

DRAFT ARKLOW AND ENVIRONS LOCAL AREA PLAN 2017

APPENDIX C

STRATEGIC FLOOD RISK ASSESSMENT



WICKLOW COUNTY COUNCIL
JULY 2017

ARKLOW AND ENVIRONS LOCAL AREA PLAN 2017

STRATEGIC FLOOD RISK ASSESSMENT

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1. Background information

1.1 Introduction

In accordance with the 'Planning System and Flood Risk Management: Guidelines for Planning Authorities', a Strategic Flood Risk Assessment (SFRA) of the 'Arklow and Environs Local Area Plan 2017' has been undertaken.

The '*Planning System and Flood Risk Management – Guidelines for Planning Authorities*' were issued in 2009 by the Minister for the Environment, Heritage and Local Government and the OPW under Section 28 of the Planning and Development Act 2000 (as amended). The purpose of the Flood Risk Guidelines is to ensure that, where relevant, flood risk is a key consideration for Planning Authorities in preparing development plans and local area plans and in the assessment of planning applications. The Flood Risk Guidelines introduce mechanisms for the incorporation of flood risk identification, assessment and management into the planning process. Implementation of the Flood Risk Guidelines is intended to be achieved through actions at the national, regional, local authority and site-specific levels. Planning Authorities and An Bord Pleanála are required to have regard to the Flood Risk Guidelines in carrying out their functions under the Planning Acts.

The key planning principles of the Flood Risk 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 runoff;
- 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;
- 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.

Clarification of advice contained in the Flood Risk Guidelines was issued in August 2014 (Circular PL2/2014) referring to two matters. The first was to ensure planning authorities are prudent in the use of the draft PFRA or CFRAM flood maps as the sole basis for deciding on planning applications, to make use of site inspections and/or knowledge of local areas, to request a site-specific flood risk assessment by an appropriately qualified engineer where appropriate and to also generally use their professional judgement in this regard.

The second matter amends the text of the guidelines to indicate that during the preparation of the development plan (or a variation of a development plan) in areas located in flood zone A and B, where the existing use zoning is classified as a "vulnerable use", the planning authority should consider if the existing use zoning of the 'vulnerable use' is still the appropriate zoning for the area. Where the planning authority considers that the existing use zoning is still appropriate, the planning authority must specify the nature and design of structural or non-structural flood risk management measures required prior to future development in such areas, in order to ensure that flood hazard and risk to the area and to other adjoining locations will not be increased, or if practicable, will be reduced. With regard to the second matter, the text amendment is noted; however where the existing use zoning is in flood zone A/B and is considered a vulnerable use, where necessary a mitigation objective has been incorporated into the local plan and/or an appropriate zoning has been applied for the existing use. Any flood risk management measures are to be considered at the development management stage.

The guidelines aim to facilitate the transparent consideration of flood risk at all levels of the planning process, ensuring a consistency of approach throughout the country. SFRAs therefore become a key evidence base in meeting these objectives.

The Guidelines work on a number of key principles, including:

- adopting a staged and hierarchical approach to the assessment of flood risk; and
- adopting a sequential approach to the management of flood risk, based on the frequency of flooding (identified through Flood Zones) and the vulnerability of the proposed land use.

1.2 Definition of Flood Zones

In the 'Planning System and Flood Risk Management: Guidelines for Planning Authorities', 'Flood Zones' are used to indicate the likelihood of a flood occurring. These zones indicate a high, moderate and low risk of flooding from fluvial or coastal sources and are defined 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).

Flood Zone C – where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 100 for both river and coastal flooding). Flood Zone C covers all areas of the plan which are not in zones A and B, hence it is not highlighted on the FRA maps.

The flood zones described above are indicative of river and coastal flooding only. They should not be used to suggest that any areas are free from flood risk, since they do not include the effects of other forms of flooding such as from groundwater or artificial drainage systems.

The indicative Flood Zone map for the plan area is included in Map No.SFRA1 of this document. The information about flood risk that has been used in the preparation of these flood zones has been collated from a number of sources including:

- OPW Preliminary Flood Risk Assessment (PFRA) – no CFRAM has been prepared for Arklow Town, however there are CFRAM maps for the Avoca River up to the Motorway, west of the town (see map C1). The OPW published the 'Preliminary Flood Risk Assessment' (PFRA) mapping in 2011 and published 'Areas for Further Assessment' (AFA) in 2014. The PFRAs covered the County and identified areas at risk of significant flooding and includes maps showing areas deemed to be at risk. The areas deemed to be at significant risk, where the flood risk is of particular concern nationally, are identified as Areas for Further Assessment (AFAs) and more detailed assessment on the extent and degree of flood risk was undertaken in these areas, with Flood Hazard Mapping (CFRAMs) published in 2016. In Wicklow the AFAs / CFRAMs cover all or part of the following areas: Arklow, Ashford, Aughrim, Avoca, Baltinglass, Blessington, Greystones & environs, Kilcoole, Newcastle, Rathnew and Wicklow, but not Rathdrum (see Map C1)
- National Coastal Protection Strategy Study - flood and coastal erosion risk maps. The predicted flood extents which were produced under the Irish Coastal Protection Strategy Study (ICPSS) are based on analysis and modeling. (see Map C1)
- 'Floodmaps.ie' – The national flood hazard mapping website operated by the Office of Public Works, where information about past flood events is recorded and made available to the public. 'Flood point' and 'flood extent' information is available on this settlement and has been noted. (see Map C4)
- Alluvial deposits maps of the Geological Survey of Ireland – indicating areas that have flooded in the past (the source of alluvium) (see Map C2)
- Examination of the old '6 Inch' maps (see Map C3)
- Walk over survey to assess potential sources of flooding
- Discussions with local people
- Consultation with the engineering section of Wicklow County Council
- An examination of contours (see Map C2)
- Aerial photographs
- Any in-house Flood Risk Assessments of the Avoca River or assessments submitted as part of planning applications.
- River Avoca (Arklow Town) Flood Relief Study (Cawley, 2007 on behalf of OPW)

In preparing the Flood Zones, a precautionary approach has been applied, where necessary, to reflect uncertainties in flooding datasets and risk assessment techniques.

1.3 The River Avoca (Arklow Town) Flood Relief Scheme

Arklow is the subject of a flood risk management scheme which seeks to minimise the risks arising from flooding to people, property and the environment of Arklow.

The Hydrology and Hydraulics Report, Avoca River (Arklow) Flood Relief Study (Cawley, 2007) was prepared in 2007 on behalf of the Office of Public Works (OPW). It presented flood flows for use in the optioneering of the Arklow Flood Relief Scheme. Following on from this there has been a number of studies and projects undertaken with the main flood risk management scheme being envisaged for construction in c.2018.

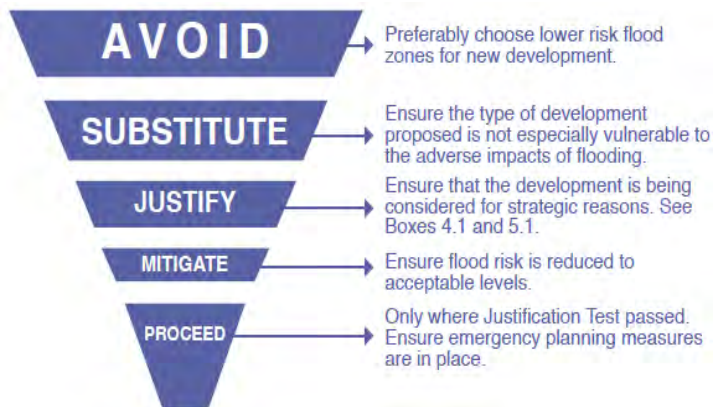
- In 2012, 2D hydraulic modelling of the Avoca River at Arklow (Cawley, 2012) was undertaken on behalf of the OPW to support the preliminary design of the Arklow Flood Relief Scheme, with particular emphasis on modelling the impact of Arklow Bridge of flood levels.
- The OPW provided funding to Wicklow County Council in 2012 to carry out interim works comprising the construction of the flood protection wall which provides protection along the Riverwalk/Town Centre area of the town.
- The Avoca River Flood Relief Feasibility Study – Preliminary Report (BLP, 2013) collates the information from previous hydrological studies and presents the proposed design flows for the scheme.
- The Avoca River Flood Relief Scheme’s Feasibility Report is due to be finalised at the end of 2017. The purpose of the Feasibility Report is to identify and recommend a preferred flood relief scheme and to prepare and outline design of the recommended scheme.

1.4 The Sequential Approach and Justification Test

Figure 1: Sequential approach

Each stage of the SFRA process aims to adopt sequential approach to management of flood risk in planning process. The sequential approach to flood management is set out in Figure 1 (Source *Plan System and Flood Risk Management Guidelines Planning Authorities’ DoEHLG/OPW 2009*,). In summ the key principles of the sequential approach include:

1. Avoid flood risk, where possible;
2. Substitute less vulnerable uses, where avoidance is possible; and
3. Mitigate and manage the risk, where avoidance and substitution are not possible.



In other words, where possible, development in areas identified as being at flood risk should be avoided; this may necessitate de-zoning lands within the plan area. If de-zoning is not possible, then re-zoning from a higher vulnerability land use, such as residential, to a less vulnerability use, such as open space, may be required. Where re-zoning is not possible, exceptions to the development restrictions are provided for through the ‘**Justification Test**’. The plan-making Justification Test is used at the plan preparation and adoption stage where a planning authority needs to consider the future development of areas at a high or moderate risk of flooding, for uses or development vulnerable to flooding that would generally be inappropriate. In such cases, the planning authority must be satisfied that it can clearly demonstrate on a solid evidence base that the zoning or designation for development will satisfy the Justification Test.

Tables 1.1 and 1.2 below illustrates those types of development that would be appropriate to each flood zone and those that would be required to meet the Justification Test. Section 2.2 sets out the Justification Test for plan making. Where the planning authority considers that land should be zoned for ‘inappropriate development’ that does not meet the criteria of the Justification Test, the flooding risk should be mitigated, so that the flood risk is reduced to an acceptable level by means of land use strategies or by means of detailed proposals for the management of flood risk, as addressed in a Flood Risk Assessment.

Table 1.1: Matrix of vulnerability versus flood zones to illustrate appropriate development and that required to meet the justification test

DEVELOPMENT TYPES			
	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

Source: DoEHLG The Planning System and Flood Risk Management Guidelines

Table 1.2: Classification of vulnerability of different types of development

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

Source: DoEHLG The Planning System and Flood Risk Management Guidelines

*Uses not listed here should be considered on their own merits

2. Strategic Flood Risk Assessment of the Arklow and Environs Local Area Plan 2017

2.1 Flood Risk Assessment

Following the guidelines, this flood risk assessment shows the zoning objectives of the plan and their typical permitted uses. In accordance with the guidelines an assessment was undertaken to determine the appropriateness of land uses (allowed by virtue of land use zoning) to each flood zone. The assessment is undertaken in accordance with Tables 3.1 and 3.2 of the guidelines and measures vulnerability to flooding of different types of development, to illustrate appropriate development that is required to meet the Justification Test. Where the zone is deemed to be appropriate no further action is required here in the FRA. Where the zone requires the Justification Test to be carried out, it is done so with any necessary mitigation measures recommended.

The Draft Arklow and Environs Local Area Plan 2017 includes the following land use zonings:

ZONING	OBJECTIVE	DESCRIPTION
RE: EXISTING RESIDENTIAL	To protect, provide and improve residential amenities of existing residential areas	To provide for house improvements, alterations and extensions and appropriate infill residential development in accordance with principles of good design and protection of existing residential amenity. In existing residential areas, the areas of open space permitted, designated or dedicated solely to the use of the residents will normally be zoned 'RE' as they form an intrinsic part of the overall residential development; however new housing or other non-community related uses will not normally be permitted.
R28: NEW RESIDENTIAL	To protect, provide and improve residential amenities at a density up to 28 units/ha.	To facilitate for the provision of high quality new residential developments at appropriate densities with excellent layout and design, well linked to the town centre and community facilities. To provide an appropriate mix of house sizes, types and tenures in order to meet household needs and to promote balanced communities.
R20: NEW RESIDENTIAL	To protect, provide and improve residential amenities at a density up to 20 units/ha.	
R10: NEW RESIDENTIAL	To protect, provide and improve residential amenities at a density up to 10 units/ha.	To facilitate for the provision of high quality new residential environments with excellent layout and design, reflecting the low-medium density character of the surrounding area.
R Special: NEW RESIDENTIAL	To protect, provide and improve residential amenities in a format and a density specified in the plan.	To facilitate for the provision of high quality new residential environments with excellent layout and design, reflecting the density and character of the surrounding area.
TC: TOWN CENTRE	To provide for the development and improvement of appropriate town centre uses including retail, commercial, office and civic use, and to provide for 'Living Over the Shop' residential accommodation, or other ancillary residential accommodation.	To develop and consolidate the existing town centre to improve its vibrancy and vitality with the densification of appropriate commercial and residential developments ensuring a mix of commercial, recreational, civic, cultural, leisure, residential uses, and urban streets, while delivering a quality urban environment which will enhance the quality of life of resident, visitor and workers alike. The zone will strengthen retail provision in accordance with the County Retail Strategy, emphasise town centre conservation, ensure priority for public transport where applicable, pedestrians and cyclists while minimising the impact of private car based traffic and enhance and develop the existing centre's fabric.
LSS: LOCAL SHOPS & SERVICES	To provide for small scale local neighbourhood shops and services	To facilitate the limited development of small scale local neighbourhood shops and retail services and other local service uses that meet only the retail or service needs of residents in the immediate catchment and are not of such a scale or type that would detract or draw trade from lands designated town centre.

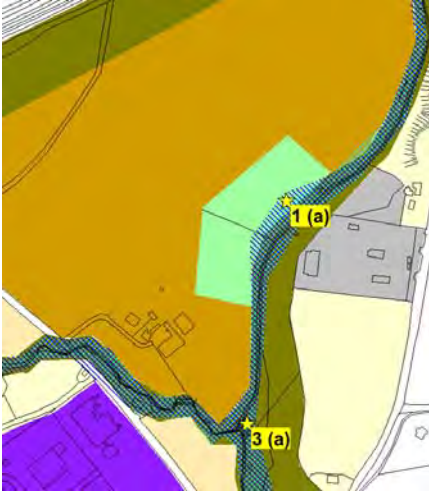
WZ: WATERFRONT	To provide for the development and improvement of the waterfront zone, to facilitate the continuation of the existing employment, maritime and port uses and to promote and provide for residential and mixed- use development.	To facilitate for the provision of high quality new residential developments at appropriate high densities with excellent layout and design, well linked to the existing town centre, community facilities and water amenities. To provide an appropriate mix of house sizes, types and tenures in order to meet household needs and to promote balanced communities. To also facilitate the provision of high quality new commercial, maritime, leisure, tourism and amenity uses at a scale that does not undermine the role of the existing Town Centre. To facilitate the extension and continued use of the existing employment, maritime and port uses within the zone. To facilitate the provision of a new Waste Water Treatment Plant with an appropriate high quality architectural design/appearance.
E1: EMPLOYMENT	To provide for the development of enterprise and employment	To facilitate the further development and improvement of existing employment areas and to facilitate opportunities for the development of new high quality employment and enterprise developments in a good quality physical environment.
E Special: SPECIAL EMPLOYMENT	To provide for a large, single, undivided employment development.	To facilitate the development of a particular type of employment provision, that is, to provide for large, single, undivided employment development, such as 'direct foreign investment' businesses and would be likely to appeal to multinationals or significant IT (such a data centres) / green technology / pharmaceutical industries.
EX: EXTRACTIVE INDUSTRY	To provide for extraction / quarrying and associated activities including processing of extracted materials and land restoration.	To facilitate the development of extraction/ quarrying and associated activities.
CE: COMMUNITY & EDUCATION	To provide for civic, community and educational facilities	To facilitate the development of necessary community, health, religious, educational, social and civic infrastructure.
AOS: ACTIVE OPEN SPACE	To protect and enhance existing and provide for new active open space	To facilitate the further development and improvement of existing active open spaces, formal exercise areas, sports grounds, playing pitches, courts and other games areas and to facilitate opportunities for the development of new high quality active recreational areas
OS1: OPEN SPACE	To protect and enhance existing and provide for recreational open space.	To facilitate the further development and improvement of existing parks and casual play areas, to facilitate opportunities for the development of new high quality amenity open areas and to restrict developments / activities (such as the use or development of such lands for formal sports grounds for organisations that are not available for a broad range of the public) that would reduce the opportunities for use by the wider public.
OS2: OPEN SPACE	To protect and enhance existing open, undeveloped lands.	To protect, enhance and manage existing open, undeveloped lands that comprise flood plains, buffer zones along watercourses and rivers, steep banks, green breaks between built up areas, green corridors and areas of natural biodiversity.
PU: PUBLIC UTILITY	To maintain lands providing services infrastructure	To allow for lands to be designated for public utilities such as waste water treatment plants, large ESB sub-stations, gasworks etc
T: TOURISM	To provide for tourism related development	To provide for the sustainable development of tourism related structures, uses and infrastructure. To provide for the development of tourism facilities including accommodation of an excellent sustainable design and aesthetic quality. Tourism related office, civic and cultural and commercial development will be facilitated.

2.2 Flood Risk Zones and Justification Test

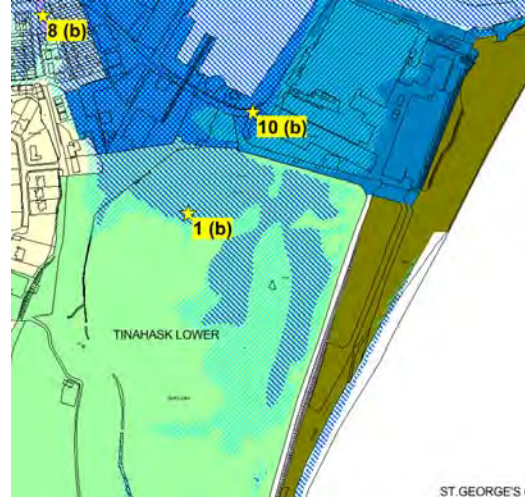
The following is an analysis of the vulnerability of land uses on sites that fall within Flood Zone A and B, and where appropriate, the application of the Justification Test for plan making. All sites are indicated on Map SFRA2.

LAND USE ZONE: Active Open Space (AOS)

Site no. 1 (a) AOS Coolboy



Site no. 1 (b) AOS Arklow golf club



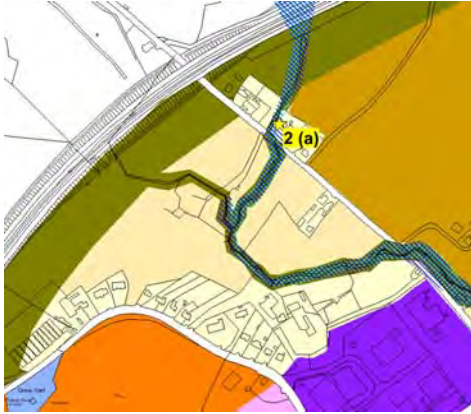
Site no. 1 (c) AOS Sports grounds, Knockanrahan



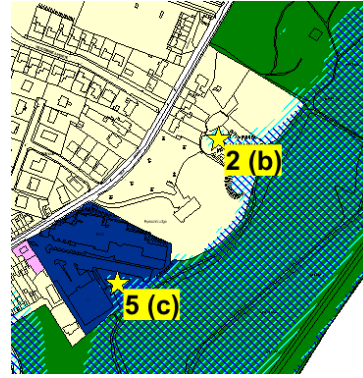
Land zoning	Active Open Space
Flood Zone	A and B
Vulnerability of land use vs. Flood Zone	Land use zoning appropriate
Requirement for Justification Test	No

LAND USE ZONE: Existing Residential (RE)

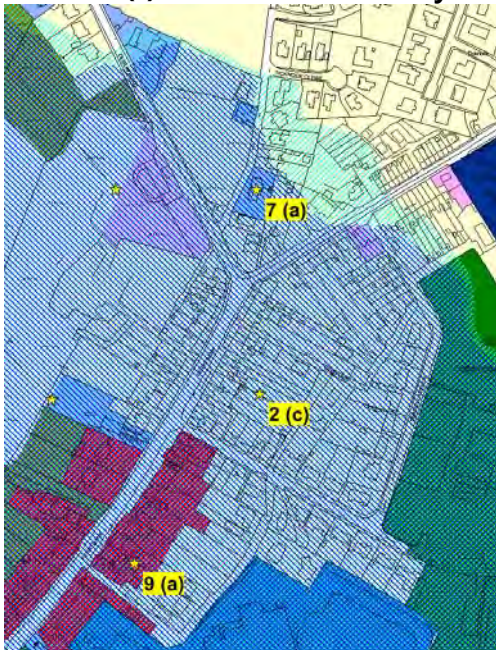
Site no. 2 (a) RE zone Beech Road



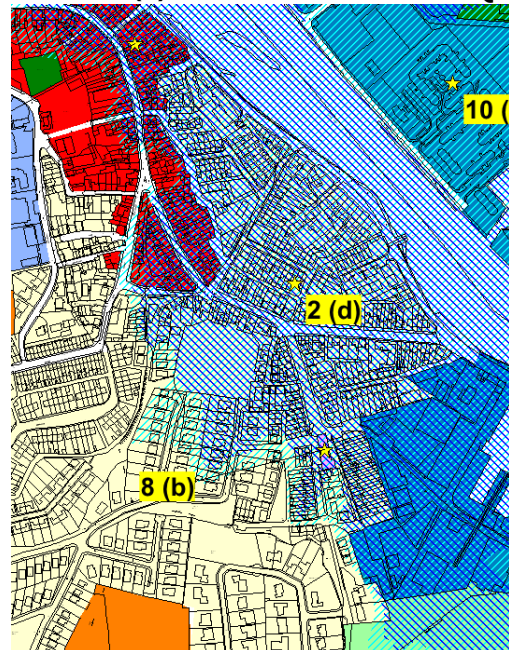
Site no. 2 (b) RE zone Sea Road



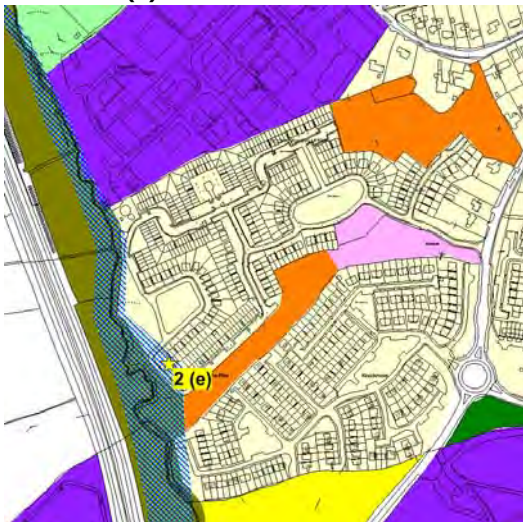
Site no. 2 (c) RE zone Ferrybank



Site no. 2 (d) RE zone South Quay



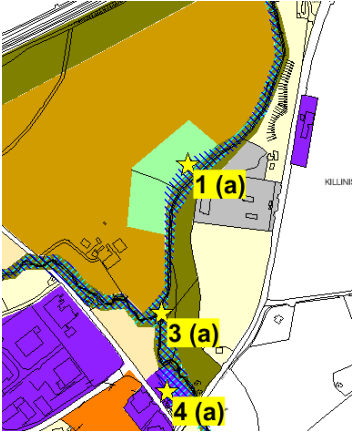
Site no. 2 (e) RE zone Knockanrahan



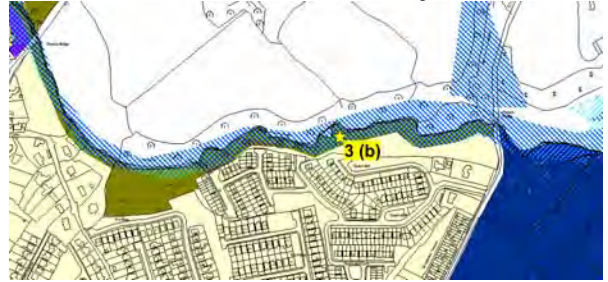
Land zoning	Existing residential
Flood Zone	A & B
Vulnerability of land use vs. Flood Zone	Land use zoning not appropriate
Requirement for Justification Test	Yes

Justification Test											
1	<p>The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act 2000, (as amended.)</p> <p>Under the Wicklow County Development Plan 2010-2016, Arklow is designated a 'Level 3 – Large Growth Town II' within the hinterland area of Dublin. Under the 'core strategy' of the CDP, the population of Arklow and Environs is targeted to grow to 23,000. It is prioritised to accommodate a large amount of population growth, to be a strong active town that is economically vibrant with high quality transport links to larger towns/cities.</p>										
2	<p>The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement and in particular:</p> <table border="1"> <tr> <td>(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;</td> <td>No</td> </tr> <tr> <td>(ii) Comprises significant previously developed and/or under-utilised lands;</td> <td>Yes</td> </tr> <tr> <td>(iii) Is within or adjoining the core of an established or designated urban settlement;</td> <td>No</td> </tr> <tr> <td>(iv) Will be essential in achieving compact or sustainable urban growth;</td> <td>No</td> </tr> <tr> <td>(v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</td> <td>N/A - these lands are developed.</td> </tr> </table>	(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;	No	(ii) Comprises significant previously developed and/or under-utilised lands;	Yes	(iii) Is within or adjoining the core of an established or designated urban settlement;	No	(iv) Will be essential in achieving compact or sustainable urban growth;	No	(v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.	N/A - these lands are developed.
(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;	No										
(ii) Comprises significant previously developed and/or under-utilised lands;	Yes										
(iii) Is within or adjoining the core of an established or designated urban settlement;	No										
(iv) Will be essential in achieving compact or sustainable urban growth;	No										
(v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.	N/A - these lands are developed.										
3	<p>A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.</p> <p>Assessment of flood risk has been incorporated into the Plan SEA process.</p>										
Conclusion											
Justification test failed.											
Recommendation											
These lands are currently developed for permitted housing. As such, it is considered appropriate to retain the RE zoning objective. Applications for minor development (e.g. extensions) are unlikely to raise significant flooding issues. Should expansion of existing uses be proposed, flood mitigation measures are required (see Section 2.3).											

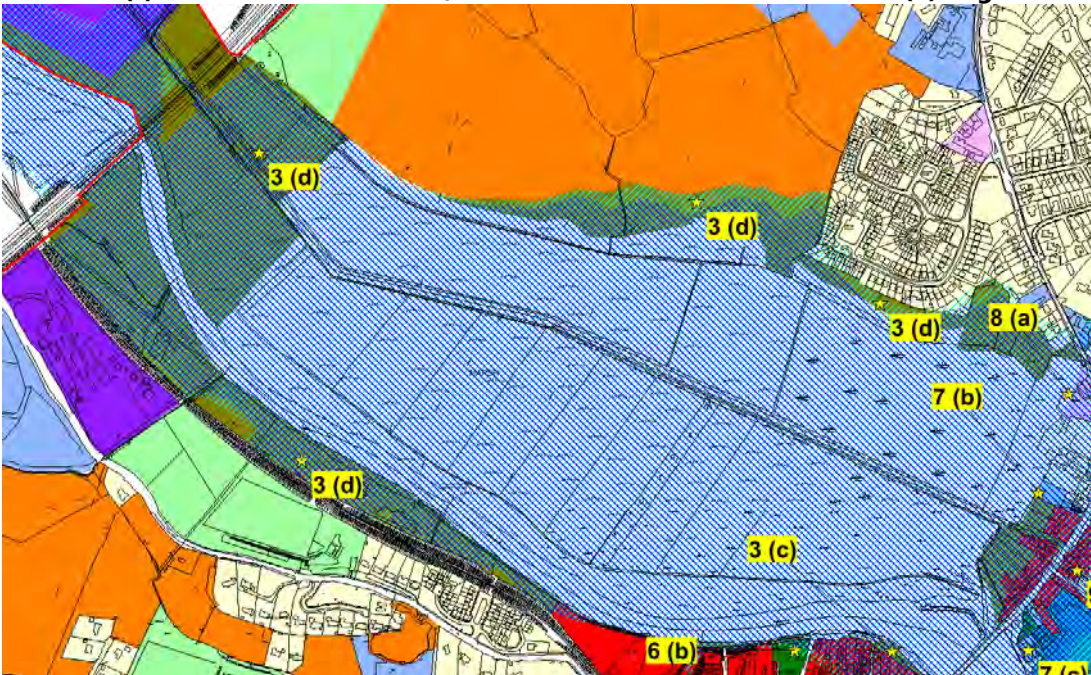
Site no. 3 (a) OS2 zone Coolboy



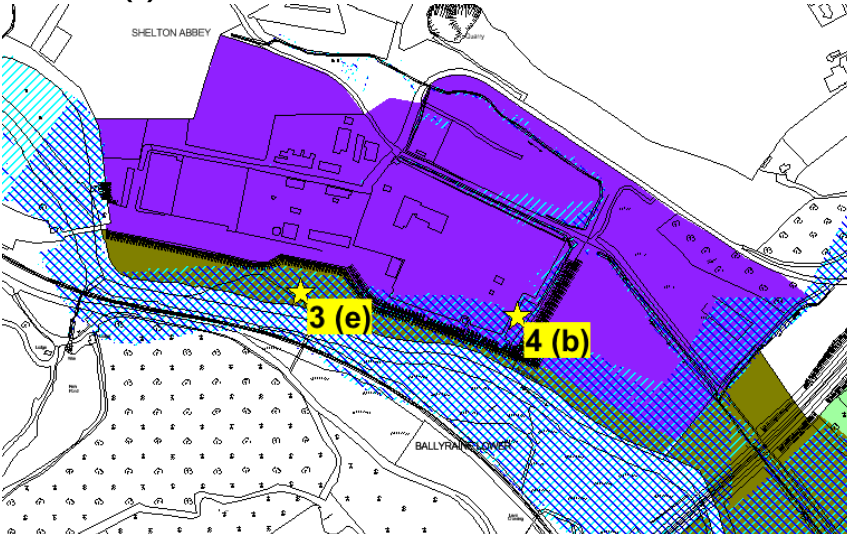
Site no. 3 (b) OS2 zone Killiniskyduff



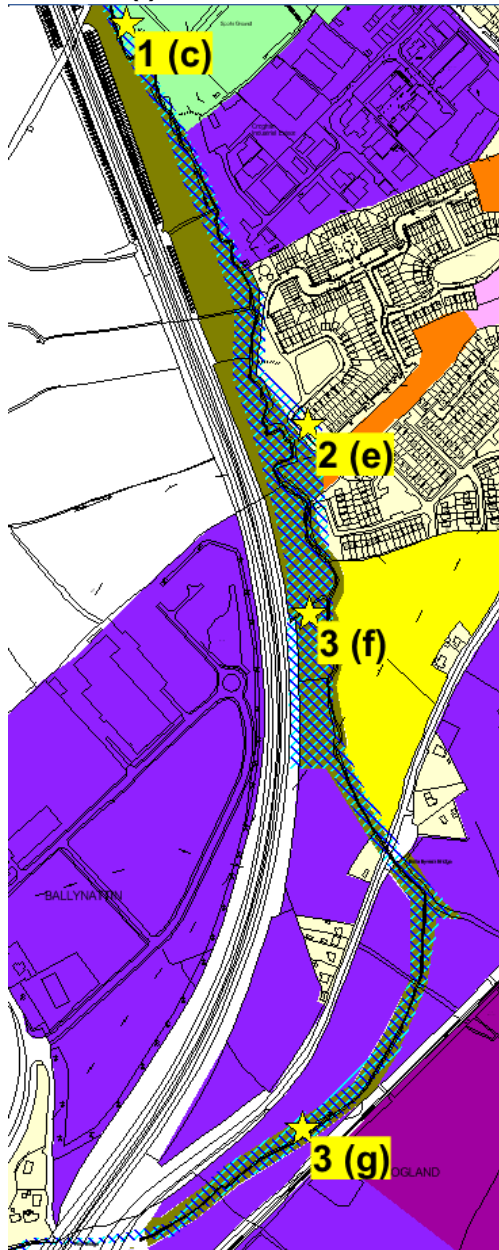
Site no. 3 (c) OS2 zone River walk, north of Main Street and Site no. 3 (d) edge of Arklow Town Marsh



Site no. 3 (e) OS2 zone Shelton

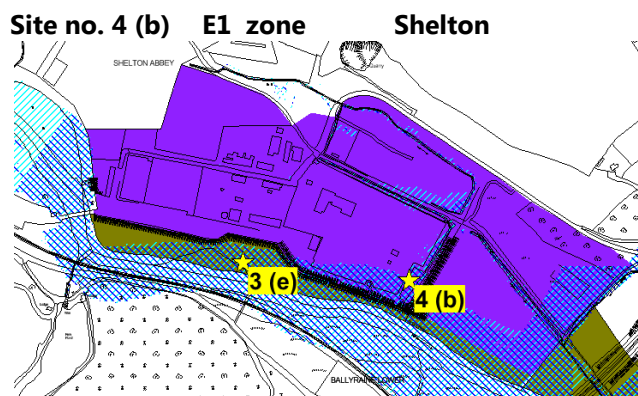
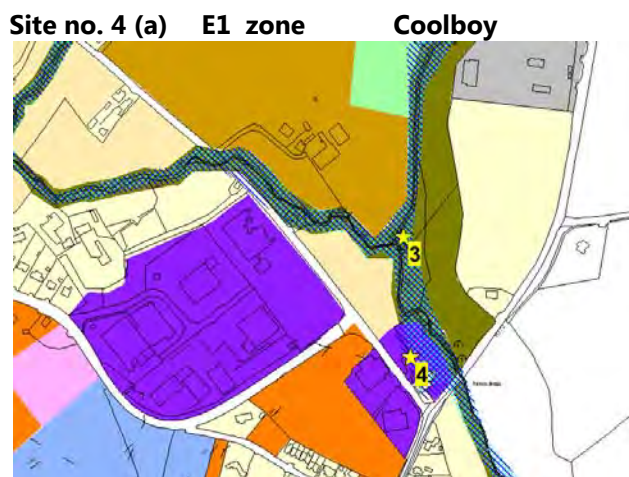


Site no. 3 (f) OS2 zone East of M11 and Site no. 3 (g) Bogland



Land zoning	Open Space 2
Flood Zone	A and B
Vulnerability of land use vs. Flood Zone	Land use zoning appropriate
Requirement for Justification Test	No

LAND USE ZONE: Employment (E1)



Land zoning	Employment
Flood Zone	A & B
Vulnerability of land use vs. Flood Zone	Flood Zone A - Land use zoning not appropriate Flood Zone B - Land use zoning appropriate
Requirement for Justification Test	Flood Zone A - Yes Flood Zone B - No

Justification Test (Flood Zone A)		
1	The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act 2000, (as amended.)	Under the Wicklow County Development Plan 2010-2016, Arklow is designated a 'Level 3 – Large Growth Town II' within the hinterland area of Dublin. Under the 'core strategy' of the CDP, the population of Arklow and Environs is targeted to grow to 23,000. It is prioritised to accommodate a large amount of population growth, to be a strong active town that is economically vibrant with high quality transport links to larger towns/cities.
2	The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement and in particular:	
	(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;	No
	(ii) Comprises significant previously developed and/or under-utilised lands;	Yes
	(iii) Is within or adjoining the core of an established or designated urban settlement;	No
	(iv) Will be essential in achieving compact or sustainable urban growth;	No
	(v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.	N/A - these lands are developed.
3	A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.	Assessment of flood risk has been incorporated into the Plan SEA process.

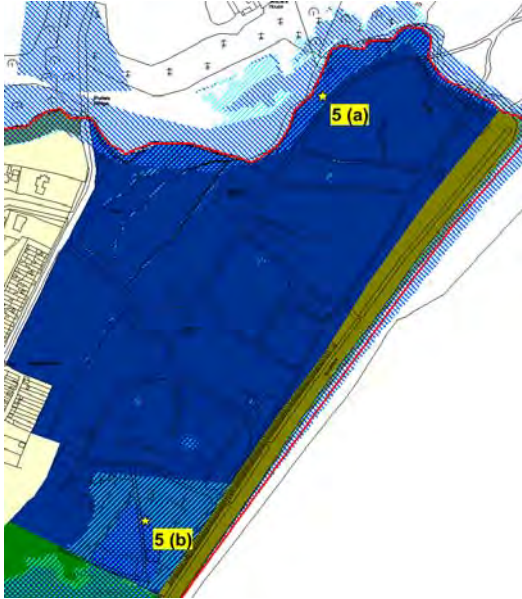
Conclusion

Justification test failed.

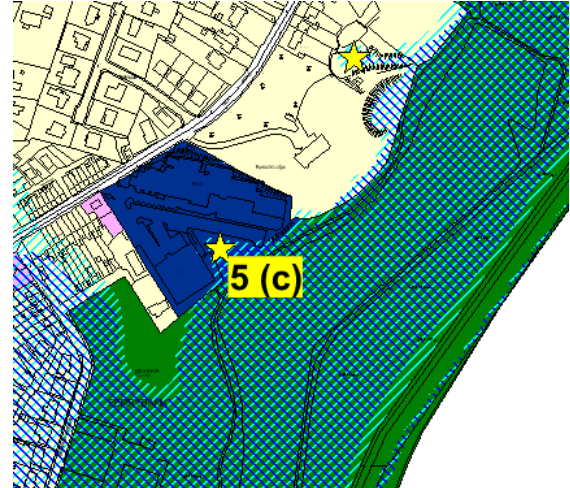
Recommendation

These lands are currently developed for permitted employment. As such, it is considered appropriate to retain the E zoning objective. Applications for minor development (e.g. extensions) are unlikely to raise significant flooding issues. Should expansion of existing uses be proposed, flood mitigation measures are required (see Section 2.3).

Site no. 5 (a) and(b) Arklow Caravan Park



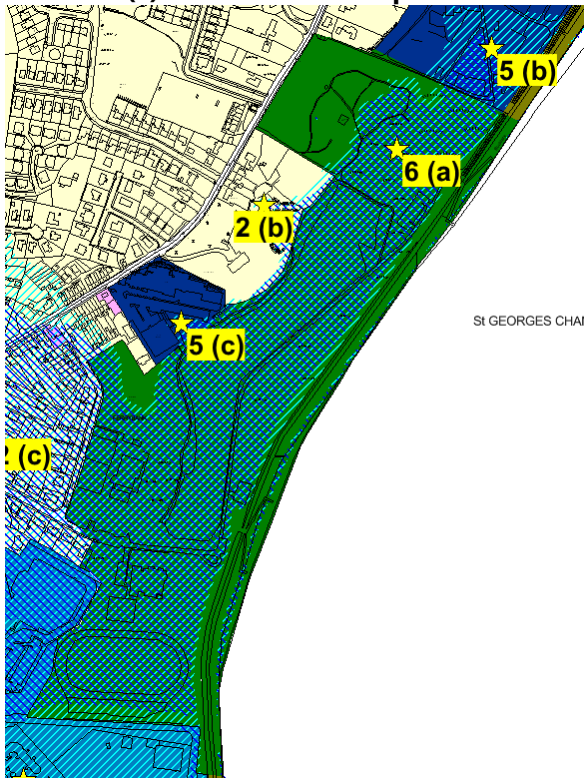
Site no. 5 (c) Tourism zone Arklow Bay Hotel



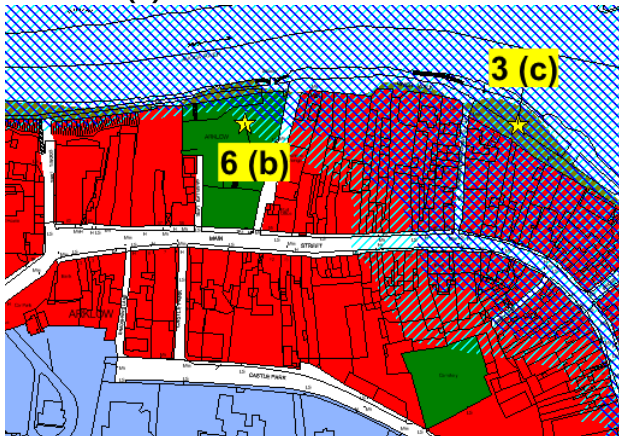
Land zoning	Tourism
Flood Zone	A and B
Vulnerability of land use vs. Flood Zone	Land use zoning not appropriate
Requirement for Justification Test	Yes

Justification Test		
1	The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act 2000, (as amended.)	Under the Wicklow County Development Plan 2010-2016, Arklow is designated a 'Level 3 – Large Growth Town II' within the hinterland area of Dublin. Under the 'core strategy' of the CDP, the population of Arklow and Environs is targeted to grow to 23,000. It is prioritised to accommodate a large amount of population growth, to be a strong active town that is economically vibrant with high quality transport links to larger towns/cities.
2	The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement and in particular:	
	(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;	No
	(ii) Comprises significant previously developed and/or under-utilised lands;	Yes
	(iii) Is within or adjoining the core of an established or designated urban settlement;	No
	(iv) Will be essential in achieving compact or sustainable urban growth;	No
	(v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.	N/A - these lands are developed.
3	A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.	Assessment of flood risk has been incorporated into the Plan SEA process.
Conclusion		
Justification test failed.		
Recommendation		
These lands are currently developed for permitted tourism use. As such, it is considered appropriate to retain the T zoning objective. Applications for minor development (e.g. extensions) are unlikely to raise significant flooding issues. Should expansion of existing uses be proposed, flood mitigation measures are required (see Section 2.3).		

Site no. 6 (a) OS1 Arklow Duck pond and nature reserve

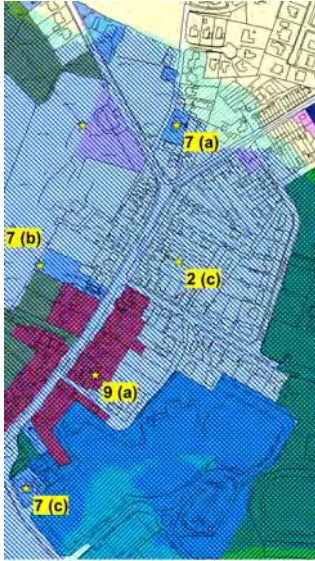


Site no. 6 (b) OS1 Arklow bandstand



Land zoning	Open Space 1
Flood Zone	A and B
Vulnerability of land use vs. Flood Zone	Land use zoning appropriate
Requirement for Justification Test	No

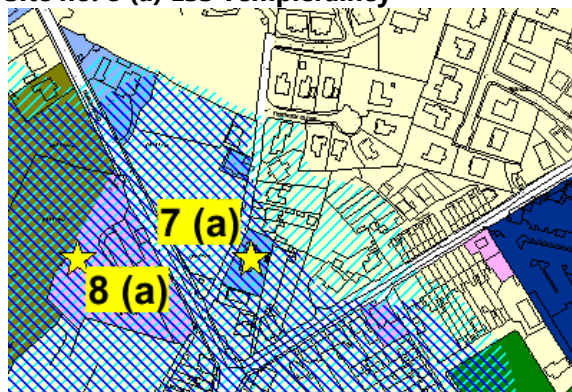
Site no. 7 (a) CE Templarainey, 7 (b) CE Ferrybank and 7 (c) CE Bridgewater



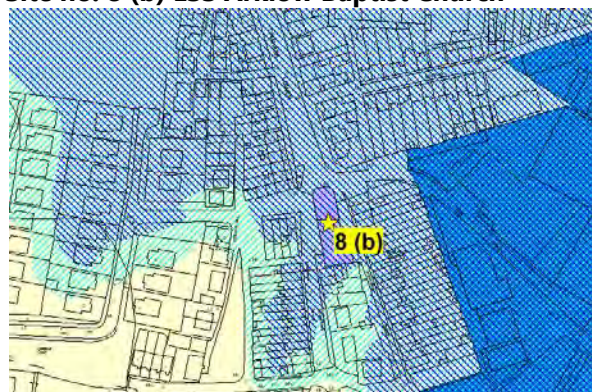
Land zoning	Community & Education
Flood Zone	A and B
Vulnerability of land use vs. Flood Zone	Land use zoning not appropriate
Requirement for Justification Test	Yes

Justification Test		
1	The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act 2000, (as amended.)	Under the Wicklow County Development Plan 2010-2016, Arklow is designated a 'Level 3 – Large Growth Town II' within the hinterland area of Dublin. Under the 'core strategy' of the CDP, the population of Arklow and Environs is targeted to grow to 23,000. It is prioritised to accommodate a large amount of population growth, to be a strong active town that is economically vibrant with high quality transport links to larger towns/cities.
2	The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement and in particular:	
	(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;	No
	(ii) Comprises significant previously developed and/or under-utilised lands;	Yes
	(iii) Is within or adjoining the core of an established or designated urban settlement;	No
	(iv) Will be essential in achieving compact or sustainable urban growth;	No
	(v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.	N/A - these lands are developed.
3	A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.	Assessment of flood risk has been incorporated into the Plan SEA process.
Conclusion		
Justification test failed.		
Recommendation		
These lands are currently developed for permitted community uses. As such, it is considered appropriate to retain the CE zoning objective. Applications for minor development (e.g. extensions) are unlikely to raise significant flooding issues. Should expansion of existing uses be proposed, flood mitigation measures are required (see Section 2.3).		

Site no. 8 (a) LSS Templeraíneiy



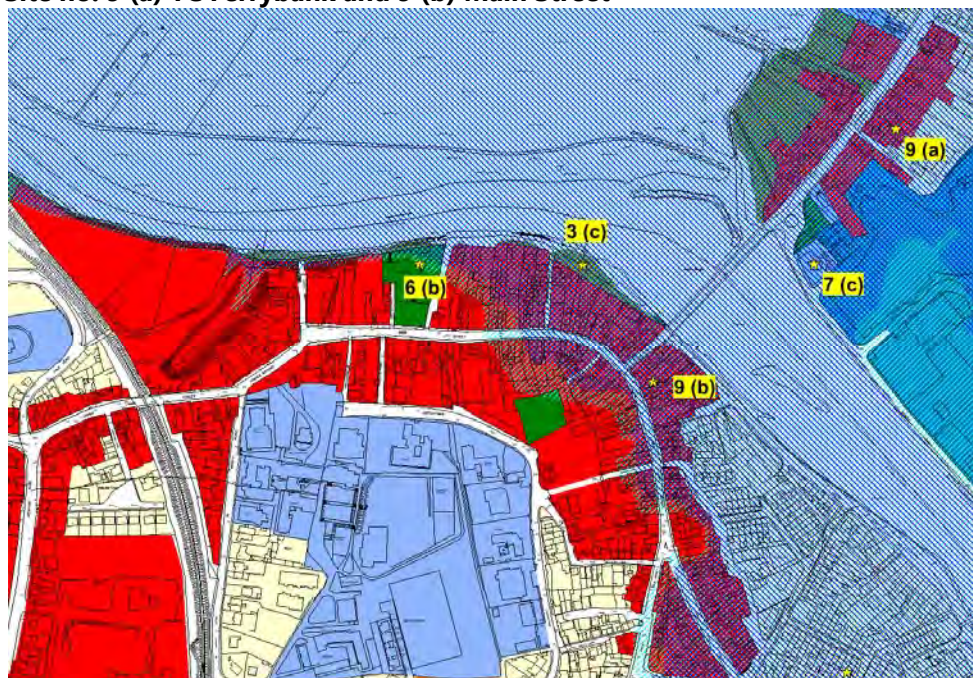
Site no. 8 (b) LSS Arklow Baptist Church



Land zoning	Local Shops & Services
Flood Zone	A and B
Vulnerability of land use vs. Flood Zone	Land use zoning not appropriate
Requirement for Justification Test	Yes

Justification Test		
1	The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act 2000, (as amended.)	Under the Wicklow County Development Plan 2010-2016, Arklow is designated a 'Level 3 – Large Growth Town II' within the hinterland area of Dublin. Under the 'core strategy' of the CDP, the population of Arklow and Environs is targeted to grow to 23,000. It is prioritised to accommodate a large amount of population growth, to be a strong active town that is economically vibrant with high quality transport links to larger towns/cities.
2	The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement and in particular:	
	(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;	No
	(ii) Comprises significant previously developed and/or under-utilised lands;	Yes
	(iii) Is within or adjoining the core of an established or designated urban settlement;	No
	(iv) Will be essential in achieving compact or sustainable urban growth;	No
	(v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.	N/A - these lands are developed.
3	A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.	Assessment of flood risk has been incorporated into the Plan SEA process.
Conclusion		
Justification test failed.		
Recommendation		
These lands are currently developed for permitted Local Shops & Services uses. As such, it is considered appropriate to retain the LSS zoning objective. Applications for minor development (e.g. extensions) are unlikely to raise significant flooding issues. Should expansion of existing uses be proposed, flood mitigation measures are required (see Section 2.3).		

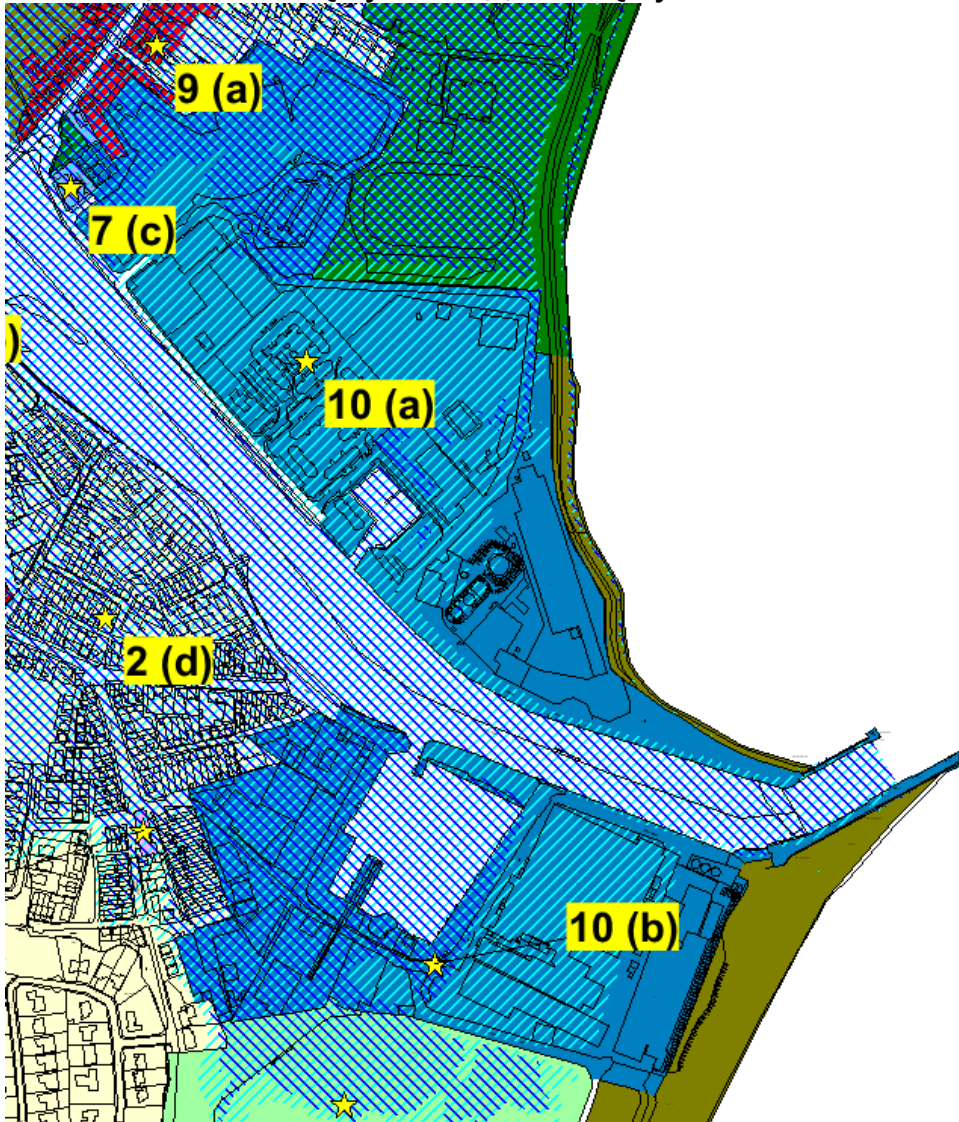
Site no. 9 (a) TC Ferrybank and 9 (b) Main Street



Land zoning	Town Centre
Flood Zone	A and B
Vulnerability of land use vs. Flood Zone	Land use zoning not appropriate
Requirement for Justification Test	Yes

Justification Test		
1	The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act 2000, (as amended.)	Under the Wicklow County Development Plan 2010-2016, Arklow is designated a 'Level 3 – Large Growth Town II' within the hinterland area of Dublin. Under the 'core strategy' of the CDP, the population of Arklow and Environs is targeted to grow to 23,000. It is prioritised to accommodate a large amount of population growth, to be a strong active town that is economically vibrant with high quality transport links to larger towns/cities.
2	The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement and in particular:	
	(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;	Yes
	(ii) Comprises significant previously developed and/or under-utilised lands;	Yes
	(iii) Is within or adjoining the core of an established or designated urban settlement;	Yes
	(iv) Will be essential in achieving compact or sustainable urban growth;	Yes
	(v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.	N/A - these lands are developed.
3	A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.	Assessment of flood risk has been incorporated into the Plan SEA process.
Conclusion		
Justification test satisfied.		
Recommendation		
No further action required.		

Site no. 10 (a) WZ North Quay and 10 (b) South Quay

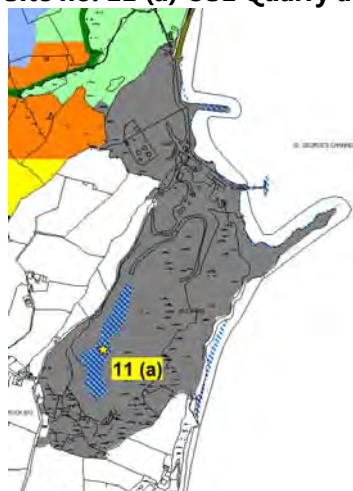


Land zoning	Waterfront
Flood Zone	A and B
Vulnerability of land use vs. Flood Zone	Land use zoning not appropriate
Requirement for Justification Test	Yes

Justification Test		
1	The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act 2000, (as amended.)	Under the Wicklow County Development Plan 2010-2016, Arklow is designated a 'Level 3 – Large Growth Town II' within the hinterland area of Dublin. Under the 'core strategy' of the CDP, the population of Arklow and Environs is targeted to grow to 23,000. It is prioritised to accommodate a large amount of population growth, to be a strong active town that is economically vibrant with high quality transport links to larger towns/cities.
2	The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement and in particular:	
	(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;	Yes
	(ii) Comprises significant previously developed and/or under-utilised lands;	Yes
	(iii) Is within or adjoining the core ¹ of an established or designated urban settlement;	Yes
	(iv) Will be essential in achieving compact or sustainable urban growth;	Yes
	(v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.	N/A - these lands are developed.
3	A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.	Assessment of flood risk has been incorporated into the Plan SEA process.
Conclusion		
Justification test satisfied.		
Recommendation		
<p>No further action required as these lands meet all of the criteria of the justification test. However these lands are developed, therefore should infill of vulnerable development be proposed, mitigation measures are required (see Section 2.3).</p> <p>These lands are currently developed for permitted employment, retail and port use – former warehouse buildings (vacant), former (vacant) and existing industrial/shipping buildings , existing permitted Bridgewater Shopping Centre, and associated marina's and storage areas. Such employment uses constitute 'less vulnerable development' and are generally acceptable for Flood Zones B and C, with such shipping/port uses constituting 'water-compatible development' and are generally appropriate uses for Flood Zones A, B and C,</p> <p>The proposed WZ zoning would allow for a greater range of uses including 'highly vulnerable development'. However, the zoning is not prescriptive as to the location of any such uses within the site therefore should permission be sought for inappropriate development in Flood Zone A or B, flood mitigation measures are required (see Section 2.3).</p>		

¹ The Flood Risk Guidelines define the 'Core of an urban settlement' as 'the core area of a city, town or village which acts as a centre for a broad range of employment, retail, community, residential and transport functions.'

Site no. 11 (a) OS1 Quarry at Rock Big



Land zoning	Extractive Industry EX
Flood Zone	A & B
Vulnerability of land use vs. Flood Zone	Flood Zone A - Land use zoning not appropriate Flood Zone B - Land use zoning appropriate
Requirement for Justification Test	Flood Zone A - Yes Flood Zone B - No

Justification Test (Flood Zone A)		
1	The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act 2000, (as amended.)	Under the Wicklow County Development Plan 2010-2016, Arklow is designated a 'Level 3 – Large Growth Town II' within the hinterland area of Dublin. Under the 'core strategy' of the CDP, the population of Arklow and Environs is targeted to grow to 23,000. It is prioritised to accommodate a large amount of population growth, to be a strong active town that is economically vibrant with high quality transport links to larger towns/cities.
2	The zoning or designation of the lands for the particular use or development type is required to achieve the proper and sustainable planning of the urban settlement and in particular:	
	(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;	No
	(ii) Comprises significant previously developed and/or under-utilised lands;	Yes
	(iii) Is within or adjoining the core of an established or designated urban settlement;	No
	(iv) Will be essential in achieving compact or sustainable urban growth;	No
	(v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.	N/A - these lands are developed.
3	A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.	Assessment of flood risk has been incorporated into the Plan SEA process.
Conclusion		
Justification test failed.		
Recommendation		
These lands are currently developed for a permitted quarry. As such, it is considered appropriate to retain the EX zoning objective. Applications for minor development (e.g. extensions) are unlikely to raise significant flooding issues. Should expansion of existing uses be proposed, flood mitigation measures are required (see Section 2.3).		

2.3 Mitigation Objectives

In order to properly manage flood risk, the following mitigation objectives are included in the County Development Plan 2016-2022; the Arklow and Environs Local Area Plan is a subsidiary plan to the County Development Plan, and these objectives will apply in Arklow and Environs:

- FL1** To prepare new or update existing flood risk assessments and flood zone maps for all zoned lands within the County as part of the review process for Local Area Plans, zoning variations and Town Plans, where considered necessary.
- FL2** To implement the 'Guidelines on the Planning System and Flood Risk Management' (DoEHLG/OPW, 2009).
- FL3** The zoning of land that has been identified as being at a high or moderate flood risk (flood zone A or B) shall be in accordance with the requirements of the Flood Risk Guidelines and in particular the 'justification test for development plans' (as set out in Section 4.23 and Box 4.1 of the guidelines).
- FL4** Applications for new developments or significant alterations/extension to existing developments in a flood risk area shall comply with the following:
- Follow the 'sequential approach' as set out in the Flood Risk Guidelines.
 - Flood risk assessments will be required with all planning applications proposed in areas identified as having a flood risk, to ensure that the development itself is not at risk of flooding and the development does not increase the flood risk in the relevant catchment (both up and down stream of the application site).
 - Where a development is proposed in an area identified as being at low or no risk of flooding, where the planning authority is of the opinion that flood risk may arise or new information has come to light that may alter the flood designation of the land, an appropriate flood risk assessment may be required to be submitted by an applicant for planning permission.
 - Restrict the types of development permitted in Flood Zone A and Flood Zone B to that are 'appropriate' to each flood zone, as set out in Table 3.2 of the guidelines for Flood Risk Management (DEHLG/OPW, 2009).
 - Developments that are an 'inappropriate' use for a flood zone area, as set out in Table 3.2 of the guidelines, will not be permitted, except where a proposal complies with the 'Justification Test for Development Management', as set out in Box 5.1 of the Guidelines.
 - Flood Risk Assessments shall be in accordance with the requirements set out in the Guidelines.
 - Generally a Flood Impact Assessment will be required with all significant developments and a certificate (from a competent person stating that the development will not contribute to flooding within the relevant catchment) will be required with all small developments of areas of 1 hectare or less.
- FL5** To prohibit development in river flood plains or other areas known to provide natural attenuation for floodwaters except where the development can clearly be justified with the Flood Risk Guidelines 'Justification test'.
- FL6** To limit or break up large areas of hard surfacing in new developments and to require all surface car parks to integrate permeability measures such as permeable paving.
- FL7** Excessive hard surfacing shall not be permitted for new, or extensions to, residential or commercial developments and all applications will be required to show that sustainable drainage techniques have been employed in the design of the development.
- FL8** To require all new developments to include proposals to deal with rain and surface water collected on site and where deemed necessary, to integrate attenuation and SUDS measures.
- FL9** For developments adjacent to all watercourses of a significant conveyance capacity or where it is necessary to maintain the ecological or environmental quality of the watercourse, any structures (including hard landscaping) must be set back from the edge of the watercourse to allow access for channel clearing/maintenance / vegetation. A minimum setback of up to 10m (or other width, as determined by the Council) will be required either side depending on the width of the watercourse.

3. Disclaimer

Arklow and Environs Strategic Flood Risk Assessment

Please read below the disclaimer and limitations associated with this assessment to avoid incorrect interpretation of the information and data provided.

Wicklow County Council makes no representations, warranties or undertakings about any of the information provided in this assessment and associated maps including, without limitations, on its accuracy, completeness, quality or fitness for any particular purpose. To the fullest extent permitted by applicable law Wicklow County Council nor any of its members, offices, associates, consultants, employees, affiliates, servants, agents or other representatives shall be liable for loss or damage arising out of, or in connection with, the use of, or the inability to use, the information provided in this assessment including but not limited to, indirect or consequential loss or damages, loss of data, income, profit, or opportunity, loss of, or damages to, property and claims of third parties, even if Wicklow County Council has been advised of the possibility of such loss or damages, or such loss or damages were reasonably foreseeable. Wicklow County Council reserves the right to change the content and / or presentation of any of the information provided in this report at their sole discretion, including these notes and disclaimer. This disclaimer, guidance notes and conditions of use shall be governed by, and construed in accordance with, the laws of the Republic Of Ireland. If any provision of this disclaimer, guidance notes and conditions of use shall be unlawful, void or for any reason unenforceable, that provision shall be deemed severable and shall not affect the validity and enforceability of the remaining provisions.

This SFRA is based on information from the sources outlined in Section 1.2 of this report. The following notes on Uncertainty and Best Available Information are attached to these studies,

UNCERTAINTY

Although great care and modern, widely-accepted methods have been used in the preparation of this assessment there is inevitably a range of inherent uncertainties and assumptions made during the estimation of design flows and the construction of flood models.

BEST AVAILABLE INFORMATION

There has been a wide range of datasets utilised in the production of this plan which are constantly changing and subsequently the analysis of these datasets is only correct at the time of assessment.

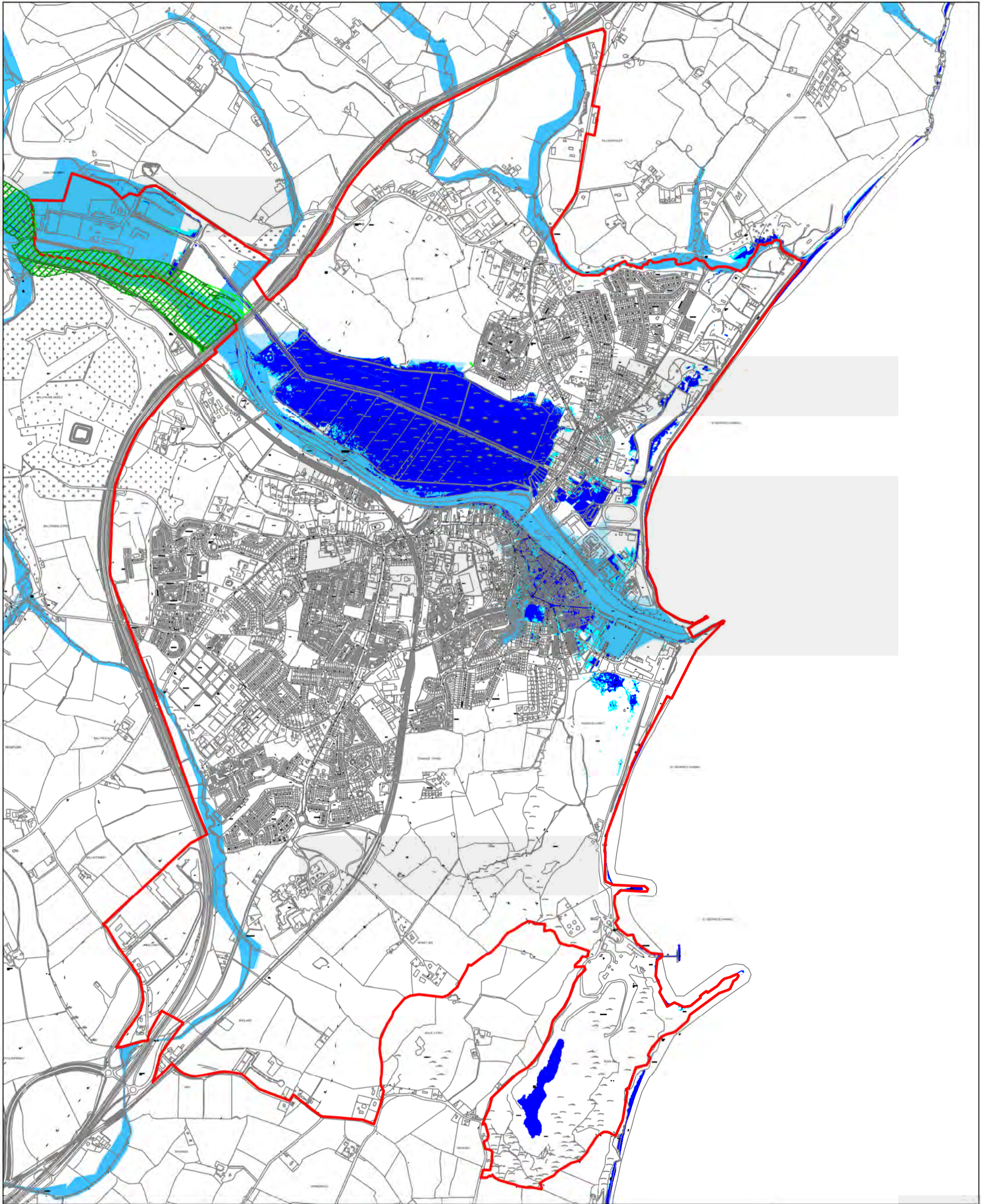
It is important to note that compliance with the requirements of 'The Planning System and Flood Risk Management-Guidelines for Planning Authorities' is a work in progress and is currently based on emerging and incomplete data as well as estimates of the locations and likelihood of flooding. As a result, this Strategic Flood Risk Assessment was based on available information at the time of assessment.

All information in relation to flood risk may be substantially altered in light of future data, new methodologies and/or analysis. As a result, all landowners and developers are advised that Wicklow County Council 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, including professional advice, to assess the vulnerability to flooding of lands in which they have an interest prior to making planning or development decisions.

4. Background Data Sources

The following maps illustrate some of the background data sources.

Source	Flood Map No.
OPW Preliminary Flood Risk Assessment (PFRA	C1
National Coastal Protection Strategy Study	C1
OPW CFRAM for Avoca River (west of Motorway)	C1
Contours	C2
Alluvial deposits	C2
Six Inch Mapping	C3
Flood extends (www.floodmaps.ie)	C4
Flood points (www.floodmaps.ie)	C4
River Avoca (Arklow Town) Flood Relief Study (Cawley, 2007 on behalf of OPW) As part of the study a hydraulic model of the River Avoca through Arklow was developed to predict flood levels.	C5










WICKLOW COUNTY DEVELOPMENT PLAN 2016-2022

**Arklow and Environs
Local Area Plan
2017**

BACKGROUND DATA SOURCES

Title: Flood Map
Map No. : C1

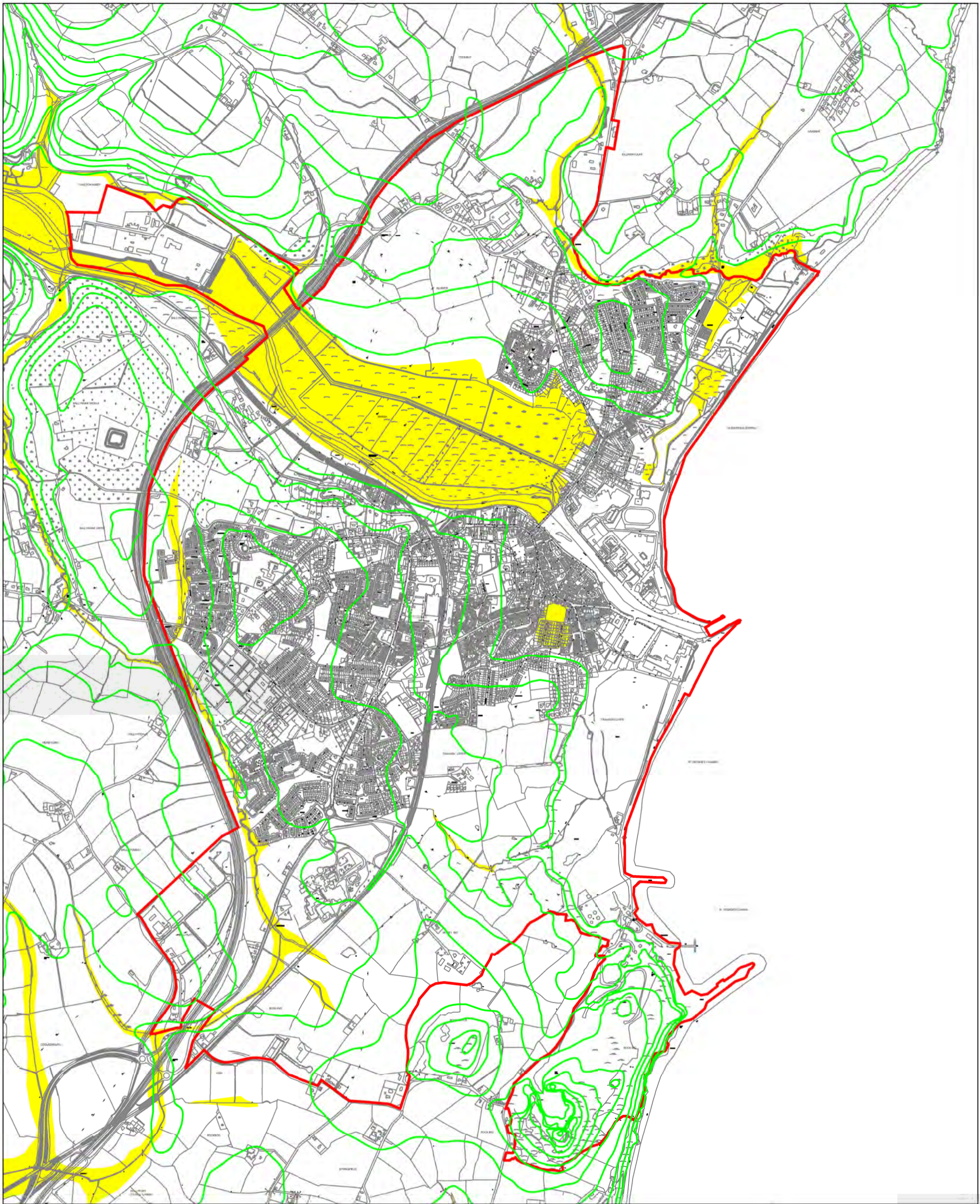
-  Settlement boundary
-  PFRA Zone A
-  PFRA Zone B
-  CFRAM Zone A
-  CFRAM Zone B
-  Coastal Flooding Zone A
-  Coastal Flooding Zone B



Wicklow County Council
Planning Department

Maps are not to scale

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WICKLOW COUNTY DEVELOPMENT PLAN 2016-2022

**Arklow and Environs
Local Area Plan
2017**

BACKGROUND DATA SOURCES

Title: Flood Map
Map No. : C2

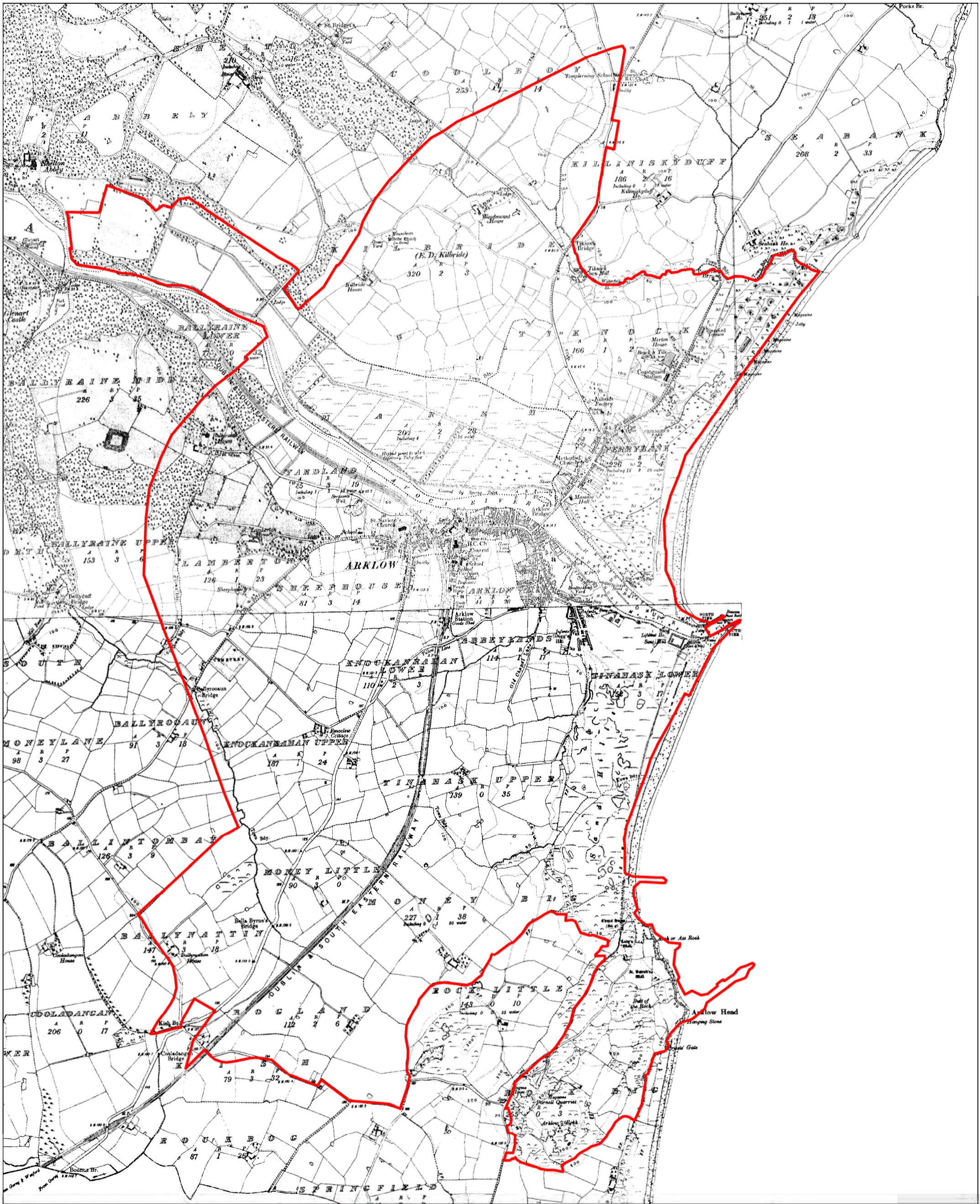
-  Settlement boundary
-  Contours
-  Alluvial Soils



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WICKLOW COUNTY DEVELOPMENT PLAN 2016-2022

**Arklow and Environs
Local Area Plan
2017**

BACKGROUND DATA SOURCES

Title: Flood Map
Map No. : C3



Settlement boundary

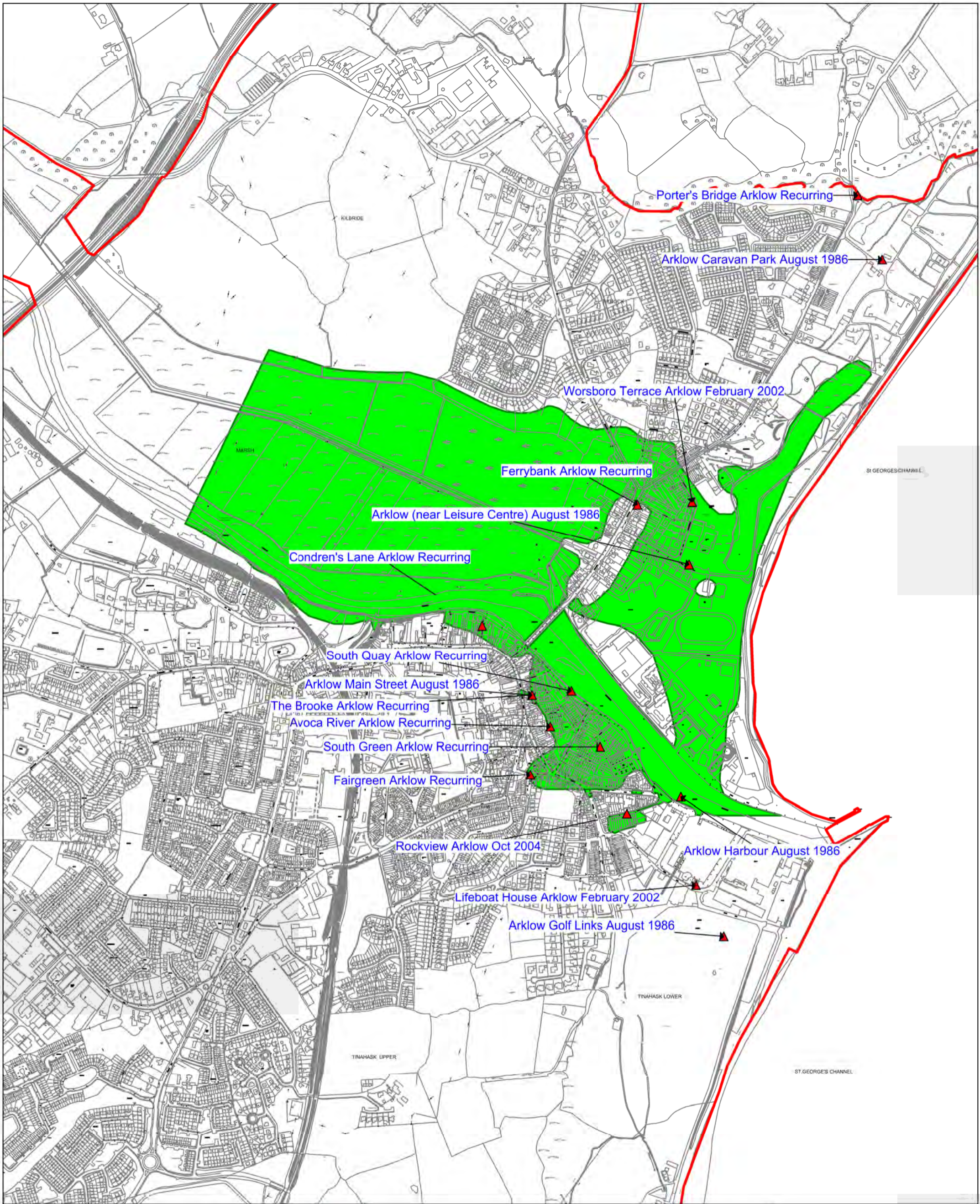
Six inch mapping



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WICKLOW COUNTY DEVELOPMENT PLAN 2016-2022

**Arklow and Environs
Local Area Plan
2017**

BACKGROUND DATA SOURCES

Title: Flood Map
Map No. : C4

 Settlement boundary

 Flood Events from www.floodmaps.ie

 Flood extents

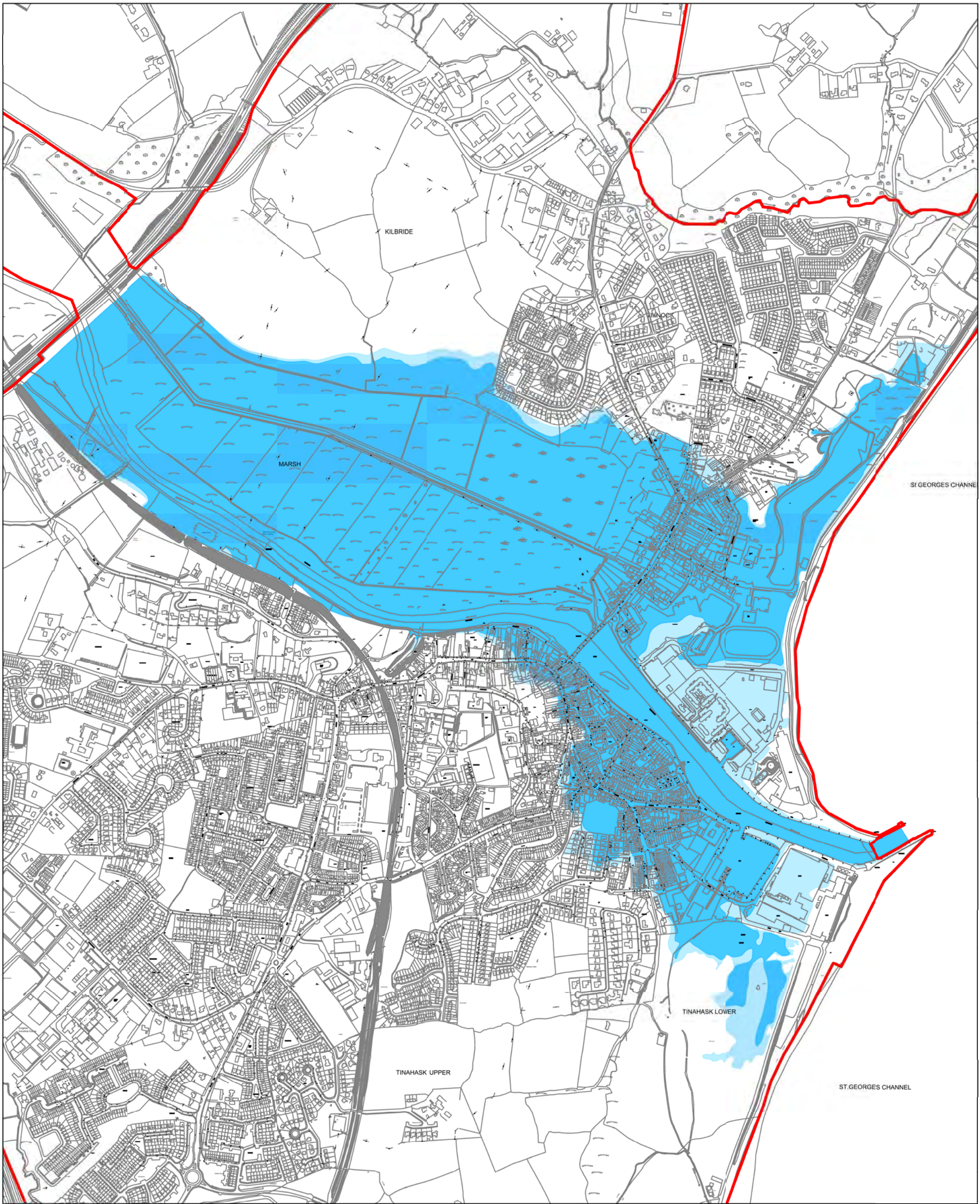
 Flood points



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WICKLOW COUNTY DEVELOPMENT PLAN 2016-2022

**Arklow and Environs
Local Area Plan
2017**

BACKGROUND DATA SOURCES

**Title: Flood Map
Map No. : C5**



Settlement boundary

River Avoca (Arklow Town) Flood Relief Study

As part of the study a hydraulic model of the River Avoca through Arklow was developed to predict flood levels.



Flood Zone A



Flood Zone B



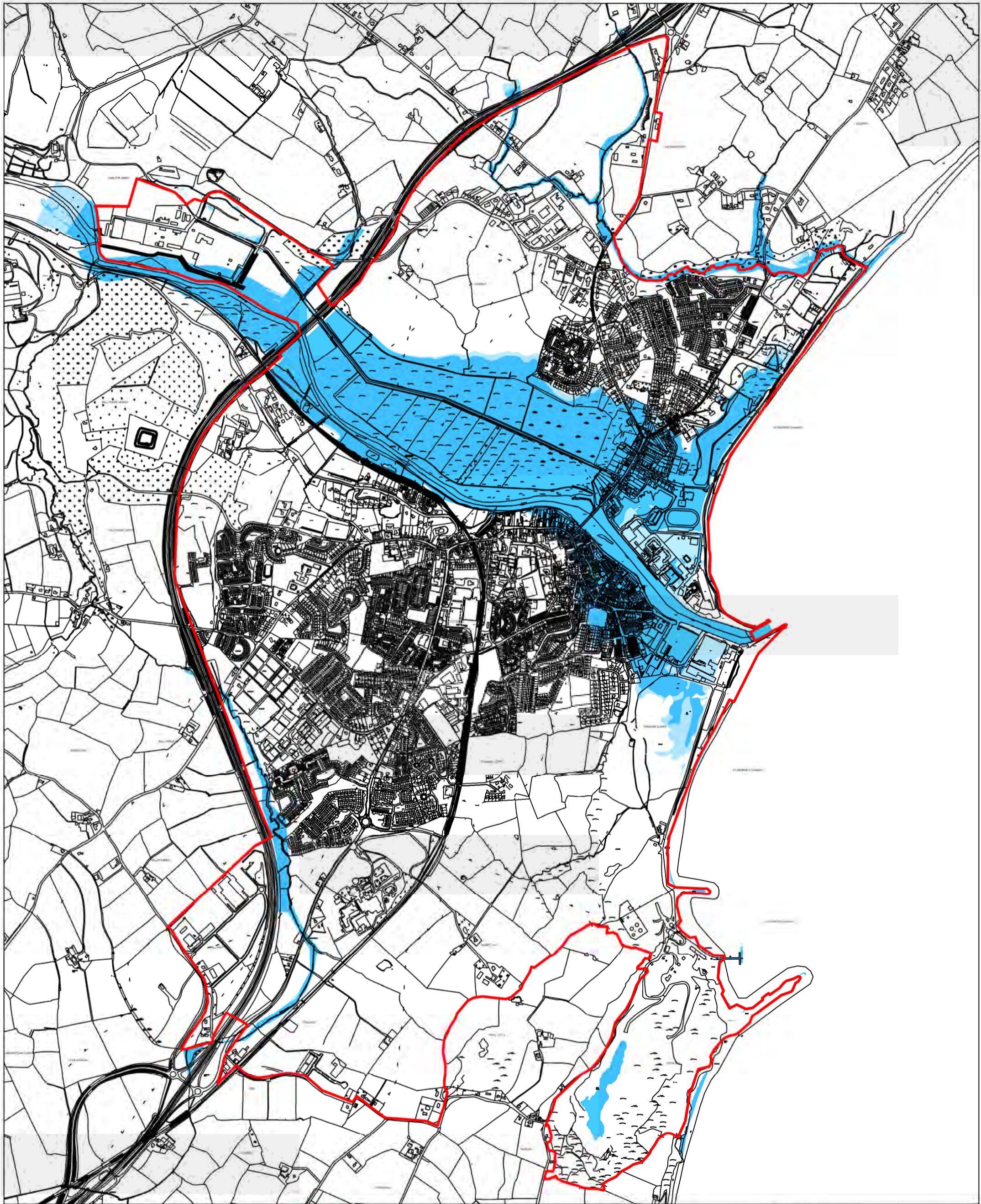
Wicklow County Council
Planning Department

Maps are not to scale

5. Mapping

The following maps illustrate the Strategic Flood Risk Assessment for Arklow and Environs LAP 2017.

Flood Map No.	
SFRA 1	Indicative Flood Zones
SFRA 2	Strategic Flood Risk Assessment Site Assessment



WICKLOW COUNTY DEVELOPMENT PLAN 2016-2022

**Arklow and Environs
Local Area Plan 2017**

Title: Indicative Flood Zones
Map No. : SFRA1



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Planning Department
Maps are not to scale

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Settlement boundary



FLOOD ZONE A: High probability of flooding

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)



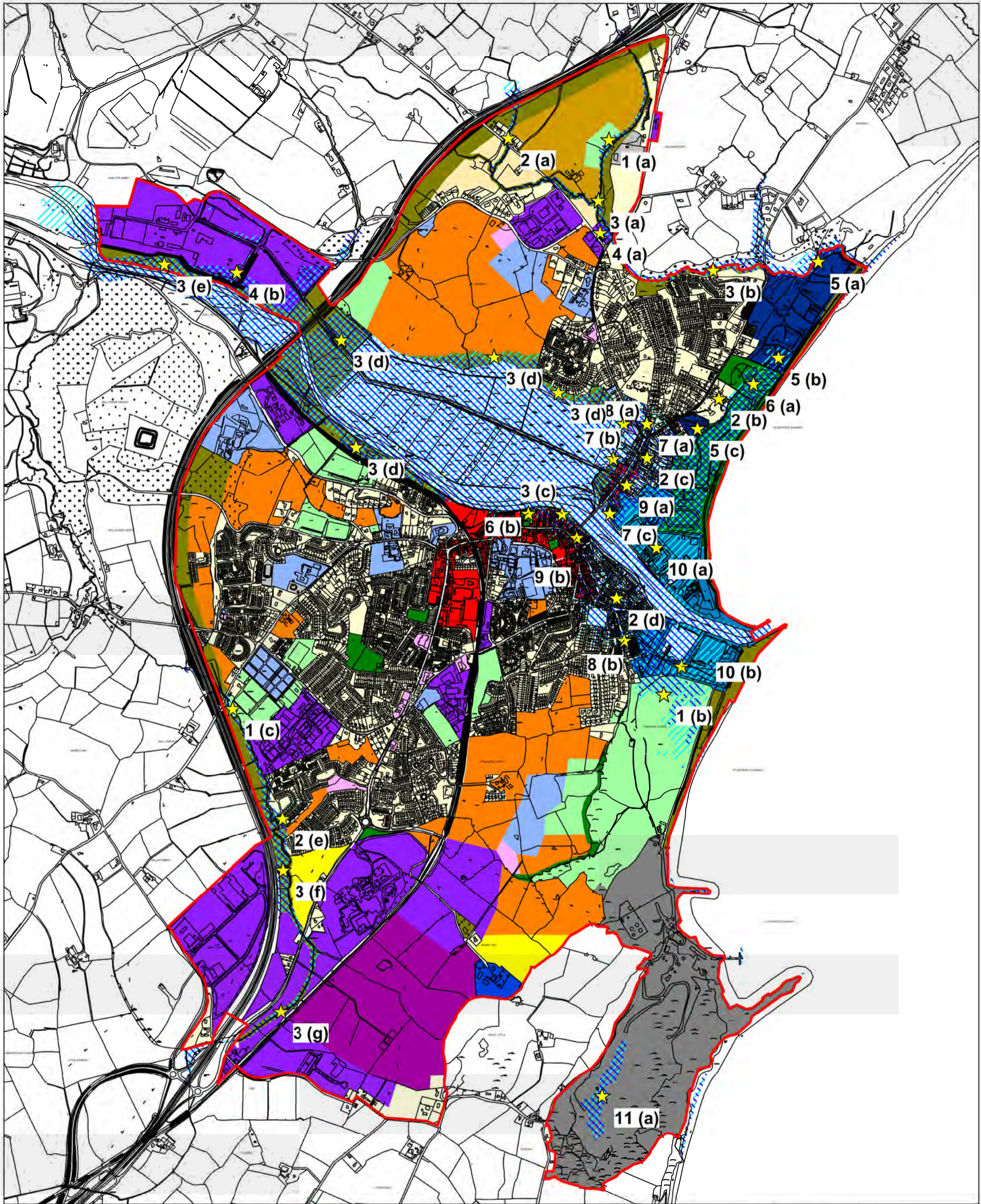
FLOOD ZONE B: Moderate probability of flooding

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)

DISCLAIMER

These Indicative Flood Zones were based on information available at the time of drafting and amending this plan. Any new data and analysis carried out after this date has not been integrated into this map but should be used in conjunction with this map for development proposals. All information may be substantially altered in light of future data and analysis.

Full Disclaimer is included in SFRA



WICKLOW COUNTY DEVELOPMENT PLAN 2016-2022





**Arklow and Environs
Local Area Plan 2017**

Title: Strategic Flood Risk Assessment
Site Assessment
Map No.: SFRA2



Wicklow County Council
Planning Department
Maps are not to scale

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-  Settlement boundary
-  FLOOD ZONE A: High probability of flooding
-  FLOOD ZONE B: Moderate probability of flooding
-  SFRA Site

DISCLAIMER

These Indicative Flood Zones were based on information available at the time of drafting and amending this plan. Any new data and analysis carried out after this date has not been integrated into this map but should be used in conjunction with this map for development proposals. All information may be substantially altered in light of future data and analysis.

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