDS in dealing with surface water run-off when the area is developed.

Appendix I

Box 5.1 Justification Test for development management (to be submitted by the applicant)

When considering proposals for development, which may be vulnerable to flooding, and that would generally be inappropriate as set out in Table 3.2, the following criteria must be satisfied:

1. The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.
2. The proposal has been subject to an appropriate flood risk assessment that demonstrates:
   - (i) The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;
   - (ii) The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;
   - (iii) The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and
   - (iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

The acceptability or otherwise of levels of residual risk should be made with consideration of the type and foreseen use of the development and the local development context.

The Development Management Justification Test from *"The Planning System and Flood Risk Management – Guidelines for Planning Authorities 2009"*

OPW *National Flood Hazard Mapping*

Summary Local Area Report

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

The map centre is in:

County: Dublin

NGR: O 000 286

Map Scale 1:15,532

Map Legend

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

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

8 Results

1. Lyons Demesne Access Nov 2000 — Start Date: 05/Nov/2000
County:Kildare — Flood Quality Code:3
Additional Information: Reports (2) More Mapped Information

2. Newcastle village Nov 2000 — Start Date: 05/Nov/2000
County:Dublin — Flood Quality Code:3
Additional Information: Reports (1) More Mapped Information

3. Aylmer Road Newcastle Nov 2000 — Start Date: 05/Nov/2000
County:Dublin — Flood Quality Code:3
Additional Information: Reports (2) Press Archive (1) More Mapped Information

4. Peamount Road Recurring — Start Date:
County:Dublin — Flood Quality Code:4
Additional Information: Reports (1) Press Archive (1) More Mapped Information

5. Newcastle Greenoge Recurring — Start Date:
County:Dublin — Flood Quality Code:4

Report Produced: 06-Jul-2012 12:32

Additional Information: Reports (1) More Mapped Information

6. Lyons Road Recurring — Start Date:
County: Dublin — Flood Quality Code: 4

Additional Information: Reports (1) More Mapped Information

7. Newcastle Glebe Dublin Recurring — Start Date:
County: Dublin — Flood Quality Code: 4

Additional Information: Reports (1) More Mapped Information

8. Aylmer Road Newcastle recurring — Start Date:
County: Dublin — Flood Quality Code: 4

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

Appendix III:

FLOODING ON RIVER GRIFFEEN (LIFFEY CATCHMENT) NOV 2000

Introduction

Serious flooding occurred on the 5th and 6th November 2000 in the lower reach of the Griffeen River. A considerable number of properties in the Griffeen Valley Park and Lucan Village were flooded during this event. Previous flooding in Lucan Village had occurred on the 11th and 12th June 1993 and to a lesser extent during Hurricane Charlie on the 25th/26th August 1986.

The Griffeen rises in Saggart Hill (elevation 395m OD) 3 km to the south of Rathcoole. It is fed by nearby streams which rise near Athgoe just southwest of Newcastle, It flows from there northwards passing beneath the Grand Canal and through the Griffeen Valley Park before heading northwest to Lucan where it outfalls to the River Liffey at the grounds of Italian Embassy . The catchment area to Lucan Village is approximately 38km2. The current urban fraction of the catchment is estimated to be approximately 24% (9km2).

Flood Estimates

A hydrometric gauging station (09002) is located in Lucan Village approximately 500m upstream of its confluence with the River Liffey and is operated by the EPA on behalf of Dublin City Council since 1977. The highest gauged flow for this station is 12cumec and flow rates in excess of this are based on extrapolation of the rating curve. Since records began in 1977, there have been three relatively significant flood events, viz.

- 25th August 1986 16.6cumec
- 11th June 1993 22.5cumec
- 6th November 2000 23.6cumec

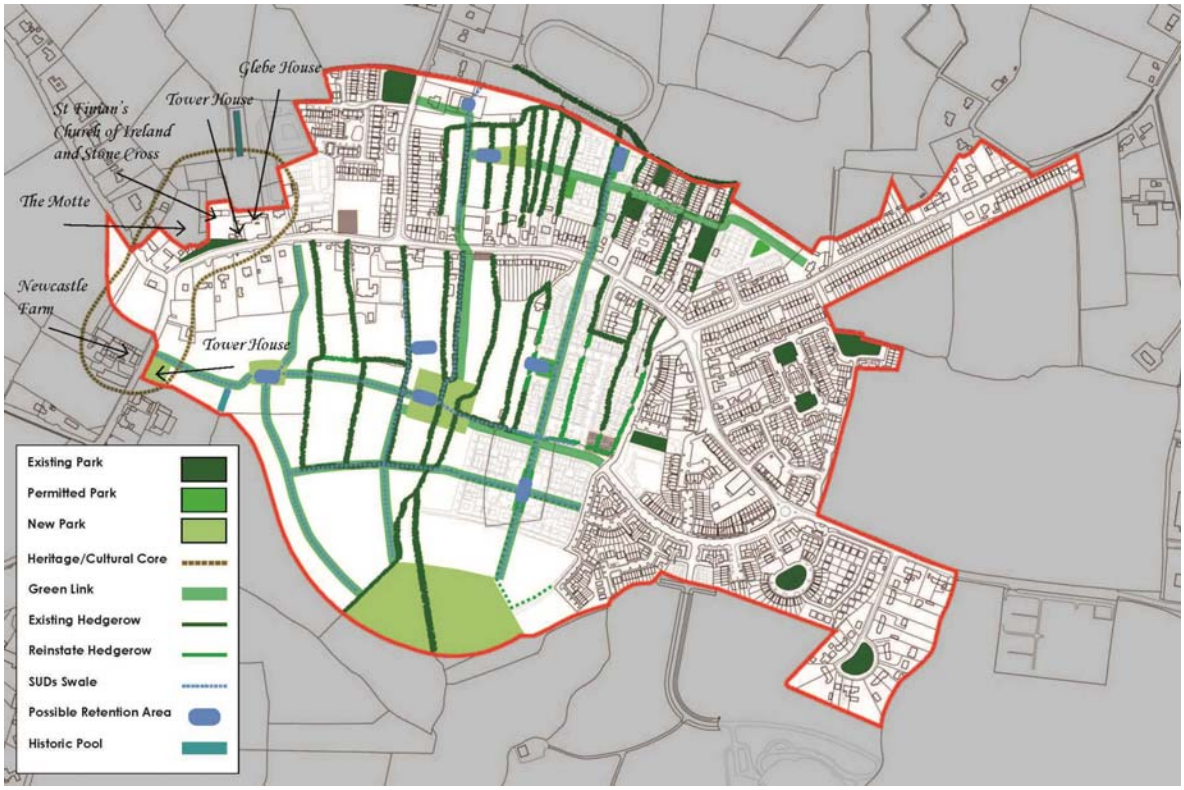
Flood frequency analysis of the Annual Maximum flow series (N= 24) gives a Q50 of 22.6cumec, a Q100 of 25.8cumec and a QBAR of 7cumec (without including the statistical standard error). This analysis suggests that the flood peak of 23.6cumec has return period magnitude of 60years (Hydro E, 2002). The flood runoff rate of this flow is 0.62cumec/km2 (6.2 l/s per ha). The percentage storm runoff for this event based on rainfall-routing is estimated to be of the order of 55 to 60%.

Rainfall

Wet antecedent conditions preceded the flood event with 20mm of rainfall being recorded on the 2nd November, three days prior to the flood. Such antecedent wetness conditions may have contributed to increased soil moisture levels and hence increased storm runoff (J.B. Barry & partners, 2001). The autographic rainfall recorder at Casement Aerodrome (Baldonnel Aerodrome) located in the Griffeen catchment, indicated a total rainfall depth of 84mm (70year return period) over a 24hour period and 58mm (25year) in a 12hour period. At Dublin Airport 66mm of rain fell (30yr return period) and at Glenasmole (Castlekelly) 137.2mm was recorded (approx 100year event, 186mm was recorded at the same gauge during Hurricane Charlie).

The June 1993 event produced 108.6mm of rainfall in just over 24hours at Casement setting new records:
12hour rainfall – a return period of over 100years
24hour rainfall – a return period of 250years
The fact that the November 2000 storm produced greater flooding than in 1993 is probably due to the antecedent wetness conditions in the catchment leading up to the storm event.

Appendix IV: Green Infrastructure Map (Newcastle Local Area Plan)



Appendix V

GRIFFEEN CATCHMENT DESCRIPTION [11]

"2.1 Griffeen Catchment Topography

2.1.1 The Griffeen River is a tributary of the River Liffey, in Hydrometric Area No. 9 of the Irish River Network System. Its catchment measures 38.8km2 (3880ha) approximately.

2.1.2 The Griffeen rises in Saggart Hill (395m OD) 3 km to the south of Rathcoole and Northwest of Brittas. It is fed by nearby streams which rise near Athgoe in Lyons Hill (197 mOD) and Athgoe Hill (177 mOD) just Southwest of Newcastle. It flows from there northwards through comparatively flat lands west of Baldonnel Aerodrome from Commons Little to the Grand Canal (near the 12th lock). It continues north through a railway crossing into the parkland setting of Griffeen Valley Park before heading northwest through Glebe and thence to the Vesey Park at Adamstown Road before turning northwards to flow in a small ravine into Lucan Village. It then flows into the Liffey through the grounds of the Italian embassy.

2.1.3 The principal roadways which traverse the catchment are the N4 and the N7 from east to west/ southwest. The Grand Canal and the Dublin-Cork rail line are other man-made features of significance.

2.1.4 The river course is initially steep but noticeably enters a plateau-like reach in the vicinity of Baldonnel Aerodrome before continuing at a gentle gradient as far as the N4 (Lucan Bypass). The river descends rapidly in a ravine from the N4 to Lucan Village and shortly thereafter to its confluence with the River Liffey.

2.1.5 The topographical disposition of this relatively narrow catchment is to provide a natural attenuation plain for runoff from the Dublin foothills (at its source) which tends to counter fast release of floodwaters into the urban reaches further to the north. However, the narrow ravine set in the heart of the catchment's urban fraction serves to concentrate the effects of floodwaters after passing through the culvert under the N4.

2.1.6 There is no appreciable floodplain from the N4 to the river Liffey. Much of the limited land area which is available as a floodplain has been developed, thereby exacerbating the vulnerability to flooding of dwelling places and commercial premises."

[11] The description of the Griffeen River catchment is taken from the *"Report On Flood Event 5/6th November 2000 In The River Griffeen Catchment"* J B Barry And Partners Ltd. March 2001. The report was produced following the Griffeen River Catchment Management Study which was prepared in 1999/2000 (this involved the hydraulic assessment of the entire river and preliminary flood alleviation and planning recommendations).