



CARLOW COUNTY COUNCIL

COMHAIRLE CHONTAE CHEATHARLOCHA



***Flood Risk Assessment:
New Carpark Layout,***

***Carlow County Council,
Athy Road,
Co Carlow.***

18th September 2023

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Revision	Issued Date	Description	Prepared	Reviewed	Approved
Rev 1	15 th October 2022	For Part 8 Planning	Angela Whelan	Kieran Cullinane	Kieran Cullinane
Final	18 th October 2022	For Part 8 Planning	Angela Whelan	Kieran Cullinane	Kieran Cullinane

INTRODUCTION

1.1 Background

A Site-Specific Flood Risk Assessment (SSFA) analysis was carried out for the proposed improvements and expansion of the Carpark at, Carlow County Council, Athy Road, Co Carlow with this resulting report. This SSFA report was prepared to form part of Part 8 planning process and comply with current planning legislation on any flood risk associated with both the proposed and existing sites.



Figure 1: Aerial View of the Site

1.2 Objectives

The objective of this report is to inform the planning authority regarding any Flood risk for the potential development of the site. The report will assess the site and refurbishment proposals in accordance the requirements of “The Planning System and Flood Risk Management Guidelines for Planning Authorities”.

The report will provide the following:

- The site’s flood zone category.
- Information to allow an informed decision of the planning application in the context of flood risk.
- Appropriate flood risk mitigation and management measures for any residual flood risk if required.

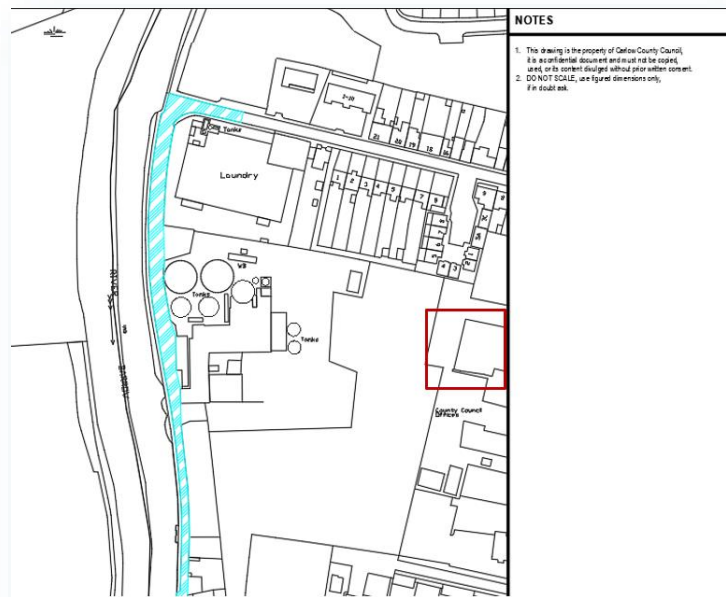
1.3 Flood Risk Assessment Scope

This Site-Specific Flood Risk Assessment relates only to the proposed site and its immediate surroundings. This report uses information obtained from various sources, together with an assessment of flood risk for the existing land and proposed refurbishment. This assessment is undertaken in accordance with the requirements of “The Planning System & Flood Risk Management-Guidelines for Planning Authorities” referred to as guidelines within this report. The Strategic Flood Risk Assessment for Draft Carlow County Development Plan 2022-2028 to include information obtained from the Office of Public Works flood maps, it has been identified that the existing site lies within an area classified as Flood Zone C indicating that the risk of flooding from rivers and sea is low.

2. Site Description

2.1 History and Current Use

Carlow is a land-locked county located in the Southeastern Region. The county has an area of 897km². Carlow's southern, western, and eastern boundaries are demarcated by the county's three principal geographic features - the River Barrow, the River Slaney and the Blackstairs Mountains, please refer to appendix 1 for settlement map of Co Carlow sourced from Strategic Flood Risk Assessment for Draft Carlow County Development Plan 2022-2028. Historical Flood Levels of Carlow Town and Past Flood Associated Information is provided in figure 2 illustration the historical flood level comparisons from 1947 to 2009, note the approximate location of the proposed site outlined in red is outside the flood risk areas. The current site is a green field site and is zoned town center as outlined in Carlow County Development Plan 2022-2028 please refer to appendix 2 for Carlow County Development Plan Map of Zoning. The site is not located within a Flood Zone A; area of a Chance of Flooding Once every 100 Years or Flood Zone B; Chance of Flooding Once Every 1000 years. Please refer to appendix 3 for full map of Flood level Comparisons map.



Flood Level Comparisons

Location/Year	1947	1990	1993	1995	Jan 2008	Aug 2008	Nov 2009
Cox's Lane	47.06m	no rec	no rec	46.80m	46.514m	46.495m	no rec
Centaur St.	47.08m	46.71m	46.53m	46.81m	46.416m	46.578m	46.965m
Kennedy St.	47.12m	46.69m	46.42m	46.83m	46.332m	46.443m	46.937m
Pembroke	no rec	46.40m	46.29m	46.45m	no rec	no rec	46.566m

Figure 2: Carlow Town Flooding

According to map's sourced from Irish Water Web Map, Gas Network Information and ESB Networks there are no underground utilities running through the proposed new sites, please refer to appendix 4 to 6 for area maps provided. There are no monuments within the site listed in the Record of Monuments and Places (RMP) or Sites and Monuments Record (SMR). The site to the north contains no Protected Structure as listed in Carlow County Development Plan 2022-2028; however, the site is situated to the rear of three Protected Structures to include Greenville (RPS No. CT33), Presbyterian Church (CT32) and Carlow VEC (RPS No. CT35).

2.2 Topography levels

Existing topography levels of the proposed car park area 4 proposed carparking located to the North of the existing carpark varied between +48.32 to +49.24 as illustrated in below survey drawings figure 3, existing topography levels. Proposed level of the site varied between +49.11m and +49.82m.

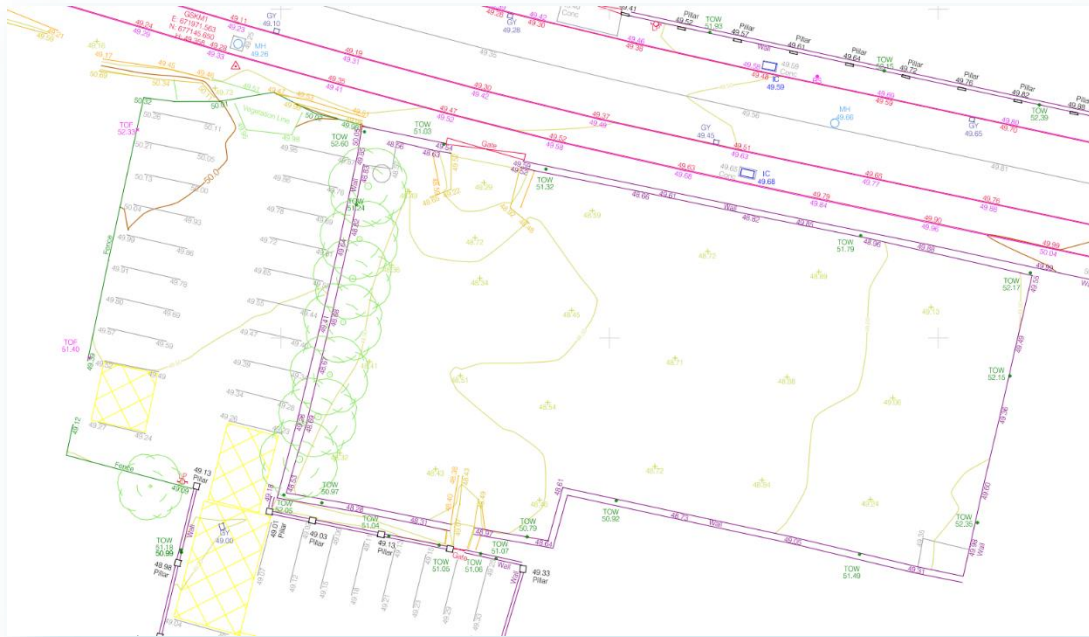


Figure 4: Existing topography levels.



Figure 5: Proposed topography levels.

2.3 Proposed Site

Carlow County Council propose to refurbish the existing carparking and create two additional carparks, located to the North and South of the existing car parking of their Carlow County Council’s Headquarters located on the Athy Road, Co Carlow. This proposed redesign will allow the entry of traffic from the Athy Road and the Andy Murphy Road and exit from the carpark onto the Andy Murphy Road. The location of the site is illustrated on Figure 4, Site location.

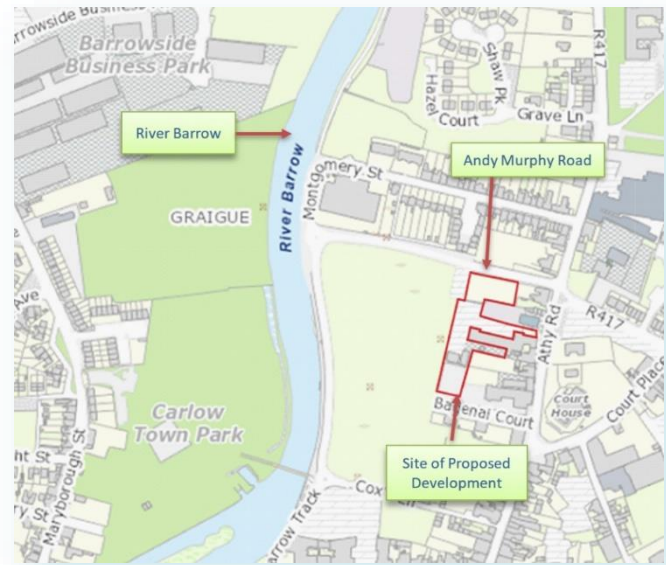


Figure 6- Site Location

The scheme will also include the refurbishment of the existing carparking area’s 1 and 2. Area 3 and Area 4 includes the proposed new additions to the carpark. Please refer to the appendix 6, Site Layout drawing of proposed works. The site located to the North is referred to as Area 4 and is situated adjacent to Andy Murphy Road. While the proposed carparking area to the South is referred to as carpark area number 6 please refer to figure 7 Area’s of Proposed Site Development.

The proposed development will include the provision for 94 carparking spaces to encompass 19 public carparking spaces along with 58 staff carparking spaces.

- Area 4 includes the provisions for a proposed additional 28 number carparking places, to include number 4 electric vehicle charging stations and 4 wheelchair parking space, overlay with asphalt concrete surface.
- Retention of an existing stone structure to the southeast of the proposed site.
- Retention of existing boundary stone wall to the north, east



Figure 7: Area’s of Proposed Site Development

and west of the site. Existing opening to the south boundary wall as outlined in red in figure 1 to accommodate a new entrance.

- Provisions for three barrier's systems, one located to area 4 at entrance and exit leading onto Andy Murphy Road. The second barrier system allowing access and exit to the existing carparking area 1. The third barrier to be located to the south of the existing site to the entrance of a staff carparking area 2 and 3.
- Provision of delineate pedestrian footpath to the south of site adjacent to the boundary of existing graveyard connected to Carlow Presbyterian Church (Scots' Church).
- Upgrading of existing surface with asphalt concrete surface.
- Area 1 and 2 to include provision for 19 public carpark spaces to include 4 wheelchair spaces and a 1.8m delineated wide footpath. Re-surfacing marking to existing carpark area 1 and area 2.
- Area 3 propose 14 staff carparking spaces with similar asphalt concrete surface as areas 1,2 and 4.
- Installation of LED public lighting and associated ducting.
- Topsoiling, grass seeding and planting.
- Installation of associated signage and road markings as necessary.
- Installation of Surface water drainage to proposed site to connect to existing surface water drainage.
- Installation of Electric Car (EV) Charging Point and all associated ducting to both the main building connection supply and to connection point located on the Athy road.

3. Principles of Flood Risk Assessment

A Strategic Flood Risk Assessment of the National Policy Objectives (NPO) within the Ireland 2040 National Planning Framework was undertaken with the aim of ensuring that flood risk is a key consideration in delivering the proposed strategic sustainable land-use planning decisions. It sets out how all levels of the planning process, from national level strategic assessments to individual planning applications, should follow the sequential approach set out in the 2009 Guidelines on Planning and Flood Risk Management.

Flood Risk is related to the probability of flooding and the magnitude of the consequences. Flood Risk Assessments aim to identify, quantify, and communicate to decision makers and other stakeholders the risk of flooding to land, property & people. This assessment is a site-specific flood risk assessment pertaining to the proposed site.

This Flood Risk Assessment & report have been prepared in accordance with the principles of flood risk assessment as scheduled in the Department of Environment, Heritage & Local Government / Office of Public Works (OPW) publications:

- The Planning System and Flood Risk Management - Nov 2009; and
- The Planning System and Flood Risk Management Guidelines for Planning Authorities: Technical Appendices: - Nov 2009

The flood risk assessment requires an understanding of the sources of flood water, the people, and assets (known as receptors) affected by the flooding and the pathways by which the flood water reaches those receptors. This is known as the Source-Pathway-Receptor (S-P-R) Model. Flood Risk Assessments require identification and assessment of all three components including:

- The probability and magnitude of the sources (e.g., high river levels, sea levels).
- The performance and response of pathways and barriers to pathways.
- The consequences to receptors such as people, properties, and the environment.

Normally, site-specific flood risk assessments include hydraulic modelling of the river or coastal cell across a wide enough area to appreciate the catchment wide impacts and hydrological processes involved. The Flood Risk Assessment should however be proportionate to the risk, scale, nature, and location of the proposed development. This development will be shown to be at a low risk of flooding, and it is held that hydraulic modelling of the river catchment is not necessary for this Flood Risk Assessment given the extent of information available, as detailed within this report, along with the size & nature of the proposed development.

3.1 Planning Principles, Guidelines and Flood Risk Assessment

The Planning System and Flood Risk Management Guidelines for Planning Authorities November 2009 published by The Office of Public Works OPW, provides a mechanism for the incorporation of flood risk identification assessment and management into the planning process.

The core objective of the Flood Risk Management FRM Guidelines is to:

- Avoid inappropriate development in areas at risk of flooding.
- Avoid new developments increasing flood risk elsewhere.
- 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 the requirements of EU and national law in relation to the natural environment and nature conservation are complied with for flood risk management.

3.2 Sequential Approach & Justification Test

The key principles of The FRM Guidelines is to apply the Sequential Approach to the planning process 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, please find table 1 below information extracted from the Sequential approach principles in flood risk management, FRM Guidelines sourced Office of Public Works 2009.

Avoid	<i>Preferably choose lower risk flood zones for new development.</i>
Substitute	<i>Ensure the type of development proposed is not especially vulnerable to the adverse impacts of flooding.</i>
Justify	<i>Ensure that the development is being considered for strategic reasons. See Boxes 4.1 and 5.1.</i>
Mitigate	<i>Ensure flood risk is reduced to acceptable levels.</i>
Proceed	<i>Only where Justification Test passed ensure emergency planning measures are in place.</i>

Table 1: Sequential approach principles in flood risk management

3.3 Methodology

The Flood Risk Management Guidelines document outlines three stages in the assessment of flood risk 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 issues.
- *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 report has been prepared in accordance with these stages.

3.4 Flood Zones

The Planning System and Flood Risk Management, Guidelines for Planning Authorities document defines three flood zone types as follows:

Flood Zone A	Where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding)
Flood Zone B	Where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding); and
Flood Zone C	Where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). Flood Zone C covers all areas of the plan which are not in zones A or B.

Table 2 : Flood Zone Type

The flood zone type is determined based on current water surface levels without allowance for climate change. The Guidelines divide developments into three vulnerability classes as follows:

- Highly vulnerable developments
- Less vulnerable developments
- Water compatible developments

The Guidelines include a matrix that determines the appropriateness of different types of development based on their vulnerability classification and the Flood Zones in which they are located.

The matrix of vulnerability versus flood zone illustrates the appropriate development and requirement to meet the Justification Test, please refer to table 3 ; Matrix of vulnerability versus flood zoned sourced Office of Public Works 2009.

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

Table 3: Matrix of vulnerability versus flood zone

Where the matrix indicates that a development is not appropriate it may still be justified based on a procedure described as a Justification Test. The Sequential Approach mechanism in the planning process is outline below and restricts development types to occur within flood zone appropriate to their vulnerability class as outlined in Figure 8, Sequential approach principles in flood risk management.

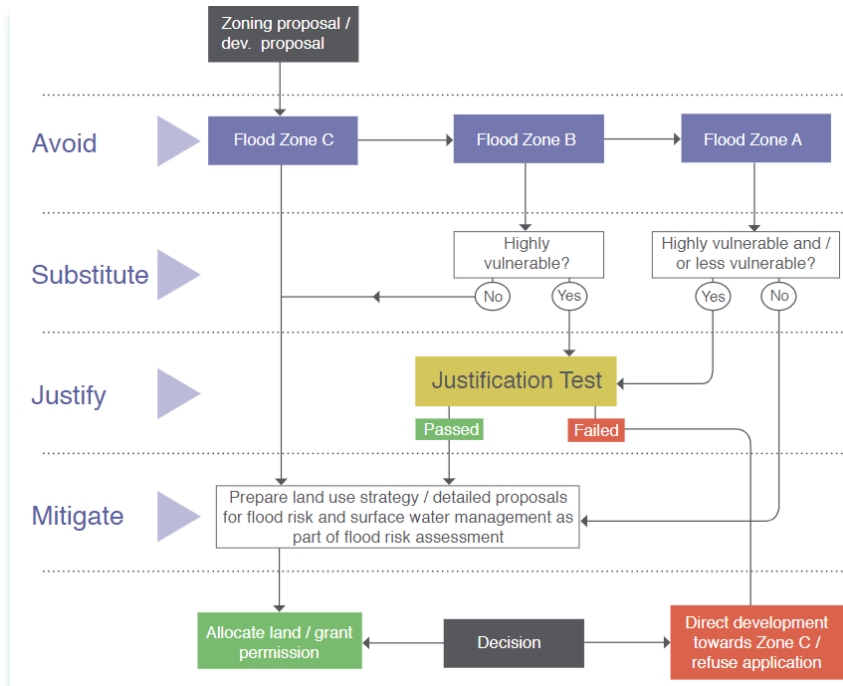


Figure 8: Sequential approach mechanism in the planning process

3.5 Site Vulnerability Class

The proposed development of site Area 4 and Area 3 is for transport infrastructure and therefore as outlined by The Planning System and Flood Risk Management, guidelines for Planning Authorities are categorized as a less vulnerable development. Please refer to table 4: Classification of vulnerability of different types of development.

This proposed site is not located within a flood risk area, as outlined in section 6 (6. Justification Test) of this report, the proposed development is located within Flood Zone C please refer to table 6, Flood Zone Type for further information. For these reasons the proposed development is deemed appropriate and as such, a Justification Test is not required.

<i>Vulnerability class</i>	<i>Land uses and types of development which include.</i>
Highly vulnerable development (Including essential infrastructure)	<p>Garda, ambulance and fire stations and command centers required to be operational during flooding.</p> <p>Hospitals.</p> <p>Emergency access and egress points.</p> <p>Schools.</p> <p>Dwelling houses, student halls of residence and hostels; Residential institutions such as residential care homes, children's homes, and social services homes.</p> <p>Caravans and mobile home parks; Dwelling houses designed, constructed, or adapted for the elderly or, other people with impaired mobility; and</p> <p>Essential infrastructure, such as primary transport and utilities distribution, including electricity generating power stations and sub-stations, water and sewage treatment, and potential significant sources of pollution (SEVESO sites, IPPC sites, etc.) in the event of flooding</p>
Less vulnerable development	<p>Buildings used for: retail, leisure, warehousing, commercial, industrial, and non-residential institutions.</p> <p>Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans.</p> <p>Land and buildings used for agriculture and forestry.</p> <p>Waste treatment (except landfill and hazardous waste); Mineral working and processing; and</p> <p>Local transport infrastructure</p>
Water-compatible development	<p>Flood control infrastructure.</p> <p>Docks, marinas, and wharves. Navigation facilities.</p> <p>Ship building, repairing, and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.</p> <p>Water-based recreation and tourism (excluding sleeping accommodation); Lifeguard and coastguard stations.</p> <p>Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and</p> <p>Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).</p>

Table 4: Classification of vulnerability of different types of development.

3.6 Report Inputs

- This report has been prepared based on information obtained from the following sources:
- Strategic Flood Risk Assessment
- South Eastern CFRAM Study
- National Flood Hazard Mapping by the OPW – www.floodinfo.ie
- Catchment Flood Risk Assessment and Management (CFRAM) studies – South Eastern CFRAM Study
- Author’s inspection of the relevant premises on 14th of September 2022

4. Flood Risk Assessment

The proposed sites are situated in Carlow Town Centre as outlined in Appendix 2: Carlow County Development Plan 2022-2028. The main channel of the River Barrow is located approximate 200m from the proposed site and outside any flood risk area, please refer to Figure 6 Site Location of this report for location of proposed site. A desktop study and site inspection have been conducted, and it has been established that the relevant site is in an area which is not susceptible to flooding. Details of the desktop study are listed below.

4.1 Stage 1: Flood Risk Identification

The purpose of this stage is to identify whether there may be any flooding issues relating to the subject sites. This report assesses the risk from different types of flooding as outlined in table 5. As previously mentioned the site is located within Flood Zone C and is therefore regarded to be low risk. The site is located circa 60km from the nearest coastline and is not in danger of tidal or estuarine flooding. This report also confirms that no past floods due to brach or failure of reservoir embankments or walls have been reported by the Local Authorities. There are no canals within the vicinity of the site. Please refer to table 5.

<i>Source / Pathway</i>	<i>Significant</i>	<i>Comment / Reason</i>
<i>Tidal / Coastal</i>	No	The sites are located circa 60km inland from the Irish Sea.
<i>Fluvial</i>	No	The subject sites lie within flood Zone C and therefore is a low risk of fluvial flooding.
<i>Pluvial (Urban Drainage)</i>	No	There is no urban drainage or water supply infrastructure located in the vicinity of either sites.
<i>Pluvial (Overland Flow)</i>	No	Neither site is surrounded by significantly elevated lands and does not provide an important surface water discharge point to adjacent lands.
<i>Blockage</i>	No	There is no blockage noted in the area, to include public sewers or road drainage flooding or infrastructure failure.
<i>Groundwater</i>	No	There are no significant springs or groundwater discharges mapped or recorded in the immediate vicinity of the site.
<i>Surface Water Flooding</i>	No	Reviewing online flood mapping, does not note any historic flooding at these sites which confirmed by the PFRA which again does not record any events in the vicinity of the development sites.

Table 5: Possible Types of Flooding at Subject Site

In accordance with ‘The Planning System and Flood Risk Management – Guidelines for Planning Authority – DOEHLG 2009’, any potential flood risks are analyzed in the subsequent ‘Stage 2: Initial Flood Risk Assessment’ and ‘Stage 3: Detailed Flood Risk Assessment’ sections of this study report.

4.2 Stage 2: Initial Flood Risk Assessment

The purpose of this stage of the assessment is to establish the level of flooding risk that may affect the subject sites and to appraise the adequacy of the existing or historical information and data which may indicate the level or extent of any flood risk. The following information and data were collated as part of the Initial Flood Risk Assessment for the proposed site.

4.2.1 Carlow Local Area Strategic Flood Risk Assessment 2020

The Strategic Flood Risk Assessment (SFRA)) for Draft Carlow County Development Plan 2022-2028 confirms that Carlow town has flooded frequently from the River Barrow, the worst event occurring in 1947 which has been plotted in www.floodmaps.ie. The examination of the location of the site within this report found any traces of historical flooding. Please refer to appendix 3: Carlow Town Council, Engineering Department, Carlow town Flooding 19th -26th of November 2009 for further historical information. A flood alleviation scheme has been carried out on the River Barrow in Carlow between the years of 2010 and 2012.

4.2.2 South Eastern CFRAM Study

The Southeastern CFRAM Study outlines that there were a large number of historic flooding events which have occurred within the Carlow AFA. However, all these events occurred before the Carlow Flood Relief Scheme was completed and not in the location of the proposed site.

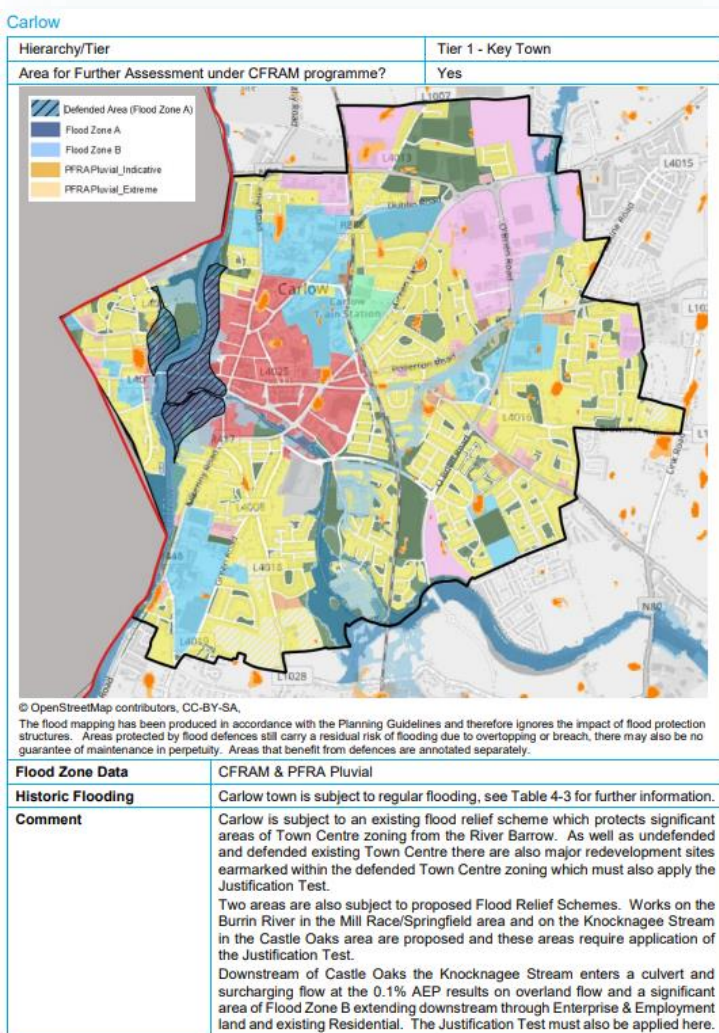


Figure 7 Carlow Local Area Strategic Flood Risk Assessment 2020

4.2.3 OPW – Flood Maps

The OPW maintain a national flood mapping resource which is available for review via their website; www.floodinfo.ie. On review of the Carlow Fluvial Flood Map on this resource, it was found that the proposed development is not within a flood risk area. Please refer to appendix 8 for the OPW Flood Maps.

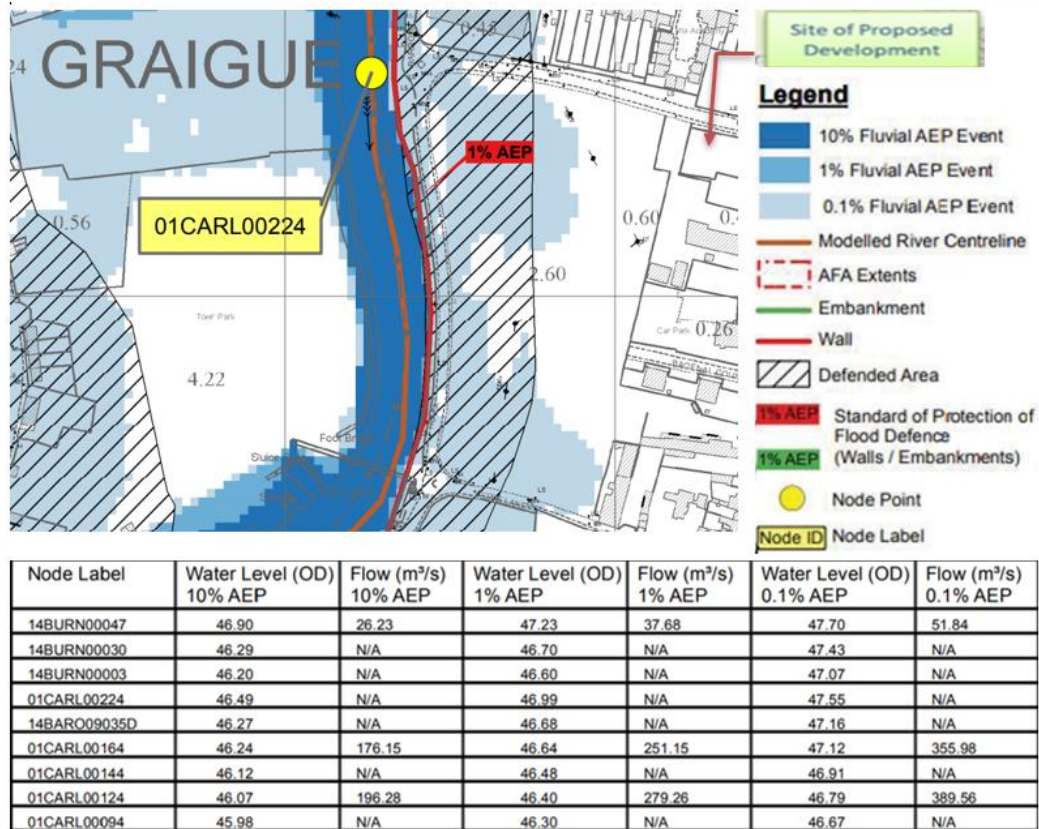


Figure 8: Extract Carlow Fluvial Flood Map

4.2.4 Historical Flooding Events

The OPW National Flood Hazard Mapping Local Area Report maintain flood hazard maps which contain information on previous flood events in a particular location. This information is available on their website www.floodmaps.ie. A Local Area Report was generated for Carlow Town which showed a number of past events, most recently in 2009. A copy of this Summary Local Area Report is contained in Appendix 7 of this report.

4.3 Stage 3: Detailed Flood Risk Assessment

The purpose of this stage is to identify possible flood risks and to implement the necessary level of appraisal to assess these possible risks in order to ensure that these can be adequately addressed in the Flood Risk Assessment, to address the potential impact on flood risk elsewhere and the effectiveness of any proposed mitigation measures.

In consideration of the information collated as part of this assessment, and the availability of other information and data specific to the subject site, it is considered that sufficient quantitative information to complete an appropriate flood risk assessment can be derived from the information collated. In particular, the final flood extent maps for the area produced as part of the Eastern CFRAM Study are based on the results of detailed hydraulic modelling undertaken along the River Barrow, and therefore provide a reasonably accurate delineation of flood zones and prediction of flood depths in the general vicinity of the subject site.

The assessment indicates that there is low significant primary risk to the subject site which can be attributed to potential fluvial flooding from the adjacent River Barrow

The initial Flood Risk Assessment undertaken as part of this Site-Specific Flood Risk Assessment has determined that the site is not at risk of coastal/tidal, pluvial (overland flow) or groundwater flooding. Therefore, coastal/tidal, pluvial (overland flow) and groundwater flooding risk to the subject site will not be assessed further as part of this Site-Specific Flood Risk Assessment.

The above assessment indicates that the subject site is not susceptible to pluvial flooding (urban drainage) and fluvial flooding (River Barrow).

4.2.1 Site Inspection – 14th of September 2022

A site inspection of the relevant sites was conducted on this date to assess the potential flood sources, pathways and assess the consequences on receptors. It was apparent prior to the property visit that the area was not at risk from flooding (fluvial) and pluvial flooding (urban drainage) based on our desktop study. The findings of the site inspection found no primary flood risk.

5 Justification Test

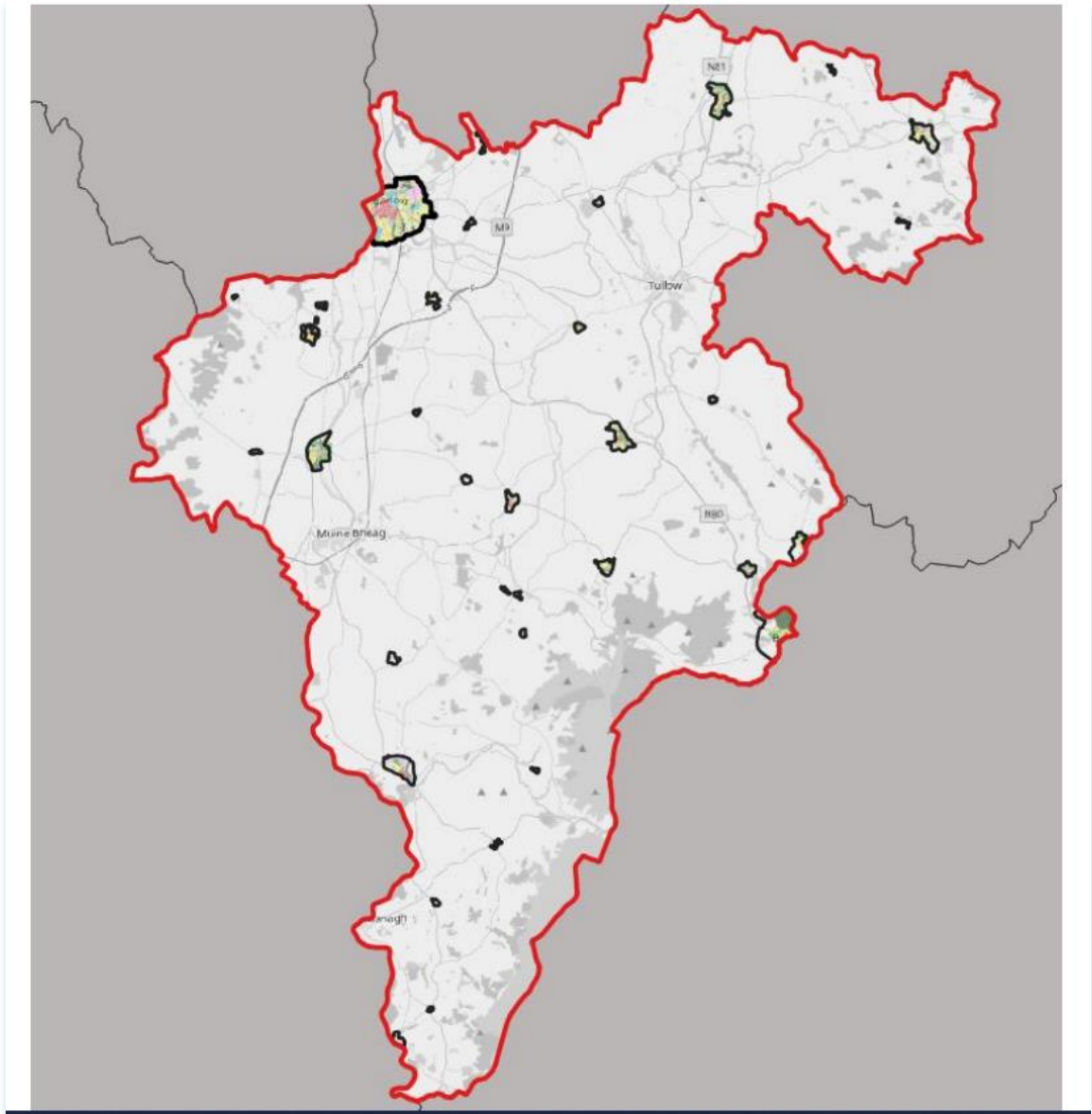
As the site is located within Flood Zone C a justification test is not required to be undertaken.

6 Conclusions

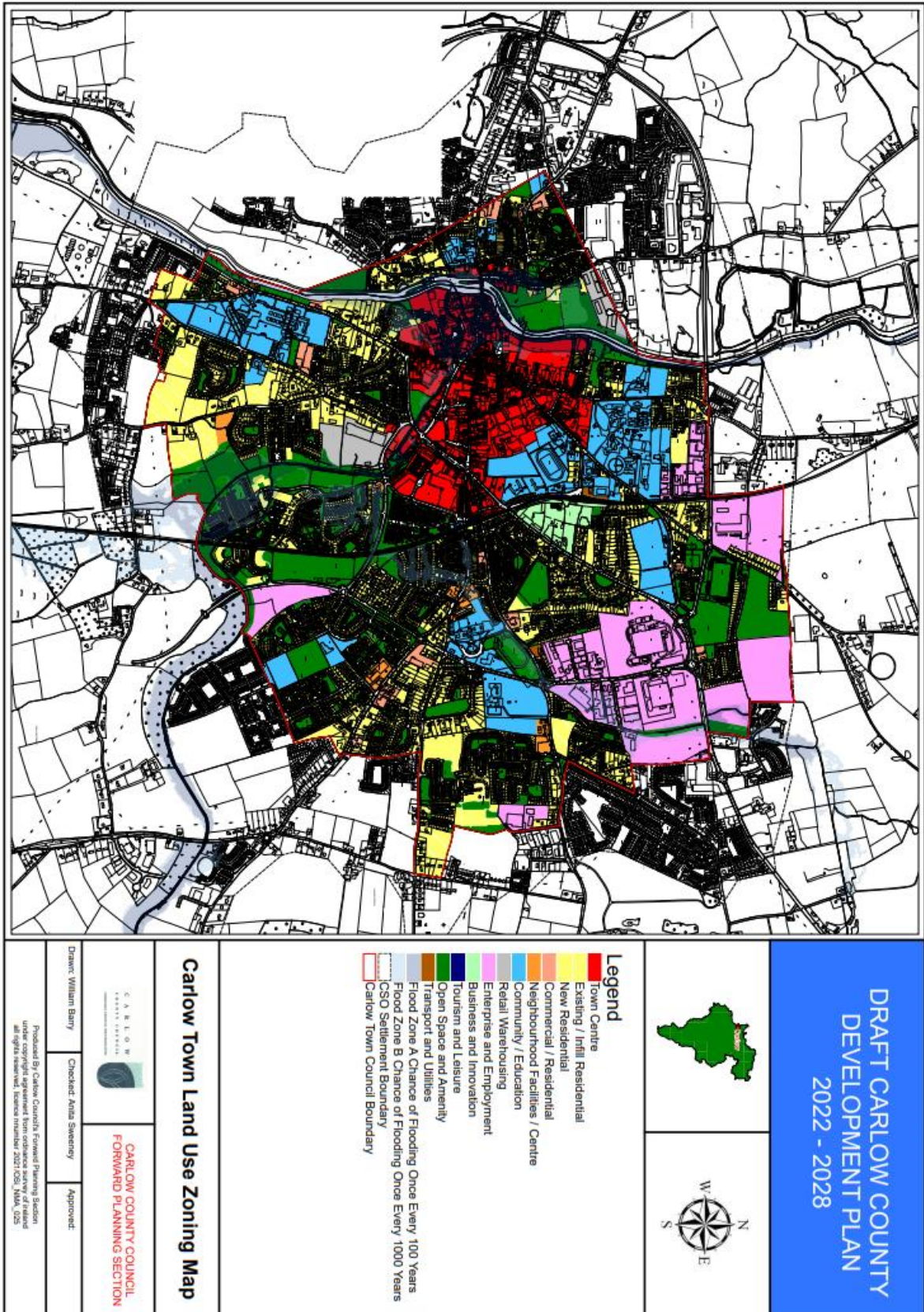
Based on our desktop study, site inspection and local knowledge of the site the proposed development is not located in an area susceptible to flooding. This flood risk assessment has been prepared for as part of a Part 8 planning process in accordance with local governance and best practices.

This flood risk assessment for the sites has been conducted demonstrating that the flood risk to the proposed development is deemed as a less vulnerable development. The site is positioned within the town center and is located within flood risk zone C the lowest possible risk. The proposed works would not have an impact on flooding in the area in terms of obstructing important flow paths. In addition, the proposed development would not impede access to the existing watercourses, nor would it result in increased flood risk elsewhere due to flood water displacement. The most up to date flood information for the site is the OPW Southern eastern CFRAM study which produced the Carlow Fluvial flood Extent Map. The map indicates the site is not within a flood risk area. Considering current condition and location of the site flood risk mitigation measure are not required. The proposed Less Vulnerable use is therefore appropriate for the flood zoning and the sequential test is passed.

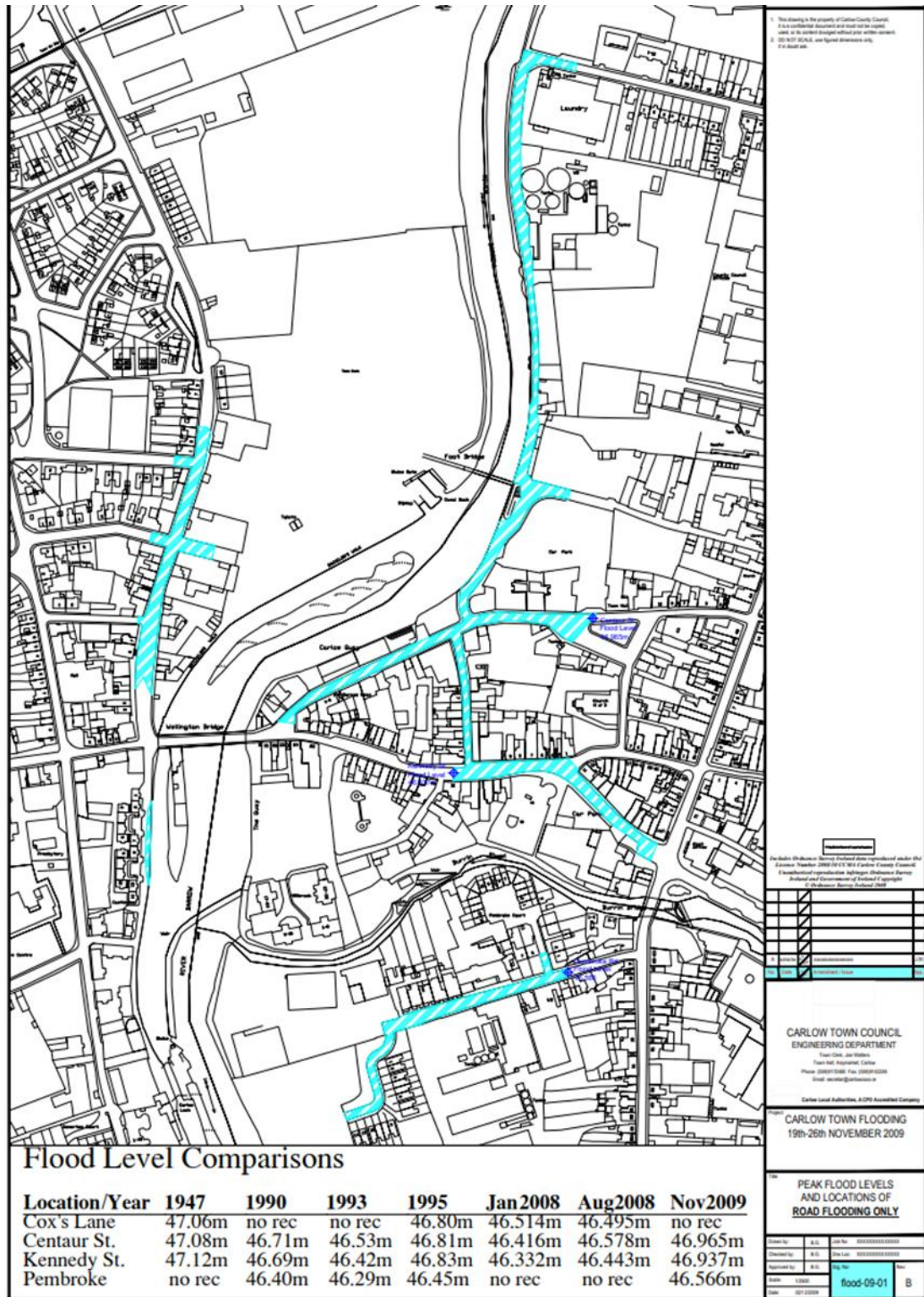
Appendix 1: Strategic Flood Risk Assessment for Draft Carlow County Development Plan 2022-2028



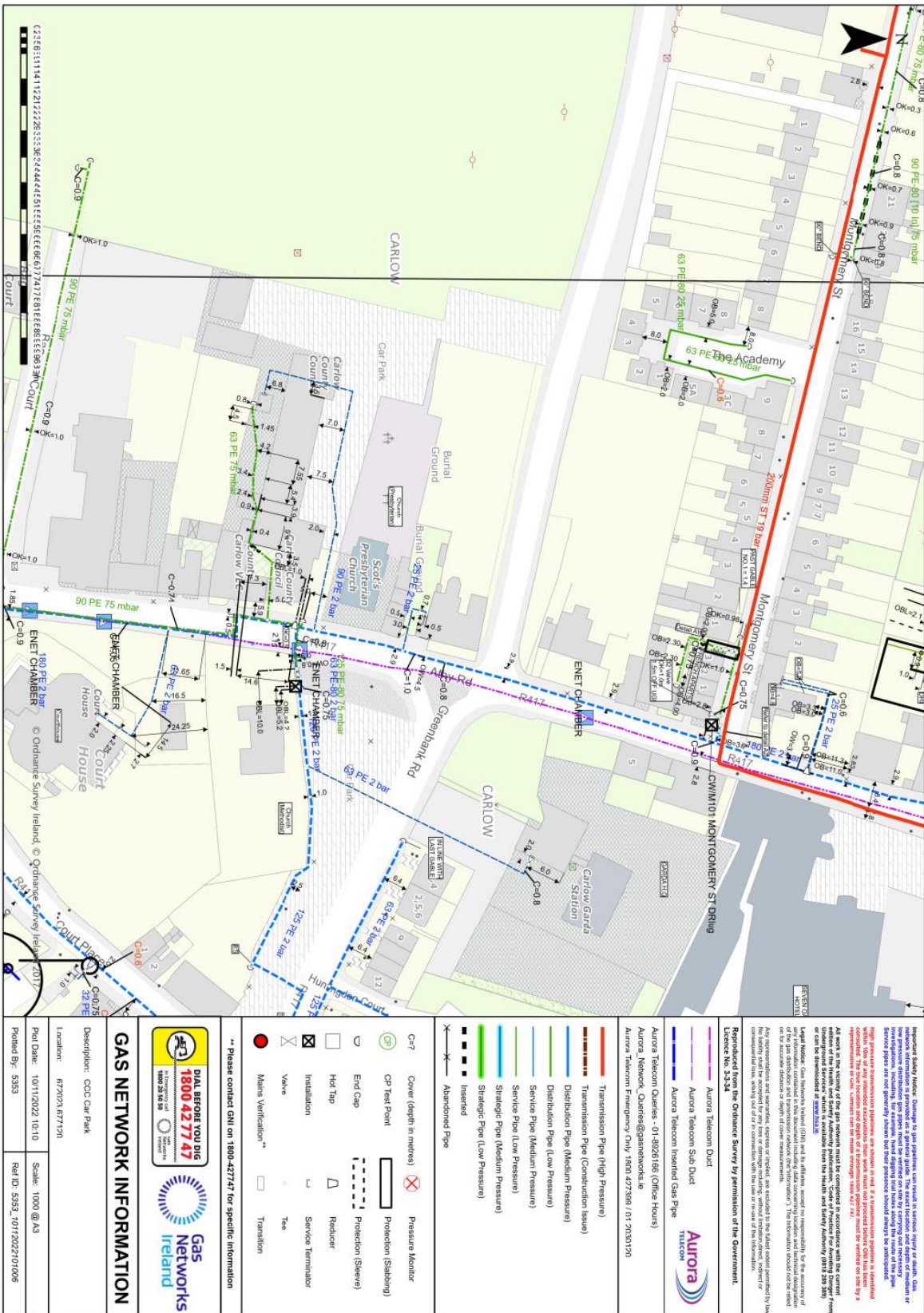
Appendix 2: Carlow County Development Plan 2022-2028



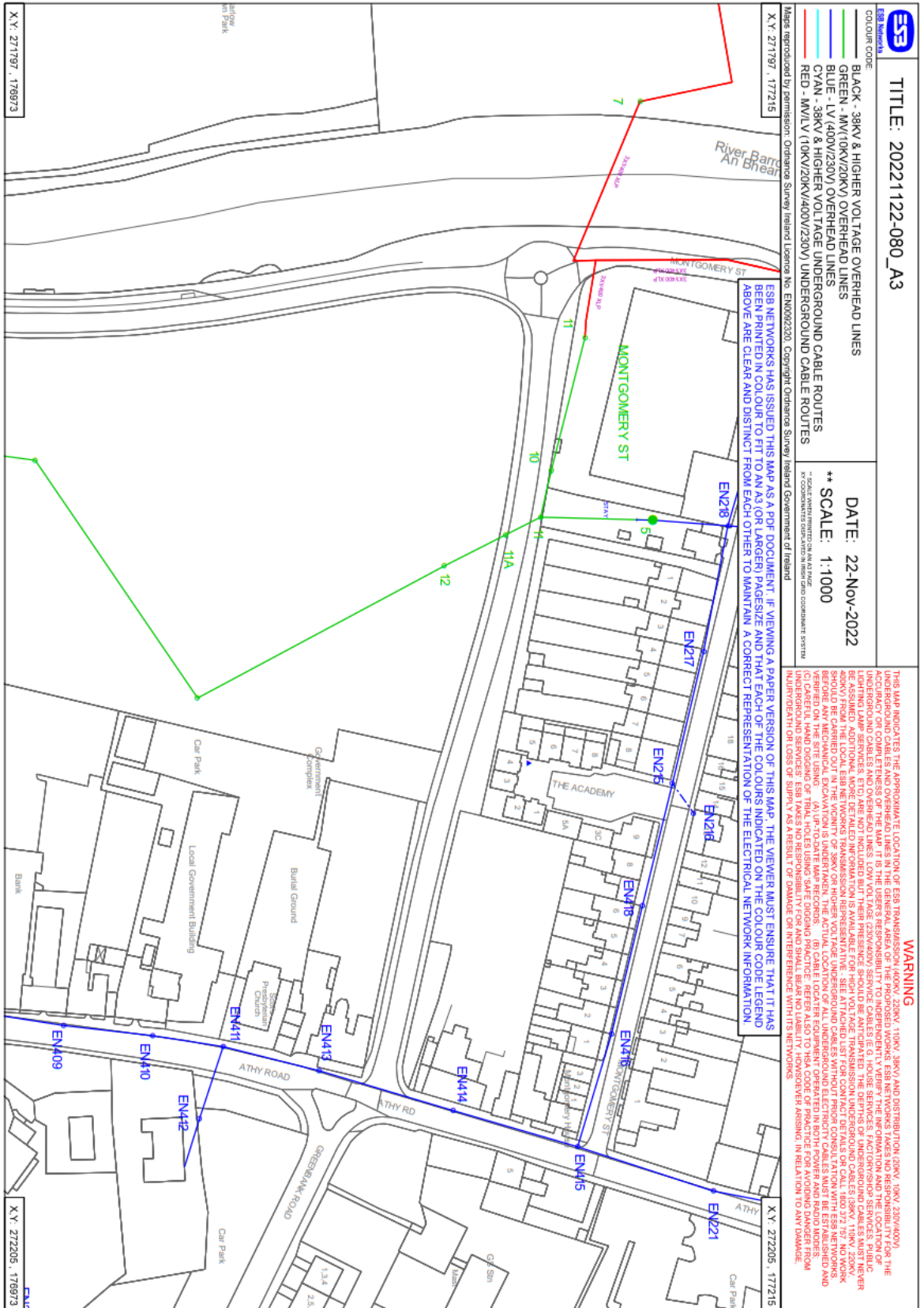
Appendix 3: Carlow Town Council, Engineering Department, Carlow town Flooding 19th -26th of November 2009



Appendix 5: Gas Network Information



Appendix 6: ESB Networks



Appendix 7 - OPW National Flood Hazard Mapping Local Area Report

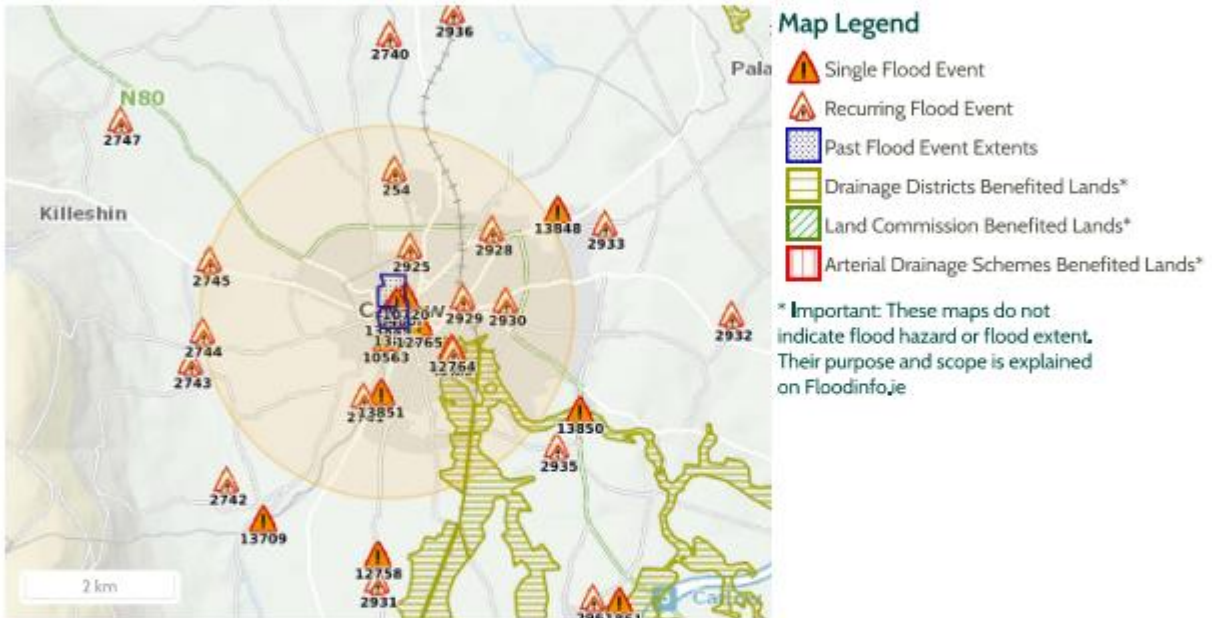
Past Flood Event Local Area Summary Report



Report Produced: 23/3/2023 14:36

This Past Flood Event Summary Report summarises all past flood events within 2.5 kilometres of the map centre.

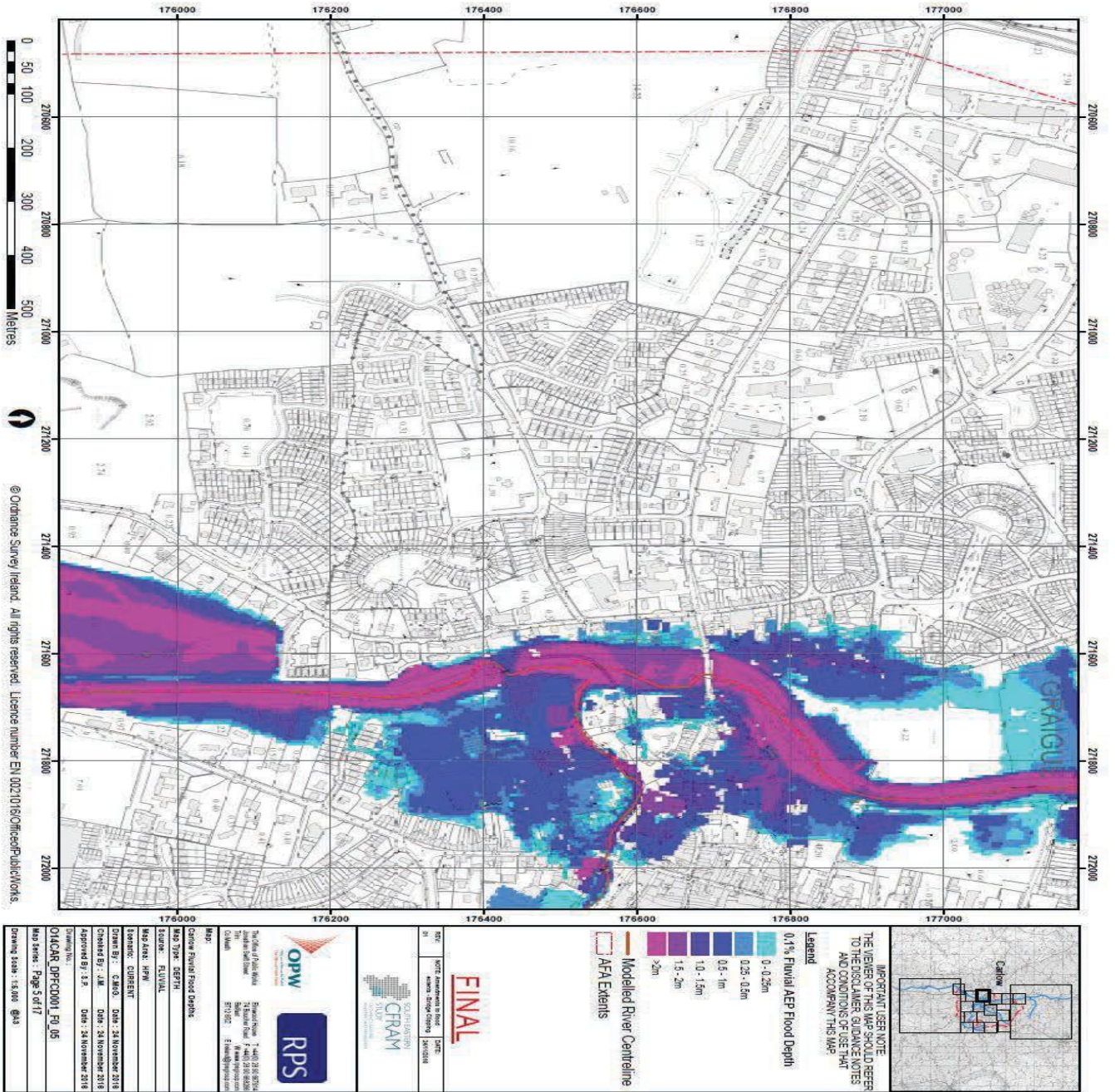
This report has been downloaded from www.floodinfo.ie (the "Website"). The users should take account of the restrictions and limitations relating to the content and use of the Website that are explained in the Terms and Conditions. It is a condition of use of the Website that you agree to be bound by the disclaimer and other terms and conditions set out on the Website and to the privacy policy on the Website.

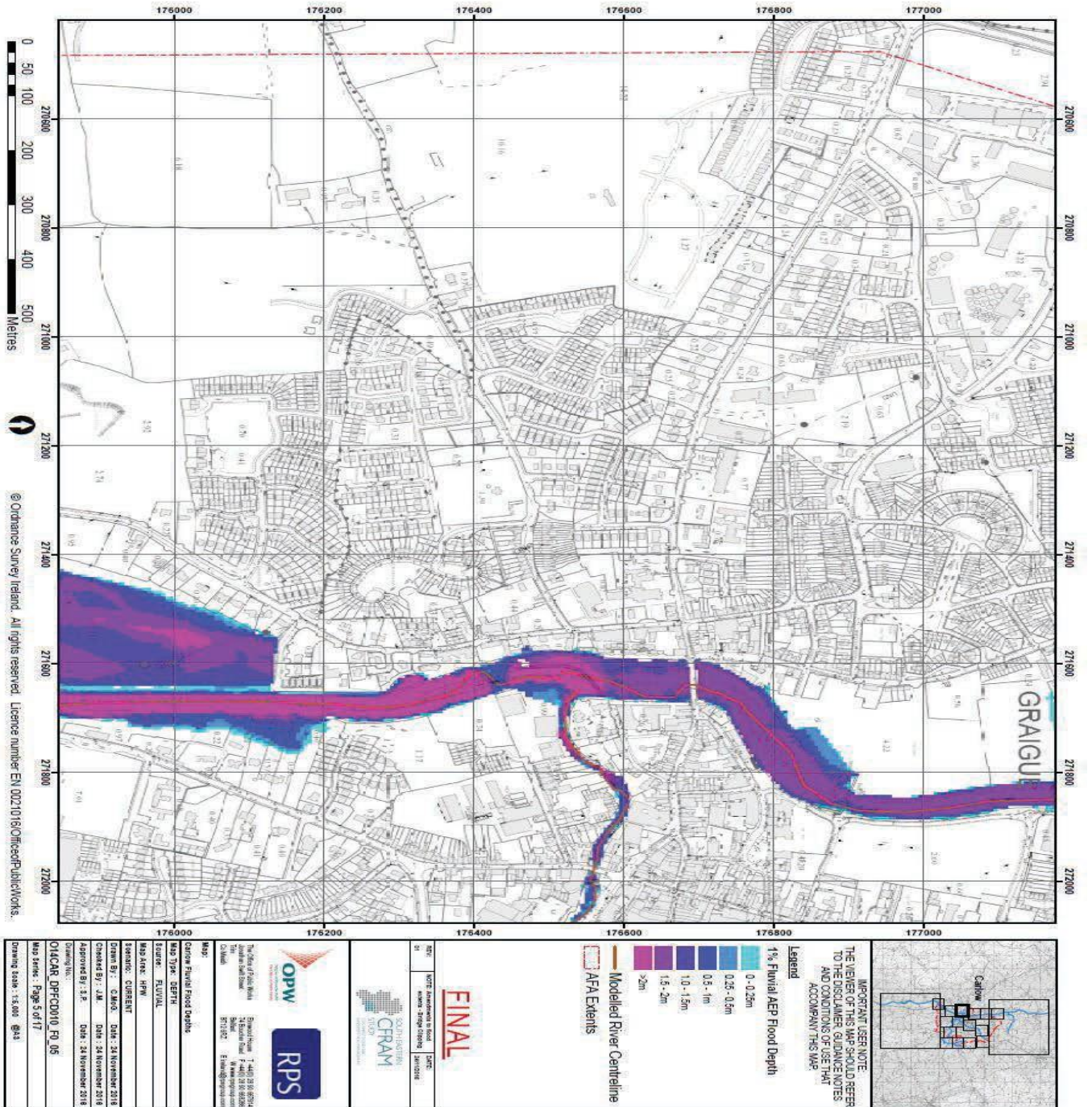


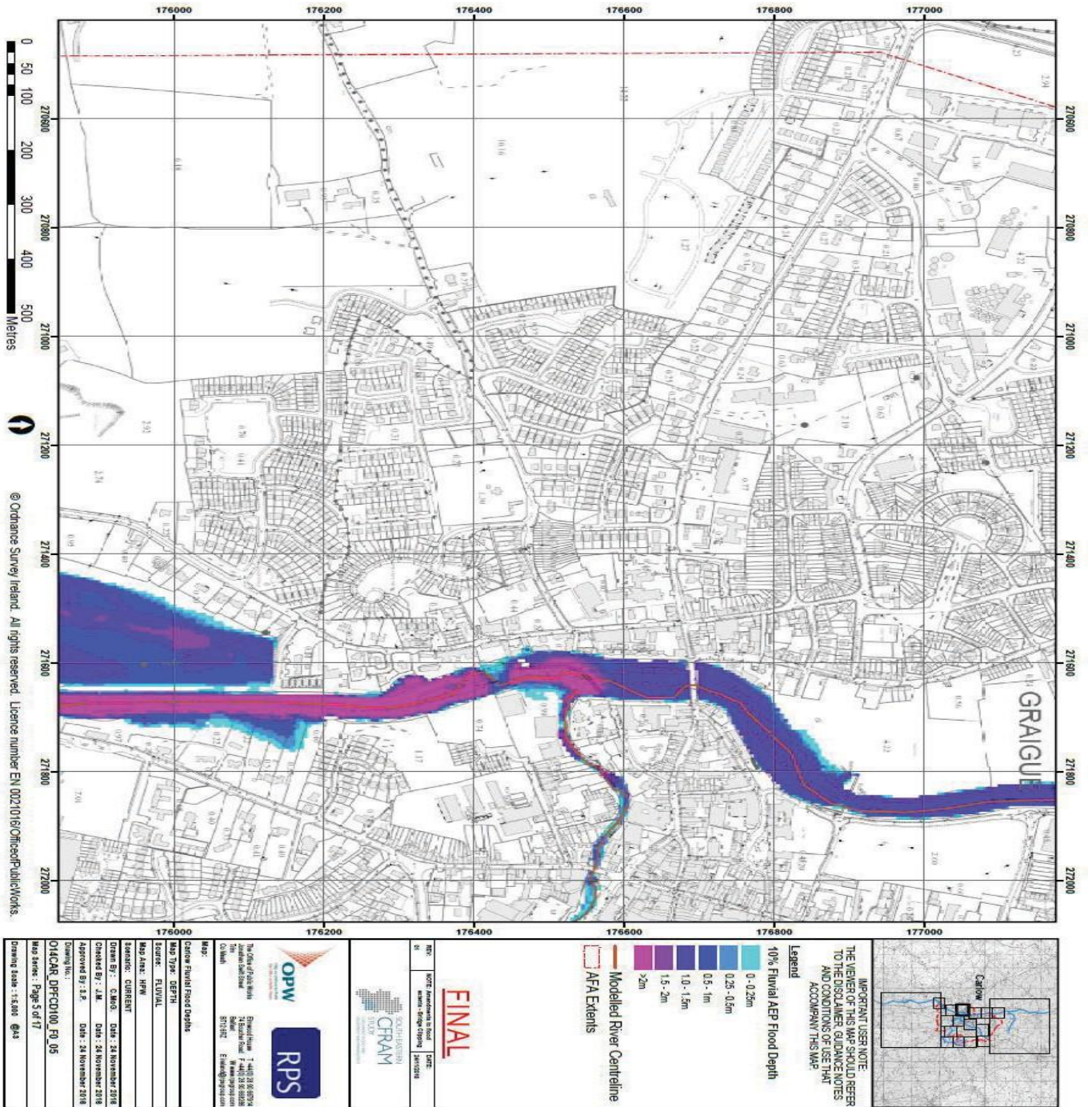
24 Results

Name (Flood_ID)	Start Date	Event Location
1. Barrow Carlow 19th to 26th Nov 2009 (ID-10720) Additional Information: Reports (12) Press Archive (0)	19/11/2009	Approximate Point
2. Barrow Carlow Town Feb 1990 (ID-3480) Additional Information: Reports (2) Press Archive (7)	06/02/1990	Approximate Point
3. Barrow Carlow November 2000 (ID-3483) Additional Information: Reports (1) Press Archive (4)	05/11/2000	Approximate Point
4. Barrow Carlow Town 18th August 2008 (ID-10563) Additional Information: Reports (2) Press Archive (0)	16/08/2008	Approximate Point
5. Barrow Carlow Town March 1947 (ID-451) Additional Information: Reports (6) Press Archive (0)	16/03/1947	Area
6. Flooding at Carlow - 2015 (ID-12764) Additional Information: Reports (0) Press Archive (0)	n/a	Approximate Point

	Name (Flood_ID)	Start Date	Event Location
7.	 Flooding at Carlow - 2015 (ID-12765) Additional Information: Reports (0) Press Archive (0)	n/a	Approximate Point
8.	 Flooding at Carlow (ID-13847) Additional Information: Reports (0) Press Archive (0)	n/a	Approximate Point
9.	 Flooding at Carlow (ID-13851) Additional Information: Reports (0) Press Archive (0)	n/a	Approximate Point
10.	 Burrin Carlow Paupish Lane Dec 1998 (ID-377) Additional Information: Reports (1) Press Archive (0)	30/12/1998	Approximate Point
11.	 Barrow Burrin Carlow Town Jan Mar 1995 (ID-414) Additional Information: Reports (58) Press Archive (1)	25/01/1995	Approximate Point
12.	 Barrow Carlow Town, Jan 1996 (ID-452) Additional Information: Reports (6) Press Archive (1)	05/01/1996	Approximate Point
13.	 Barrow Carlow Town, June 1993 (ID-453) Additional Information: Reports (4) Press Archive (0)	14/06/1993	Approximate Point
14.	 Barrow Sleaty recurring (ID-254) Additional Information: Reports (1) Press Archive (0)	n/a	Approximate Point
15.	 Barrow Crossneen recurring (ID-2741) Additional Information: Reports (2) Press Archive (0)	n/a	Approximate Point
16.	 Fushoge Ballykillen Bridge recurring (ID-2745) Additional Information: Reports (1) Press Archive (0)	n/a	Approximate Point
17.	 Green Lane Carlow recurring (ID-2929) Additional Information: Reports (2) Press Archive (1)	n/a	Approximate Point
18.	 Askagh Drive Pollerton Carlow recurring (ID-2930) Additional Information: Reports (2) Press Archive (3)	n/a	Approximate Point
19.	 Barrow Carlow town centre recurring (ID-2924) Additional Information: Reports (26) Press Archive (78)	n/a	Approximate Point
20.	 Barrow Carlow Town North recurring (ID-2925) Additional Information: Reports (4) Press Archive (78)	n/a	Approximate Point
21.	 Burren Paupish Lane Hanover Cres Carlow recurring (ID-2926) Additional Information: Reports (3) Press Archive (14)	n/a	Approximate Point
22.	 Dr Cullen Road Carlow recurring (ID-2928) Additional Information: Reports (2) Press Archive (0)	n/a	Approximate Point
23.	 Flooding at Carlow (ID-13849) Additional Information: Reports (0) Press Archive (0)	n/a	Approximate Point
24.	 Barrow Carlow Town & Area Jan 2008 (ID-10540) Additional Information: Reports (1) Press Archive (0)	10/01/2008	Approximate Point







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Legend

- 0 - 0.25m
- 0.25 - 0.5m
- 0.5 - 1m
- 1.0 - 1.5m
- 1.5 - 2m
- >2m

- Modelled River Centreline
- AFA Extents

FINAL

NOTE: Referenced to Flood 10% Fluvial AEP

DATE: 24 November 2018

OPW

RPS

CRAM

CRAM CONSULTANTS

Map:

Carlow Fluvial Flood Depths

Map Type: DEPTH

Scale: FLUVIAL

Map Area: HW

Format: CURRENT

Drawn By: CMG Date: 24 November 2018

Checked By: J.M. Date: 24 November 2018

Approved By: J.P. Date: 24 November 2018

Drawing No.: OI/CAR_DP/CD100_PJ_05

Map Series: Page 5 of 17

Drawing Scale: 1:500 @A4

