STAGE 2 STRATEGIC FLOOD RISK ASSESSMENT

FOR THE

LONGFORD COUNTY DEVELOPMENT PLAN 2015-2021

for: **Longford County Council**

Great Water Street

Longford

County Longford

by: **CAAS Ltd.**

2nd Floor, The Courtyard

25 Great Strand Street

Dublin 1

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Section 1 Introduction and Policy Background

1.1 Introduction and Terms of Reference

Longford County Council has reviewed the Longford County Development Plan 2009-2015 and prepared and made a new County Development 2015-2021 under Sections 11 and 12 of the Planning and Development Acts 2000-2010. The Plan has underwent Strategic Flood Risk Assessment (SFRA) and this document presents the findings of the SFRA.

The SFRA has been undertaken in accordance with 2009 *The Planning System and Flood Risk Management - Guidelines for Planning Authorities* Department of the Environment, Heritage and Local Government and Office of Public Works (OPW).

1.2 Consultation

As required by the Flood Risk Management Guidelines, the SFRA process is integrated into the Strategic Environmental Assessment (SEA) process that is being undertaken alongside the preparation of the County Development Plan.

The environmental authorities specified by the SEA Regulations were consulted on the SFRA early in the process and the EPA and OPW attended a scoping meeting held on 22 May 2013 in EPA Offices, Richview, Dublin 14.

1.3 Conclusion

A number of recommendations were made for integration into the County Development Plan with regard to zoning and flood risk management (see Section 4). All recommendations were adopted as part of the Plan.

1.4 Flood Risk, Context and its Relevance as an Issue to the County Development Plan

1.4.1 Flood Risk

Flooding is an environmental phenomenon can pose a risk to human health as well as causing economic and social effects. Some of the effects of flooding are identified on Table 1.1 below.

Parts of County Longford are vulnerable to flooding and this vulnerability can be exacerbated by changes in both the occurrence of severe rainfall events and sea level rise and associated flooding. Local conditions such as low-lying lands and slow surface water drainage increase the risk of flooding. This risk can be increased by human actions including clearing of natural vegetation to make way for agriculture, draining of bog and wetland areas, the development of settlements in the flood plains of rivers and on low lying or eroding coastlines as well as by changing weather patterns. Inadequately planned infrastructural development, culverting, forestry operations and urban development in the floodplain, for example, can also give rise to flooding hazards.

Tangible Effects	Intangible Human and Other Effects
Damage to buildings (houses)	Loss of life
Damage to contents of buildings	Physical injury
Damage to new infrastructure e.g. roads	Increased stress
Loss of income	Physical and psychological trauma
Disruption of flow of employees to work causing knock on effects	Increase in flood related suicide
Enhanced rate of property deterioration and decay	Increase in ill health
Long term rot and damp	Homelessness
	Loss of uninsured possessions

Table 1.1 Potential effects that may occur as a result of flooding

1.4.2 Context

Flood Risk must be seen in the context of both the long history of settlement in the county and in the context of existing and emerging policy and practice in relation to planning, development and flooding. The location and layout of the county's towns have generally evolved to avoid flood-prone areas. The direct impact of new urban development is generally not as significant a problem now as it was in the past because of the implementation of Sustainable Drainage Systems (SuDS) that aim to control run-off as close to its source as possible using a sequence of management practices and control structures designed to drain surface water in a more sustainable fashion than some conventional techniques. However vigilance is still needed at the planning and zoning stage to avoid flood risk, for example in less well understood urban fringe areas – hence the need for SFRAs of plans for various sectors and at various levels, including SFRAs for County Development Plans and Local Area Plans and Flood Risk Assessments for individual projects.

1.5 Flood Risk Management Policy

1.5.1 EU Floods Directive

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

- Carry out a preliminary assessment by December 2011 in order to identify the river basins and associated coastal areas where potential significant flood risk exists.
- Prepare flood hazard and risk maps for the identified areas (these will be finalised in 2015).
- Prepare flood risk management plans focused on prevention, protection and preparedness (these are likely to be finalised in 2016). These plans will include measures to reduce the probability of flooding and its potential consequences.

Implementation of the EU Floods Directive is required to be coordinated with the requirements of the EU Water Framework Directive and associated River Basin Management Plans.

1.5.2 National Flood Policy

Historically, flood risk management focused on land drainage for the benefit of agricultural improvement. With increasing urbanisation, the Arterial Drainage Act, 1945, was amended in 1995 to permit the OPW to implement localised flood relief schemes to provide flood protection for cities, towns and villages.

In line with changing national and international paradigms on how to manage flood risk most effectively and efficiently, a review of national flood policy was undertaken in 2003-2004. The review was undertaken by an Inter-Departmental Review Group, led by the Minister of State at the Department of Finance with special responsibility for the OPW. The Review Group prepared a report that was put to Government, and subsequently approved and published in September 2004 (Report of the Flood Policy Review Group, OPW, 2004).

The scope of the review included a review of the roles and responsibilities of the different bodies with responsibilities for managing flood risk, and to set a new policy for flood risk management in Ireland into the future. The adopted policy was accompanied by many specific recommendations, including:

- Focus on managing flood risk, rather than relying only flood protection measures aimed at reducing flooding;
- Taking a catchment-based approach to assess and manage risks within the whole-catchment context; and
- Being proactive in assessing and managing flood risks, including the preparation of flood maps and flood risk management plans.

1.5.3 National CFRAM Programme

The national Catchment Flood Risk Assessment and Management (CFRAM) programme commenced in Ireland in 2011. The CFRAM Programme is intended to deliver on core components of the National Flood Policy, adopted in 2004, and on the requirements of the EU Floods Directive. The Programme is being implemented through CFRAM studies which are being undertaken for each of the six river basin districts in Ireland. County Longford is located within both the Shannon International and the North Western International River Basin Districts. The national CFRAM Programme comprises three phases as follows:

- The Preliminary Flood Risk Assessment (PFRA) in 2011;
- The CFRAM Studies and parallel activities, from 2011 to 2015; and
- Implementation and Review from 2016 onwards.

The Programme provides for three main consultative stages as follows:

- PFRAs in 2011;
- Flood Hazard Mapping (these will be finalised in 2015); and
- Flood Risk Management Plans (these are likely to be finalised in 2016).

The OPW is the lead agency for flood risk management in Ireland. The coordination and implementation of Government policy on the management of flood risk in Ireland is part of its responsibility. The European Communities (Assessment and Management of Flood Risks) Regulations 2010 (SI No. 122) identifies the Commissioners of Public Works as the 'competent authority' with overall responsibility for implementation of the Floods Directive 2007/60/EC which includes requirements to prepare a preliminary assessment by 2011, flood risk mapping (these will be finalised in 2015) and flood risk management plans (these are likely to be finalised in 2016). It is the principal agency involved in the preparation of Flood Risk Assessment and Management studies (FRAMS).

The PFRAs 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 that is of particular concern nationally, are identified as Areas for Further Assessment (AFAs) or Areas of Potential Significant Risk

(APSRs) and more detailed assessment on the extent and degree of flood risk is currently being undertaken in these areas with the objective of producing Flood Hazard Mapping.

1.5.4 Flood Risk Management Guidelines

1.5.4.1 Introduction

In 2009, the OPW and the then Department of the Environment and Local Government (DEHLG) published Guidelines on flood risk management for planning authorities entitled *The Planning System and Flood Risk Management - Guidelines for Planning Authorities*. The Guidelines introduce mechanisms for the incorporation of flood risk identification, assessment and management into the planning process. Implementation of the 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 Guidelines in carrying out their functions under the Planning Acts.

The core objectives of the Guidelines are to:

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

1.5.4.2 Principles of Flood Risk Management

The key principles of flood risk management set out in the Flood Risk Management Guidelines are to:

- Avoid development that will be at risk of flooding or that will increase the flooding risk elsewhere, where possible;
- Substitute less vulnerable uses, where avoidance is not possible; and
- Mitigate and manage the risk, where avoidance and substitution are not possible.

The Guidelines follow the principle that development should not be permitted in flood risk areas, particularly floodplains, except where there are no alternative and appropriate sites available in lower risk areas that are consistent with the objectives of proper planning and sustainable development.

Development in areas which have the highest flood risk should be avoided and/or only considered in exceptional circumstances (through a prescribed *Justification Test*) if adequate land or sites are not available in areas which have lower flood risk. Most types of development would be considered inappropriate in areas which have the highest flood risk. Only water-compatible development such as docks and marinas, dockside activities that require a waterside location, amenity open space, outdoor sports and recreation and essential transport infrastructure that cannot be located elsewhere would be considered appropriate in these areas.

1.5.4.3 Stages of SFRA

The Flood Risk Management Guidelines recommend a staged approach to flood risk assessment that covers both the likelihood of flooding and the potential consequences. The stages of appraisal and assessment are:

> **Stage 1 Flood risk identification** – to identify whether there may be any flooding or surface water management issues related to either the area of regional planning guidelines, development plans and LAP's or a proposed development site that may warrant further investigation at the appropriate lower level plan or planning application levels;

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 scope the extent of the risk of flooding which may involve preparing indicative flood zone maps. Where hydraulic models exist the potential impact of a development on flooding elsewhere and of the scope of possible mitigation measures can be assessed. In addition, the requirements of the detailed assessment should be scoped; and

Stage 3 Detailed flood 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 or land to be zoned, of its potential impact on flood risk elsewhere and of the effectiveness of any proposed mitigation measures.

1.5.4.4 Flood Zones

Flood risk is an expression of the combination of the flood probability or likelihood and the magnitude of the potential consequences of the flood event. It is normally expressed in terms of the following relationship:

Flood risk = Likelihood of flooding x Consequences of flooding

Likelihood of flooding is normally defined as the percentage probability of a flood of a given magnitude or severity occurring or being exceeded in any given year. For example, a 1% Annual Exceedance Probability (AEP) indicates the severity of a flood that is expected to be exceeded on average once in 100 years, i.e. it has a 1 in 100 (1%) chance of occurring in any one year.

Consequences of flooding depend on the hazards associated with the flooding (e.g. depth of water, speed of flow, rate of onset, duration, wave-action effects, water quality), and the vulnerability of people, property and the environment potentially affected by a flood (e.g. the age profile of the population, the type of development, presence and reliability of mitigation measures etc.).

Flood zones are geographical areas within which the likelihood of flooding is in a particular range and they are a key tool in flood risk management within the planning process as well as in flood warning and emergency planning.

There are three types or levels of flood zones defined for the purposes of implementing the Flood Risk Management Guidelines:

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.

1.6 Emerging Information

It is important to note that compliance with the requirements of the Flood Risk Management Guidelines is currently based on emerging and incomplete data as well as estimates of the locations and likelihood of flooding. The assessment and mapping of areas of flood risk, in particular, still awaits the publication of both Flood Hazard and Risk Maps for Areas for Further Assessment (AFAs) (to be finalised in 2015) and for Flood Risk Management Plans (estimated for 2016).

Available information in relation to flood risk - which is imperfect and incomplete - therefore may be substantially altered in light of future data and analysis.

Flood Hazard and Risk mapping will be integrated into this SFRA once finalised and available during the County Development Plan preparation process.

Future revisions of this SFRA, after adoption of the County Development Plan, will integrate other new and emerging data, including, when available, the information contained in the Flood Risk Management Plans.

1.7 Content of the County Development Plan

The Longford County Development Plan contains land use zoning for 16 settlements/environs as follow: Abbeyshrule, Ardagh, Aughnacliffe, Ballinalee, Ballinamuck, Ballymahon, Carrickglass, Clondra, Drumlish, Edgeworthstown, Granard, Keenagh, Lanesborough, Legan, Longford Environs and Newtownforbes. These zoned areas are considered by the SFRA in the following sections.

The Plan also contains policies and objectives for various sectors including economic development, infrastructure, housing and environment, heritage and amenities and housing. These provisions are added to by the measures recommended by the SFRA.

Section 2 Stage 1 SFRA - Flood Risk Identification

2.1 Introduction

Stage 1 SFRA (flood risk identification) was undertaken in order to identify whether there may be any flooding or surface water management issues within the zoned areas of the County and consequently whether Stage 2 SFRA (initial flood risk assessment) should be proceeded to for these areas.

The Stage 1 SFRA was a desk-based exercise based on existing information on flood risk indicators and involved consulting with a range of sources as detailed in Section 2.2 below.

2.2 Flood Risk Indicators

2.2.1 Historical Flood Risk Indicator Mapping

Indicators of flood risk that are based on historical flooding events are identified and described on Table 2.1 below.

Indicators included on Table 2.1, apart from the Council's flood time aerial photography for certain locations and the data from the River Camlin Flood Study Integrated Report (Nicholas O'Dwyer on behalf of Longford County Council), are mapped on a county level on Figure 2.1 and in Appendix I, on a larger scale for, the County's zoned areas.

2.2.1 New Flood Risk Indicator Mapping from the OPW

In recent years, the OPW has published flood risk indicator data based on analysis and modelling (see Table 2.2).

The OPW are scheduled to finalise new Flood Hazard and Risk Maps for Areas for Further Assessment (AFAs) in 2015. The OPW are also scheduled to prepare Flood Risk Management Plans focused on prevention, protection and preparedness by December 2015. The Flood Risk Management Plans will include measures to reduce the probability of flooding and its potential consequences.

Preliminary Flood Risk Assessment (PFRA) indicators described on Table 2.2 are mapped on a county level on Figure 2.2 and in Appendix I, on a larger scale, for the County's zoned areas.

Information Source	Description	Spatial Spread	Strategic Limitations
Recorded Flood Events from the OPW	A flood event is the occurrence of recorded flooding at a given location on a given date. The flood event is derived from different types of information (reports, photographs etc.).	County wide data (uneven), especially in settlements and along roads	This dataset only provides a spot location.
Recurring Flood Events	A flood event that has occurred more than once at a certain area is named a recurring flood event.	County wide data (uneven), especially in settlements and along roads	This dataset only provides a spot location.
OPW Flood Extent	A flood extent is an inundated area as recorded at a certain moment in time. This layer of information includes floods recorded in 1999/2000 and 1954.	Coverage provided in the western and southern parts of county along River Shannon and Lough Ree and along the River Camlin downstream of Longford Town	Coverage limited
River Camlin Flood Study Integrated Report (Nicholas O'Dwyer on behalf of Longford County Council)	For the Camlin River and its flood plain at and downstream of Longford town, this study maps: • The November 2009 flood extent; and • A 1% Annual Exceedance Probability design flood.	Camlin River and its flood plain at and downstream of Longford town. Relevant to zoned areas of Clondra and Longford Environs.	Coverage limited. Other limitations relate to the modelled flood, such as those of the computer model HEC-RAS Software Version 4.1.0
Flood Time Water Body November 2009 (Satellite Imagery) (Flood Extent)	This dataset was extracted using remote sensing of satellite data taken during the November 2009 flood event given to the OPW by SERTIT, France.	County wide for the 2009 event (most flooding in west of the county along the River Shannon and Lough Ree)	Dataset notes 'limitations due to the scale, resolution, data and interpretation of the original source materials'.
Alluvium Soils	Mineral alluvial soil mapping is indicative of recurrent or significant fluvial flooding at some point in the past and was generated by Teagasc with co-operation of the Forest Service, EPA and GSI. This project was completed May 2006.	Identified where alluvial soil occurs across the county	Drainage may have changed significantly since these soils were deposited.
Benefitting lands (OPW)	Benefitting lands mapping is a dataset identifying land that might benefit from the implementation of Arterial (Major) Drainage Schemes (under the Arterial Drainage Act 1945) and indicating areas of land estimated or reported to be subject to flooding or poor drainage.	Coverage provided in the southern and eastern parts of the county	Identifies broad areas - low resolution for flood risk management
Drainage Districts (OPW)	This drainage scheme mapping dataset was prepared on behalf of the Drainage Districts (Local Authorities with statutory responsibility for maintenance under the Arterial Drainage Act, 1925). These maps identify land that might benefit from the implementation of Arterial (Major) Drainage Schemes and indicate areas of land subject to flooding or poor drainage.	Coverage provided in various parts of the county, including the catchment of the River Camlin	Identifies large broad areas - very low resolution for flood risk management
Aerial Photographs	Longford County Council hold flood time aerial photography for certain locations which was considered by the SFRA.	Coverage limited for zoned areas, includes Clondra, Lanesborough and Longford town	Potential errors can occur in mapping oblique photography

Table 2.1 Historical Flood Risk Indicator Mapping

Information Source	Description	Spatial Spread	Strategic Limitations
OPW Preliminary Flood Risk Assessment (PFRA) Fluvial, Groundwater and Pluvial flood maps	The OPW Preliminary Flood Risk Assessment (PFRA) mapping dataset has been arrived at by: • Reviewing records of floods that have happened in the past; • Undertaking analysis to determine which areas might flood in the future, and what the impacts might be; and • Extensive consultation with each local authorities and other Government departments and agencies. This assessment has considered all types of flooding, including that which can occur from rivers, the sea and estuaries (not relevant for County Longford), heavy rain, groundwater, the failure of infrastructure, and so on. It has also considered the impacts flooding can have on people, property, businesses, the environment and cultural assets. Further information on the purpose and development of the OPW PFRA Maps are available on www.cfram.ie.	County wide	The PFRA is only a preliminary assessment, based on available or readily derivable information. Analysis has been undertaken to identify areas prone to flooding, and the risks associated with such flooding, but this analysis is purely indicative and undertaken for the purpose of completing the draft PFRA. The mapping has been developed using simple and cost-effective methods and is based on broad-scale simple analysis and may not be accurate for a specific location/use.
Emerging data from the North Western International and Shannon International CFRAM Studies	The North Western and Shannon International CFRAM Flood Risk Reviews, which were undertaken to help validate the findings of the PFRA, have informed decisions on which sites will be taken forward as Areas for Further Assessment (AFAs) for a more detailed assessment within the CFRAM Programmes.	Abbeyshrule, Ballymahon, Clondra, Edgeworthstown, Lanesborough Power Station and Longford	No new spatial data provided.
	As previously noted, the OPW are scheduled to publish finalise Flood Hazard and Risk Maps in 2015.	Abbeyshrule, Ballymahon, Clondra, Edgeworthstown, Lanesborough Power Station and Longford	Not applicable (currently not available).

Table 2.2 New Flood Risk Indicators

2.3 Conclusion

After considering available information potential flood risk issues were identified and the SFRA proceeded to Stage 2.

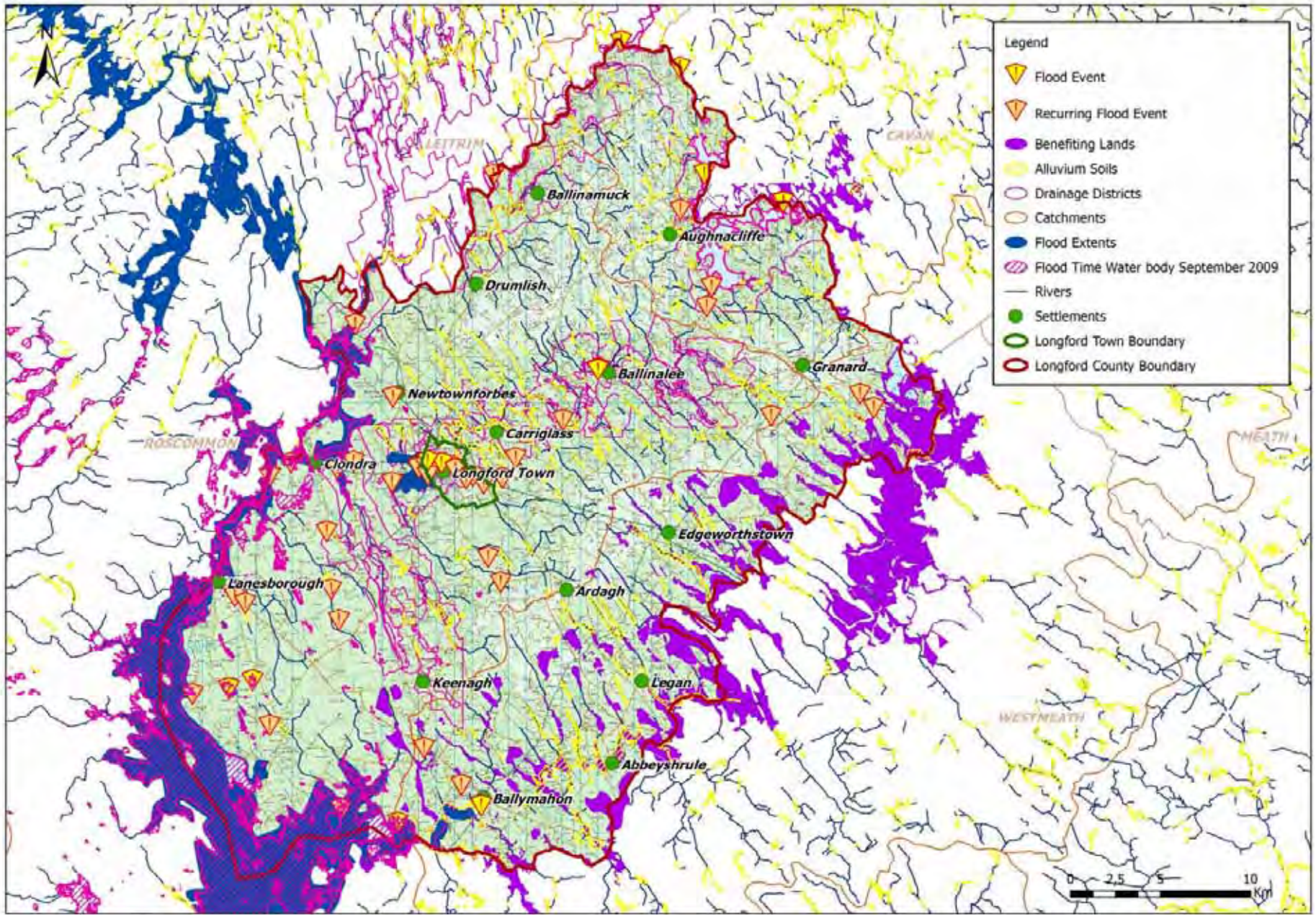


Figure 2.1 Occurrence of Available Historical Flood Risk Indicators in County Longford

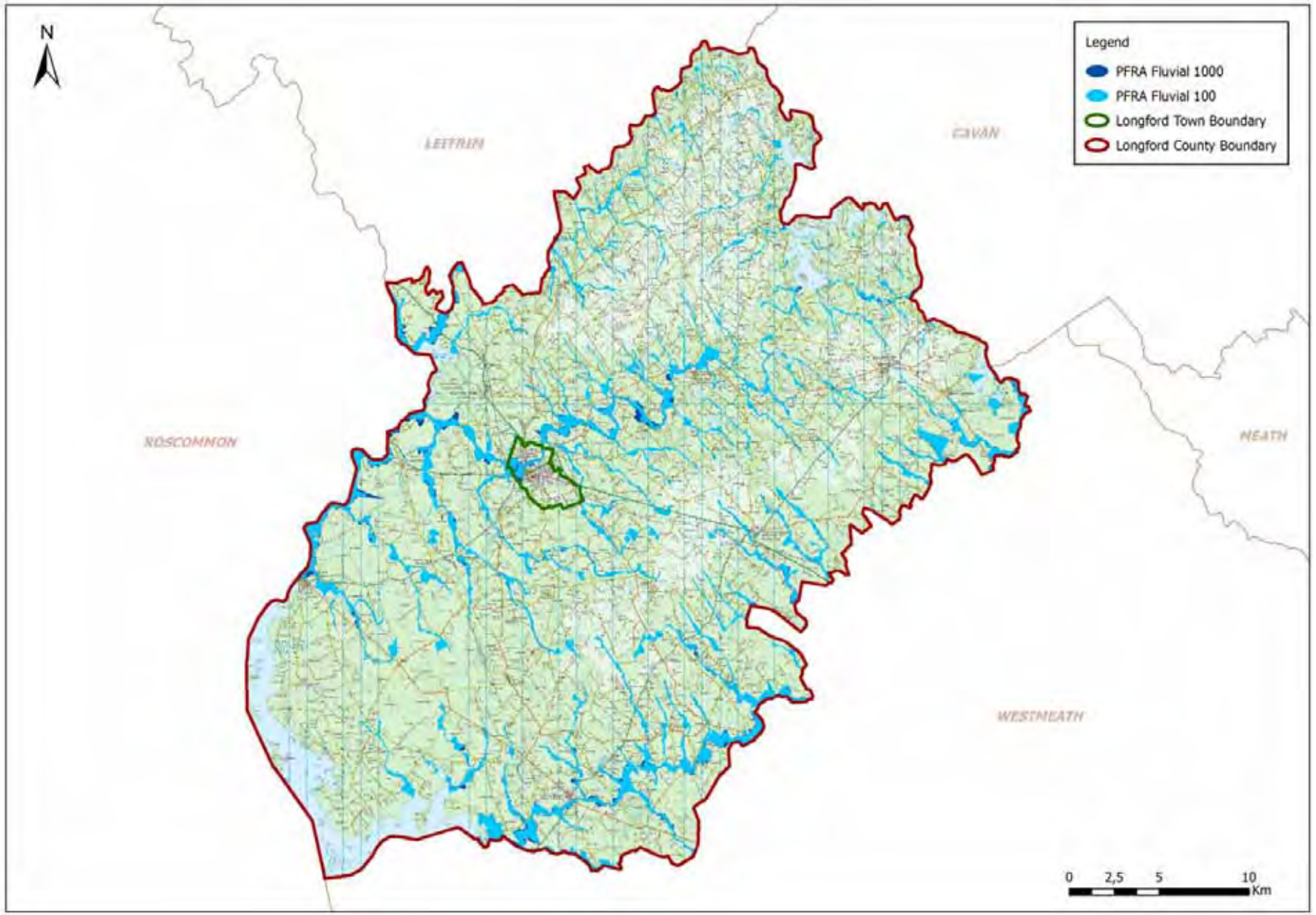


Figure 2.2 Occurrence of PFRA Fluvial Areas in County Longford

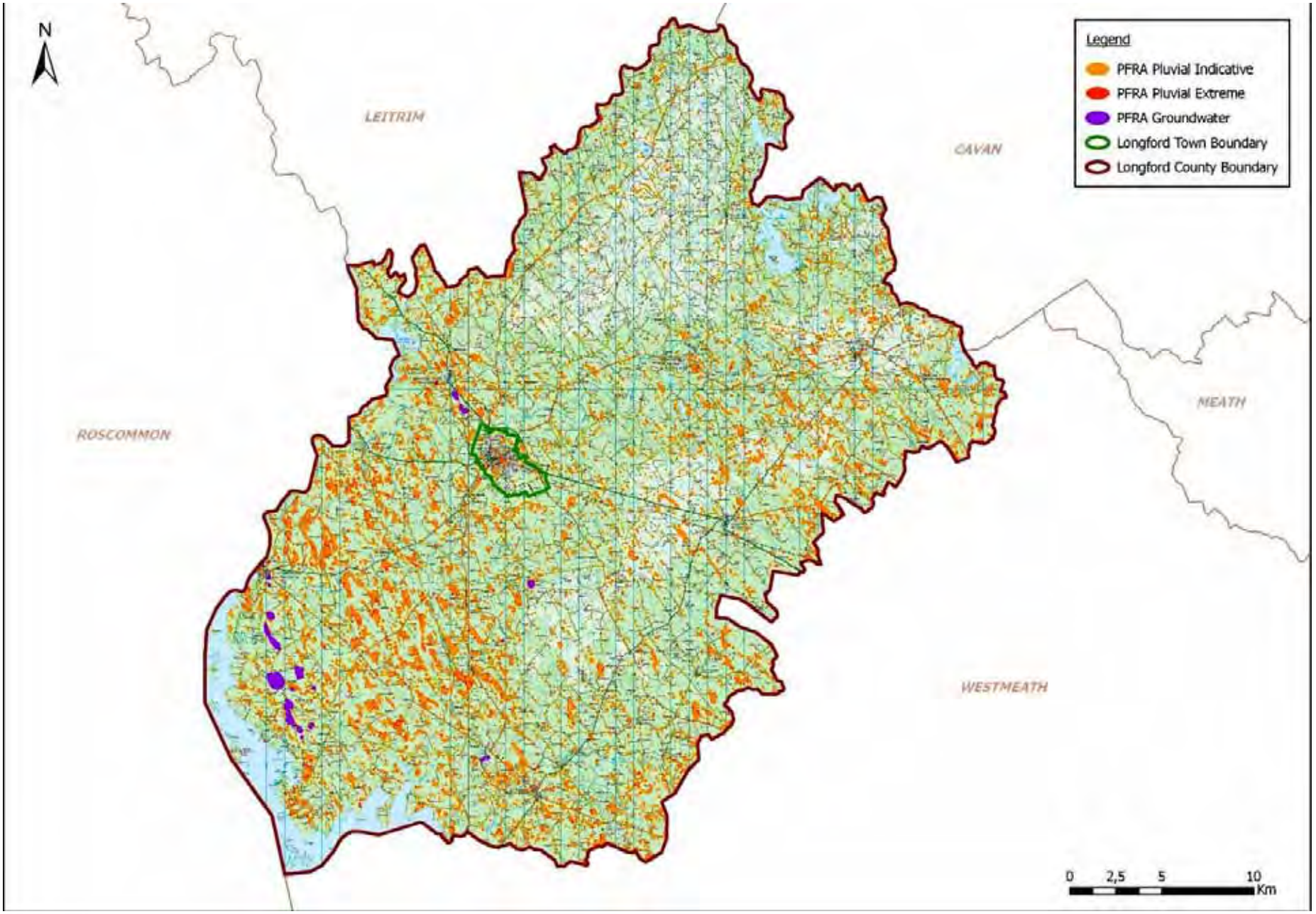


Figure 2.3 Occurrence of PFRA Pluvial and Groundwater Areas in County Longford

Section 3 Stage 2 SFRA - Initial Flood Risk Assessment

3.1 Introduction

A Stage 2 SFRA (initial flood risk assessment) was undertaken to:

- Confirm the sources of flooding that may affect zoned and adjacent areas;
- Appraise the adequacy of existing information as identified by the Stage 1 SFRA; and
- Scope the extent of the risk of flooding through the preparation of indicative flood zone maps.

3.2 Site Walkovers

In order to inform the Stage 2 assessment, the zoned areas were inspected on foot by experienced professionals to examine, inter alia, the potential source and direction of flood paths, locations of topographic and built features that coincide with the flood indicator related boundaries and to identify standing water and vegetation indicative of standing water and associated frequency of inundation.

Local knowledge (including of past flood events) informed the assessment and was provided by the Local Council Engineers who attended the relevant site walkovers.

3.3 Flood Risk Indicator Information Considered

Flood risk indicator information which was considered during the Stage 2 SFRA, including the site walkovers, is detailed under Section 2 of this report and mapped as it occurs in Appendix I.

3.4 Site Walkover Findings, Adequacy of Existing Information and Delineation of Flood Zones

The findings of the Flood Risk Review Reports, the boundaries contained in the River Camlin Flood Study and/or PFRA fluvial mapping boundaries, at certain locations, were found to be generally consistent with what was observed on the ground during site walkovers and groundtruthing.

The Flood Risk Zones, which are mapped for each of the zoned areas and provided over the following pages, were delineated taking into account the flood risk indicators and the findings of the site walkovers which were informed by local knowledge including of past flood events (Local Council Engineers) and an examination of, inter alia: the potential source and direction of flood paths; the locations of topographic and built features, including those that coincide with the flood indicator boundaries; and vegetation indicative of standing water and associated frequency of inundation.

The table in Appendix II documents the findings of the groundtruthing at specific locations within each of the zoned areas and the SFRA recommendation(s) in respect of these locations (these locations are shown on maps in Appendix I). Also documented is how these recommendations have been integrated into the Plan.

Local drainage issues were identified in a number of settlements as detailed in Appendix II. The Council are aware of these issues and are taking measures to improve drainage issues in the County in general.

The following pages provide maps of indicative flood zones overlain on the adopted 2015 zoning for each of the settlements.

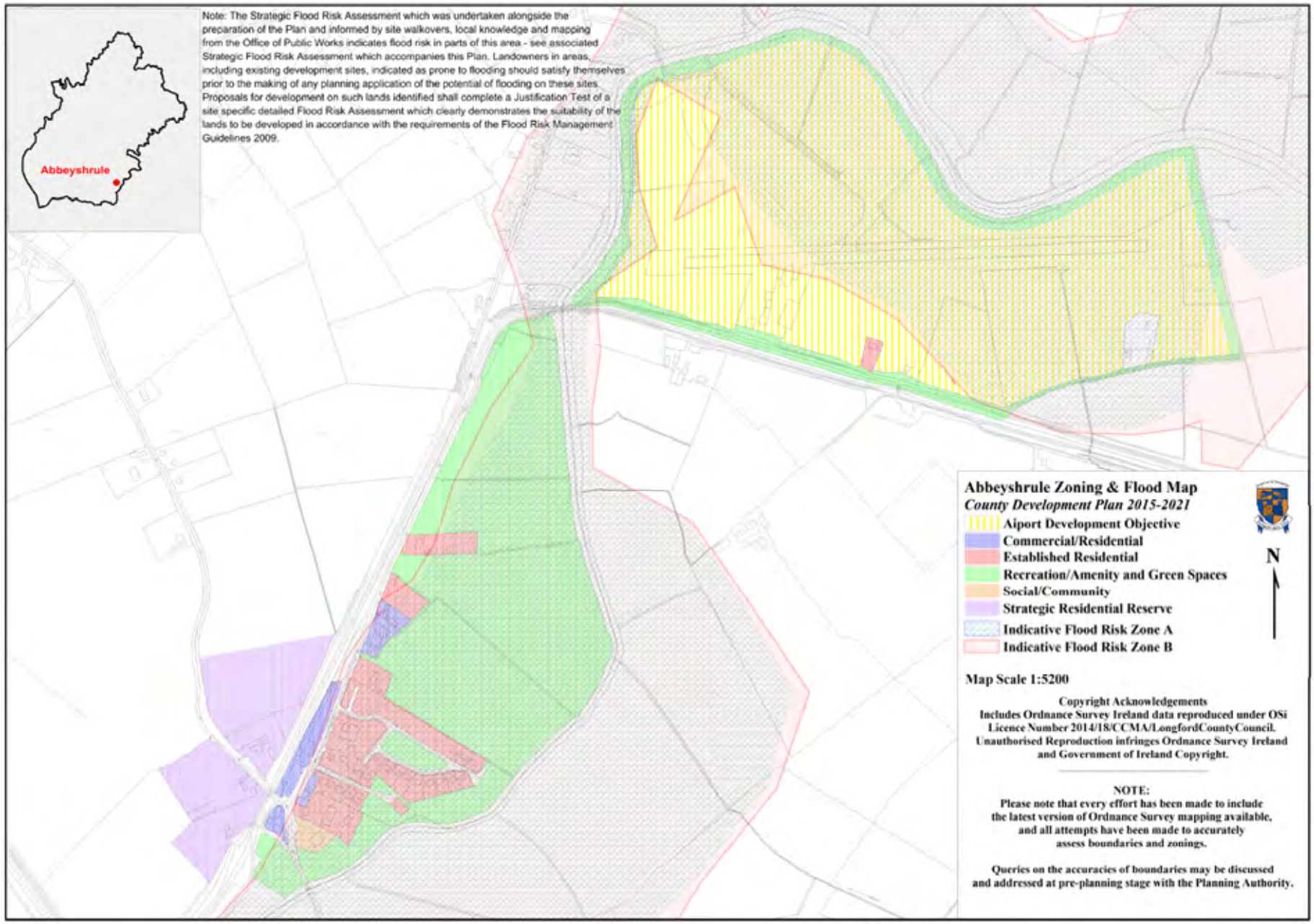


Figure 3.1 Abbeyshrule Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

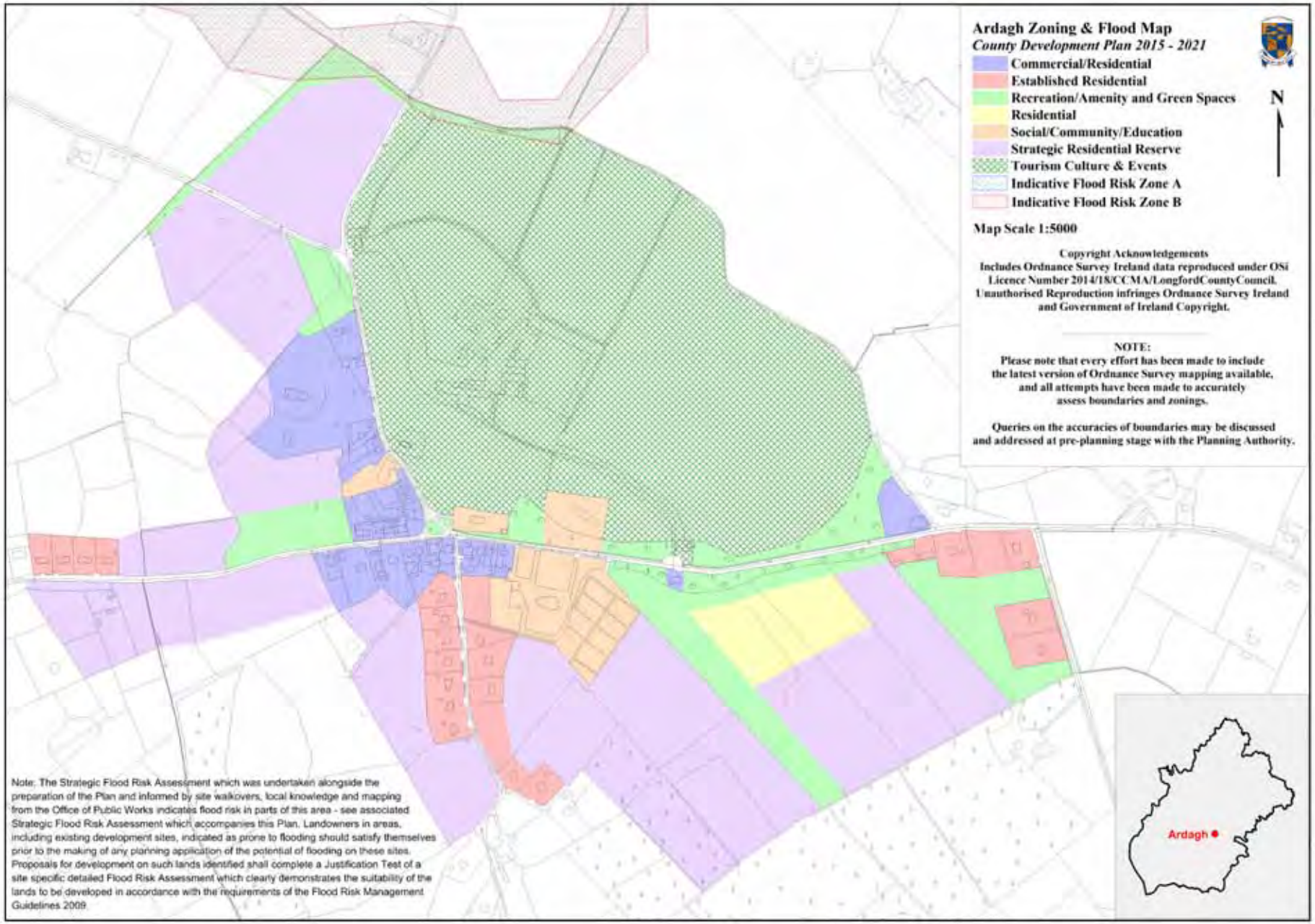


Figure 3.2 Ardagh Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

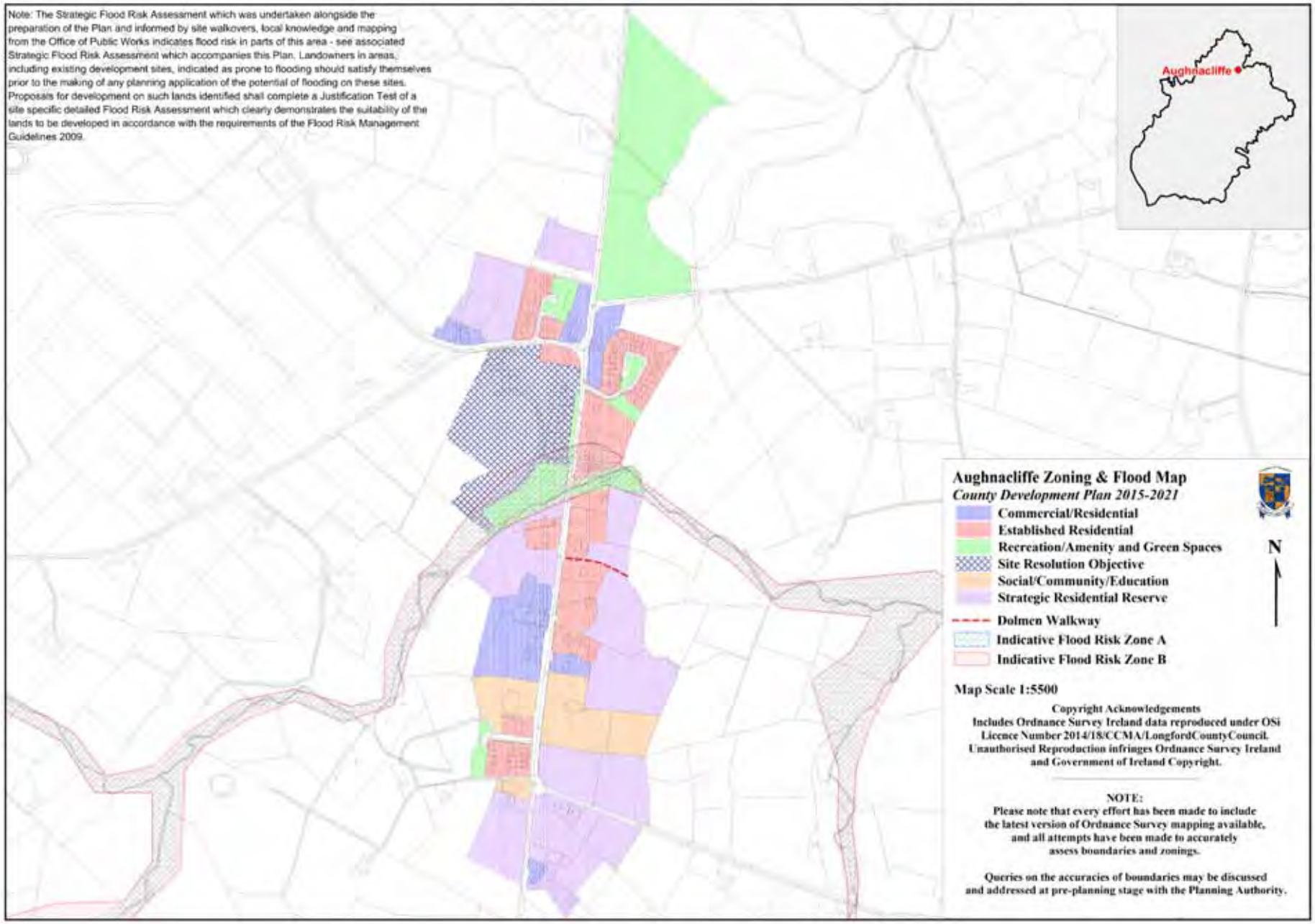


Figure 3.3 Aughnacliffe Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

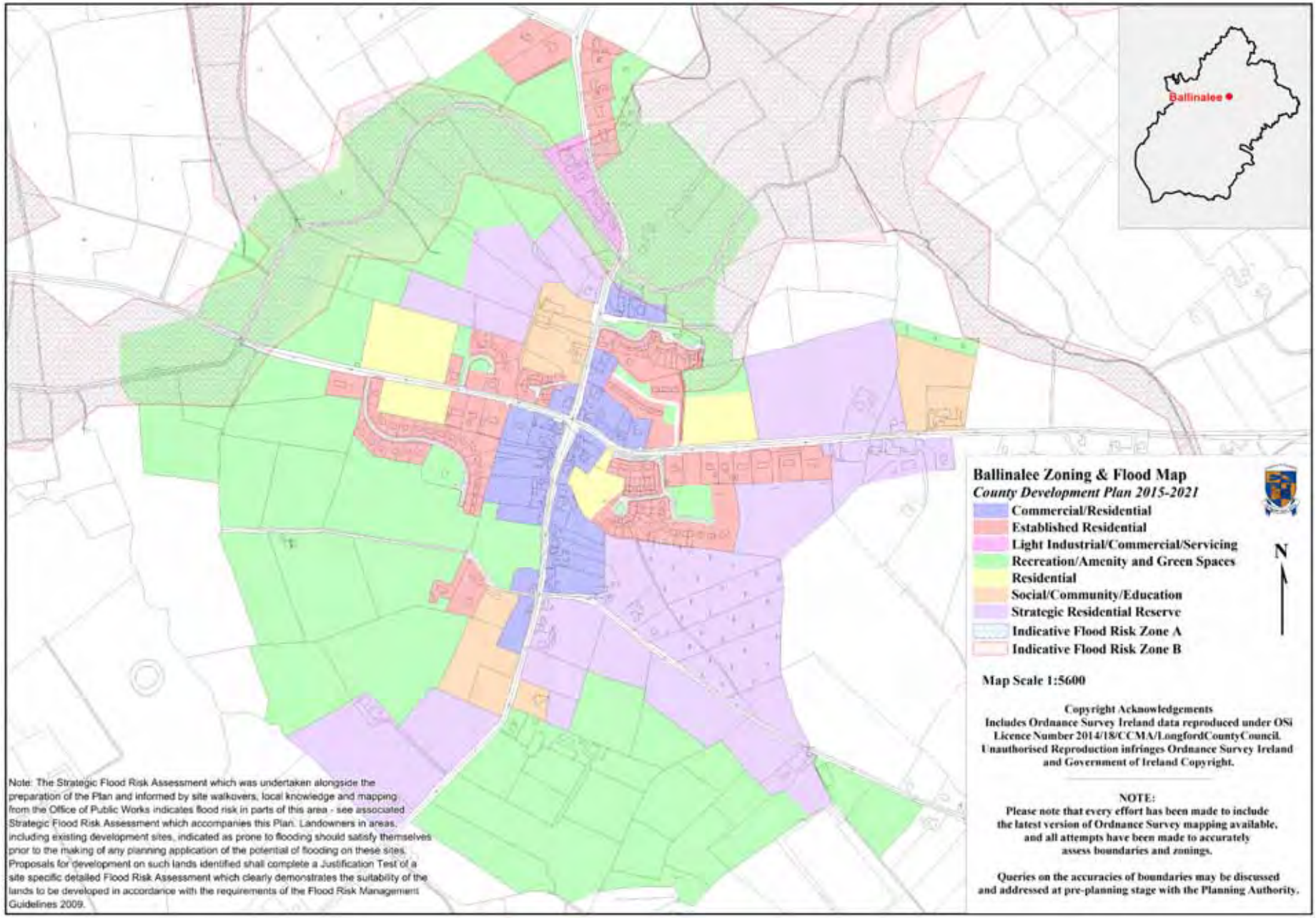


Figure 3.4 Ballinalee Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

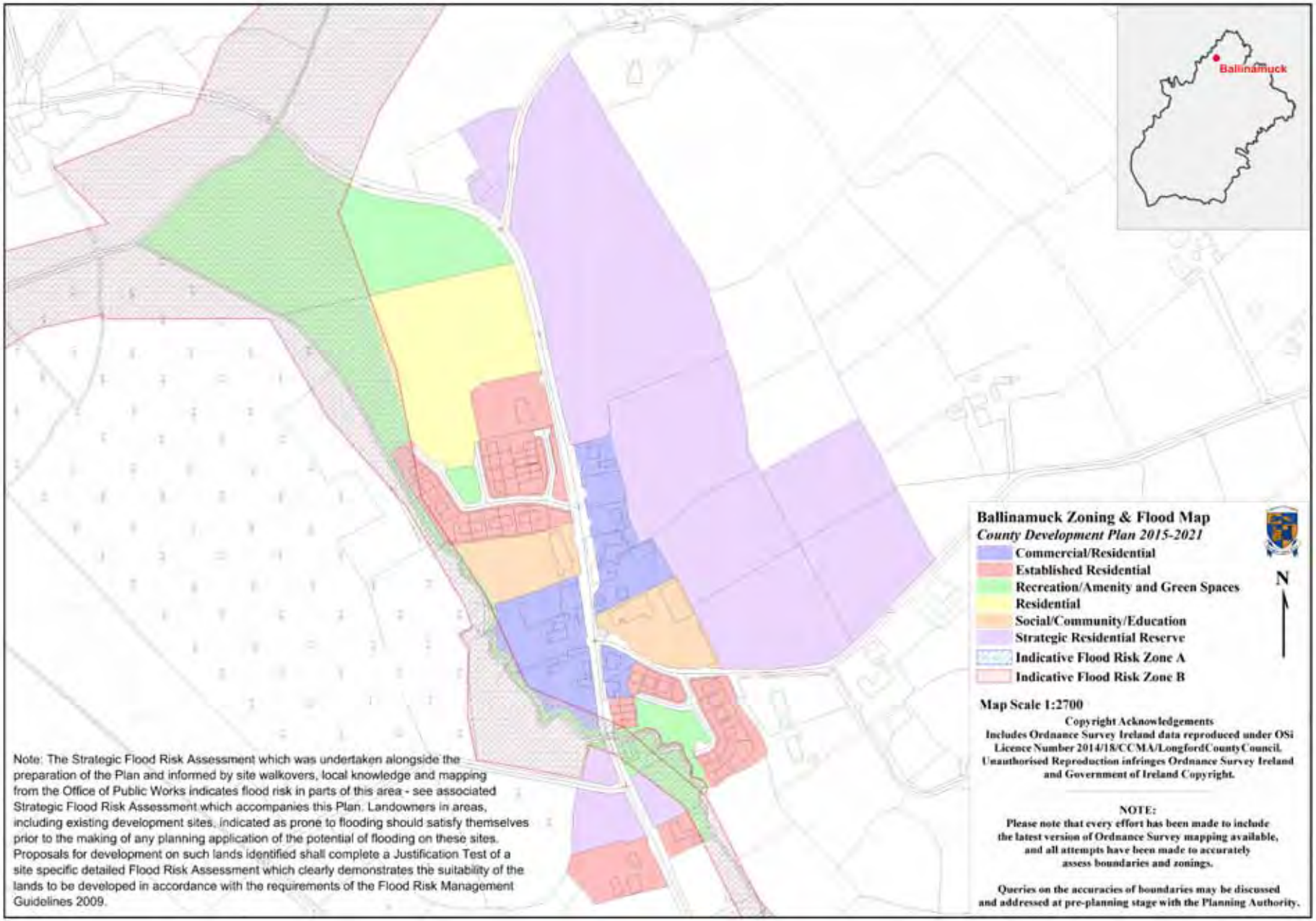


Figure 3.5 Ballinamuck Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

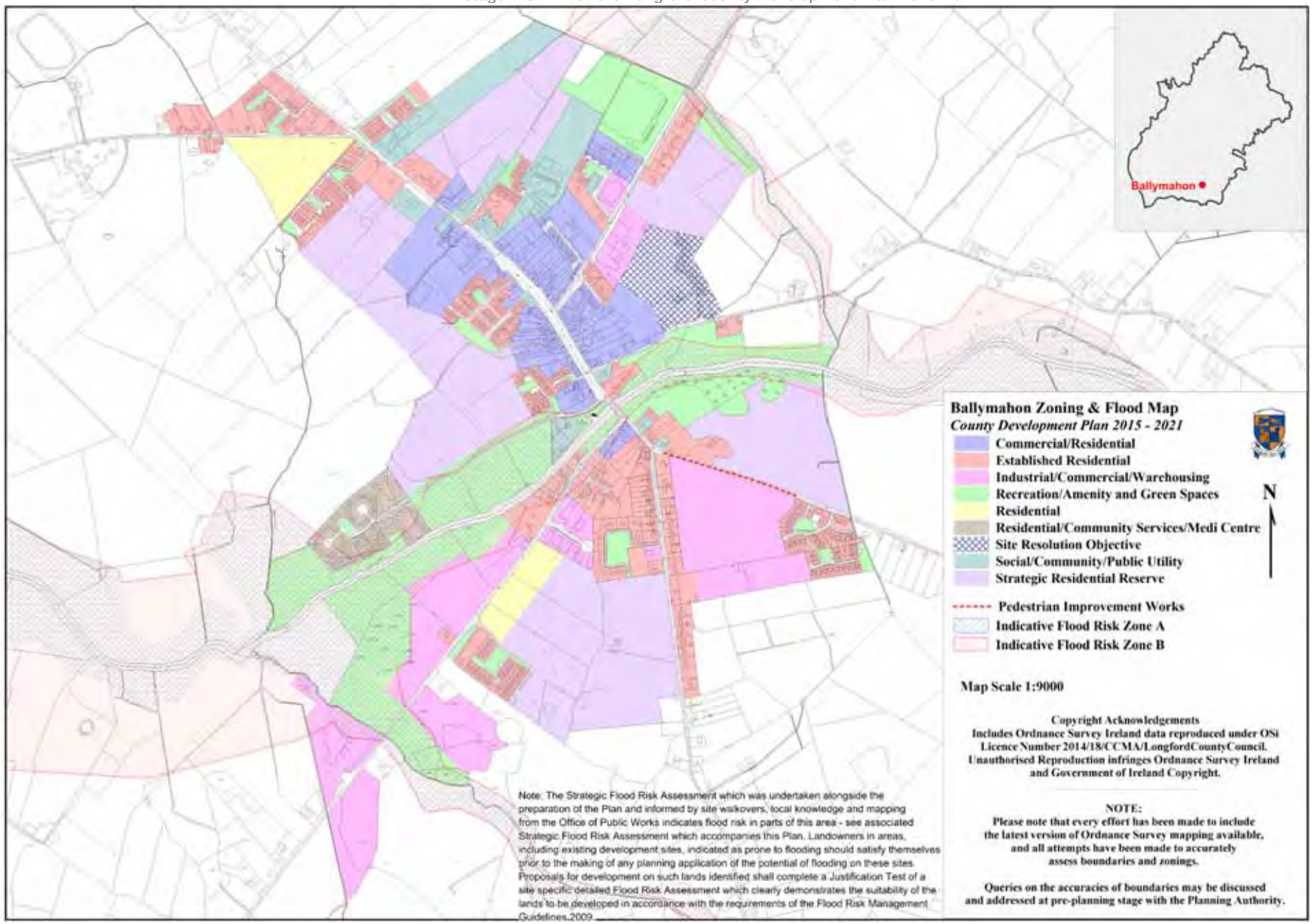


Figure 3.6 Ballymahon Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

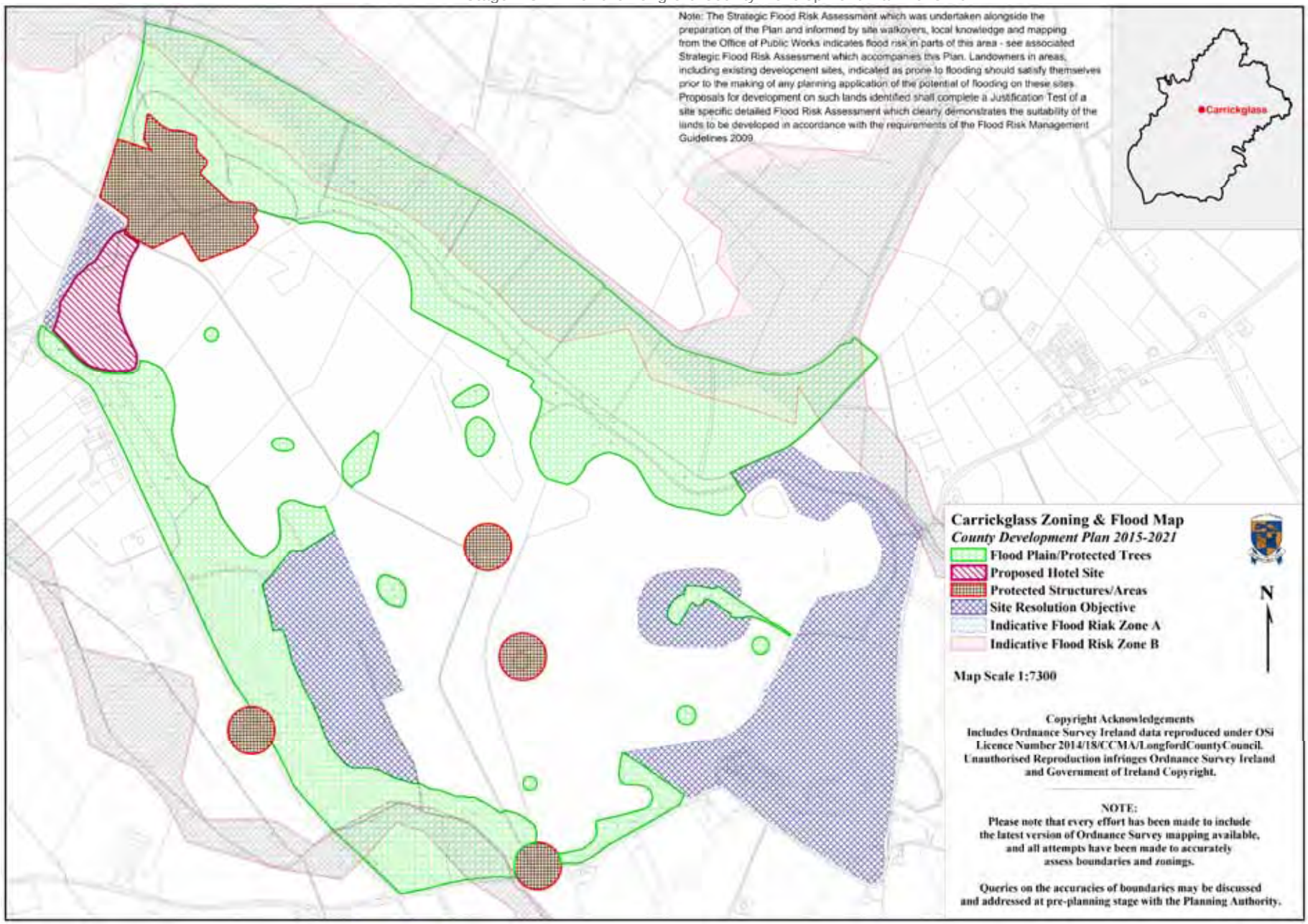


Figure 3.7 Carrickglass Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

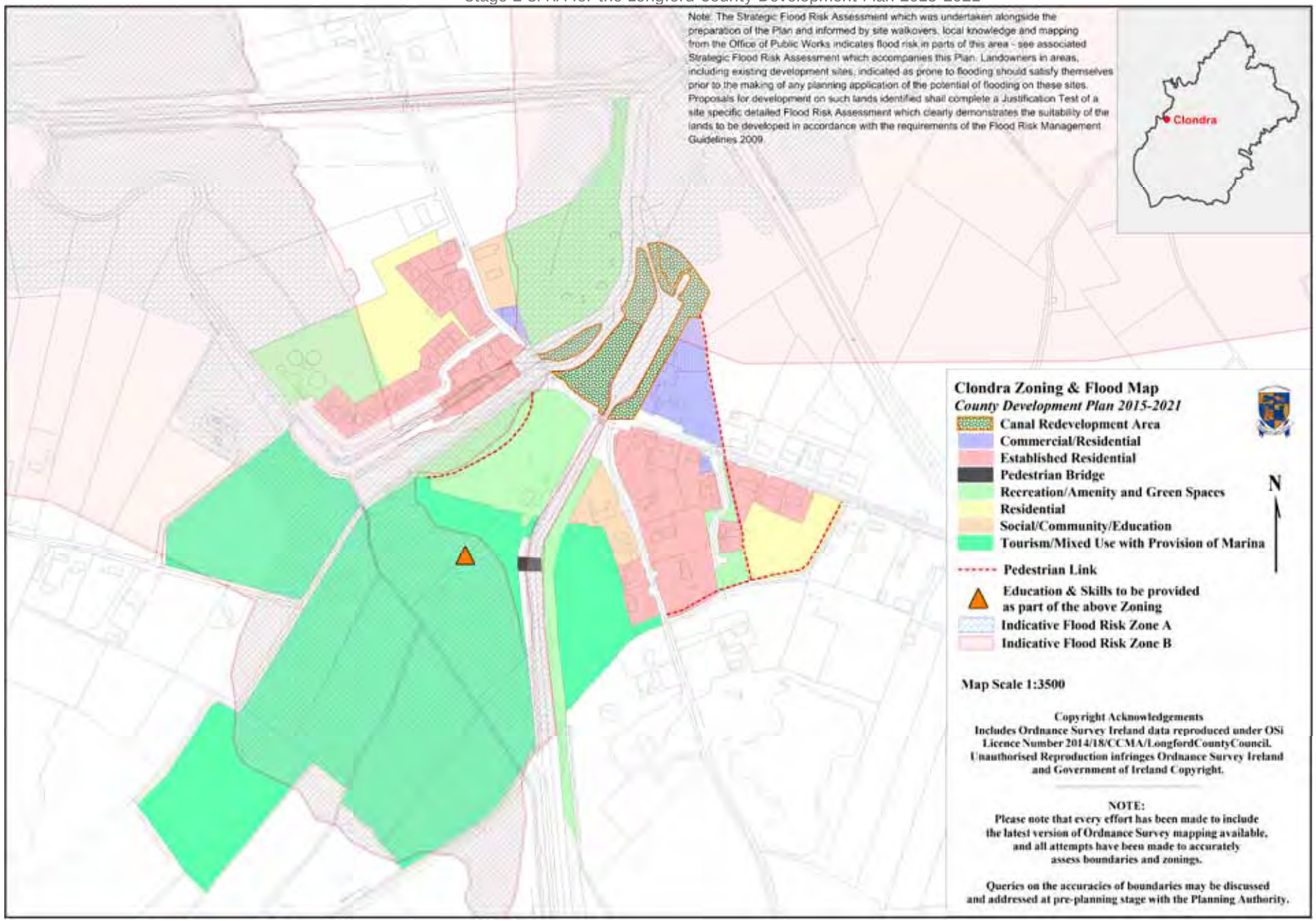


Figure 3.8 Clondra Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

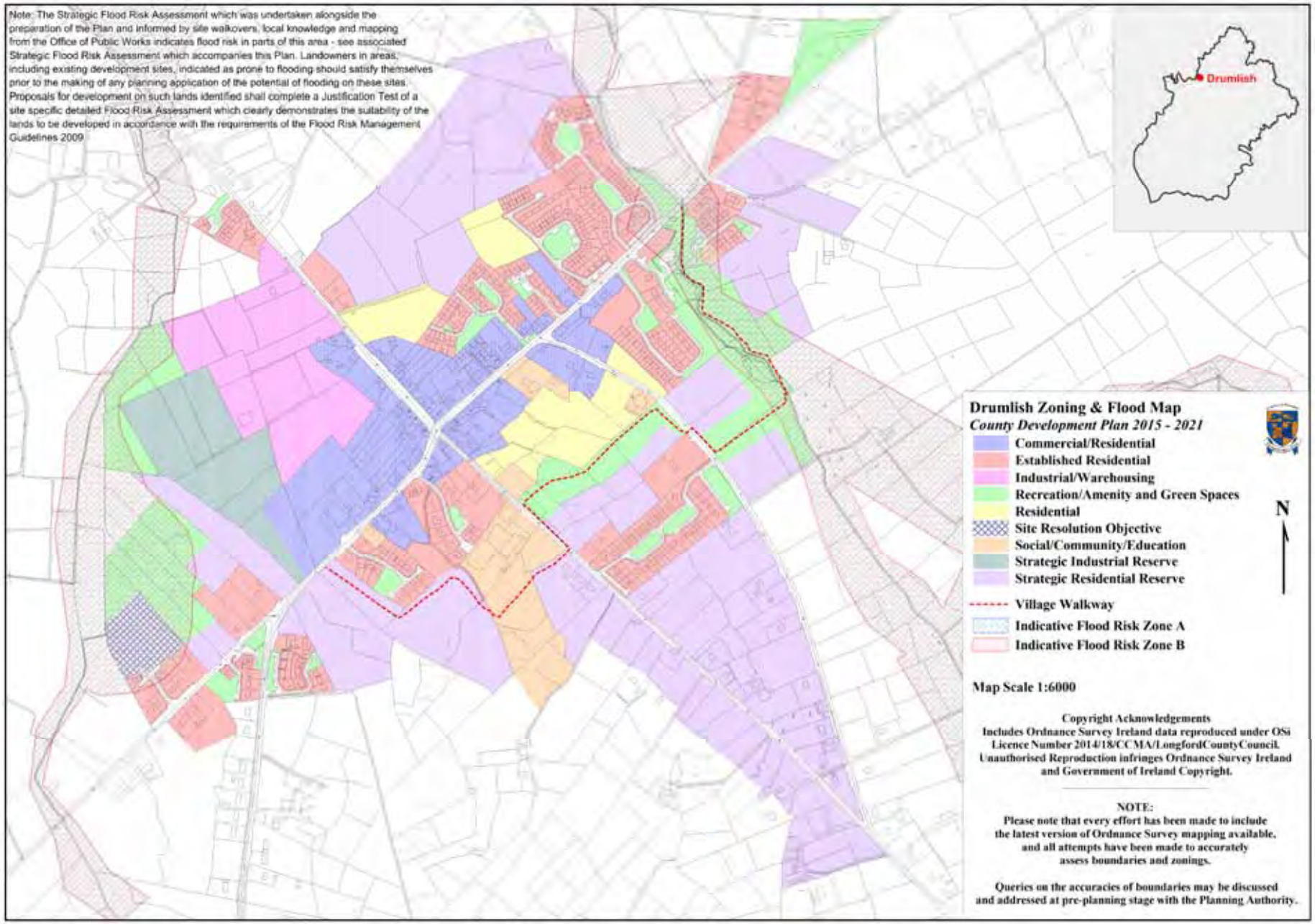


Figure 3.9 Drumlish Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

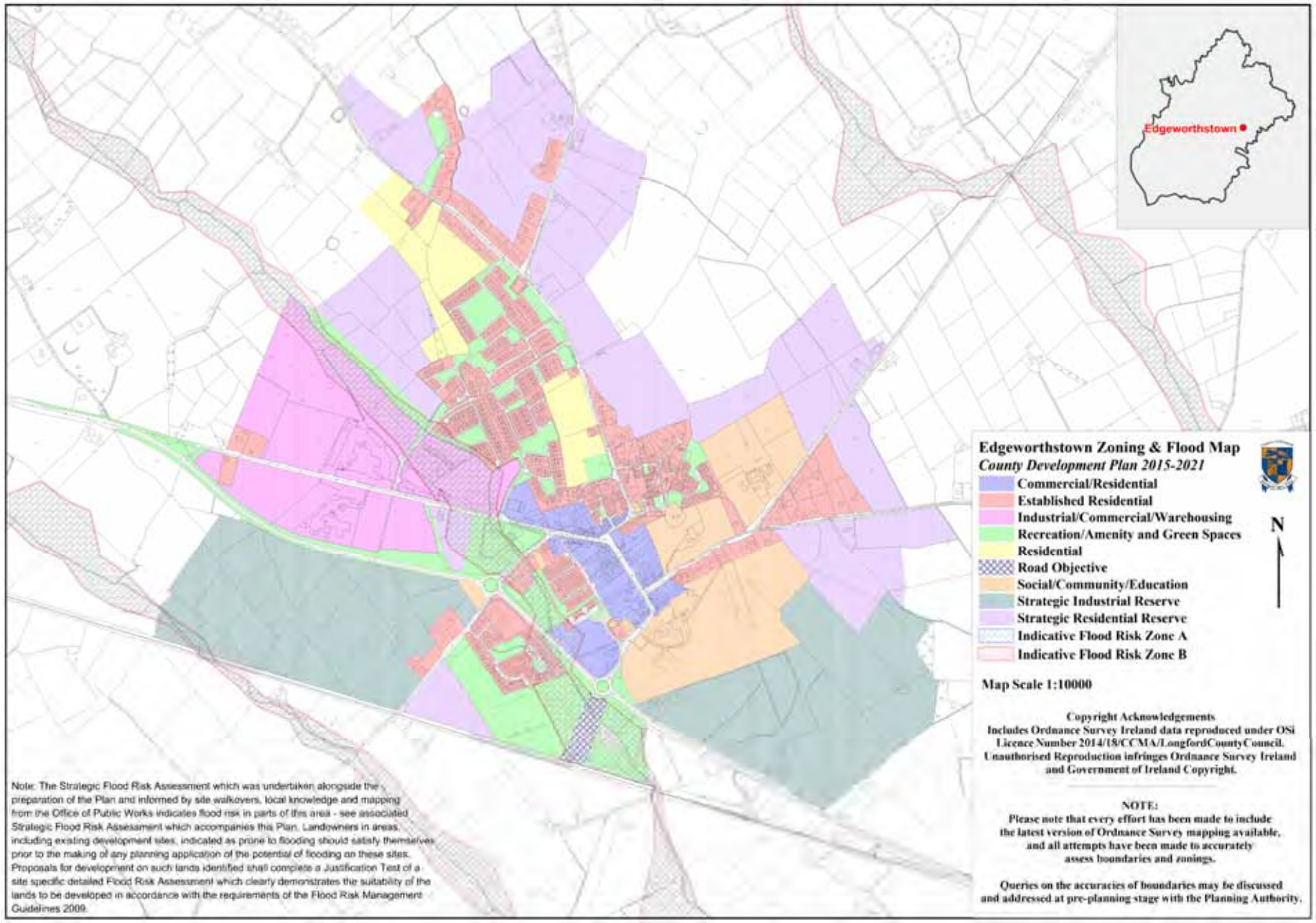


Figure 3.10 Edgeworthstown Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

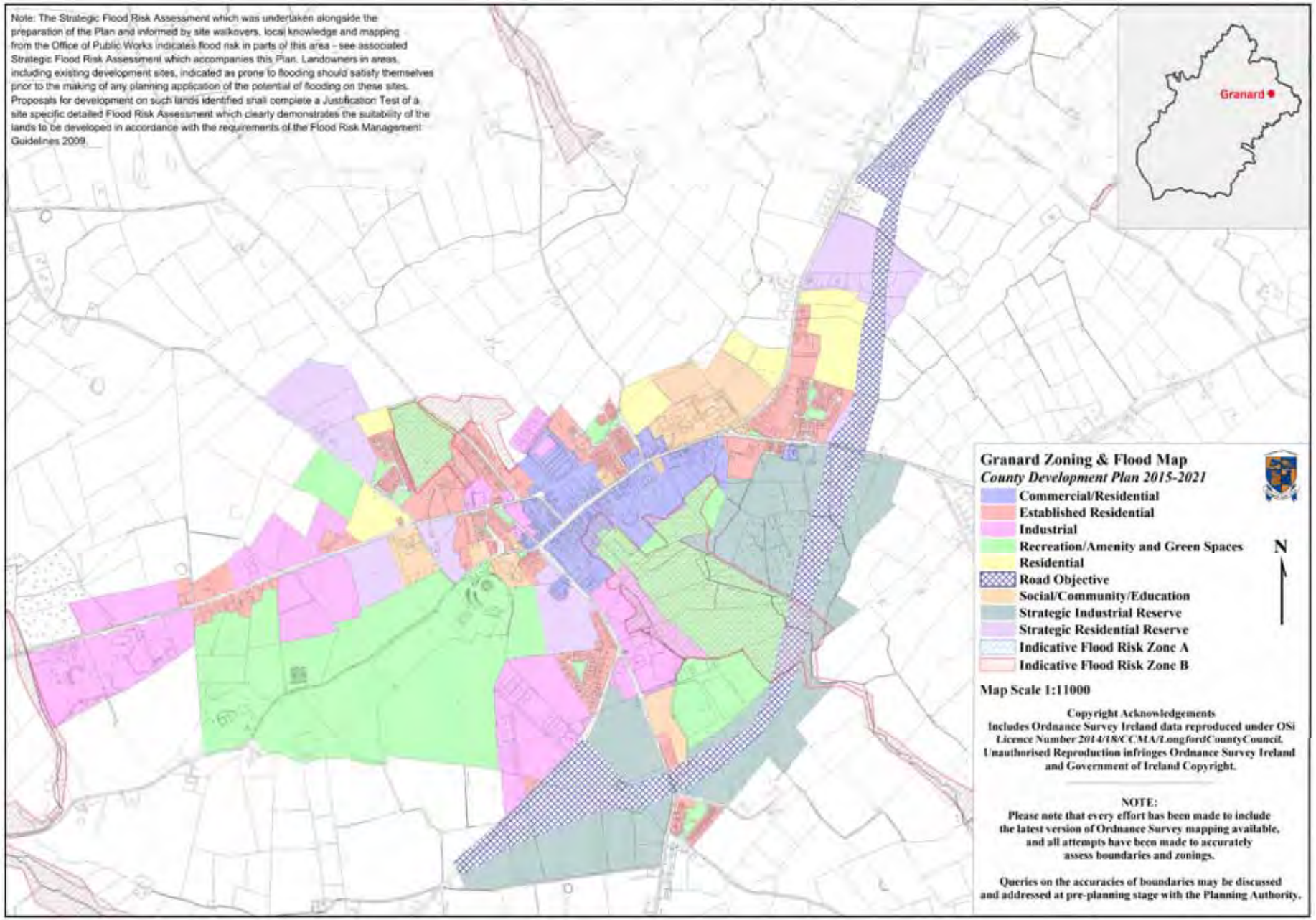


Figure 3.11 Granard Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

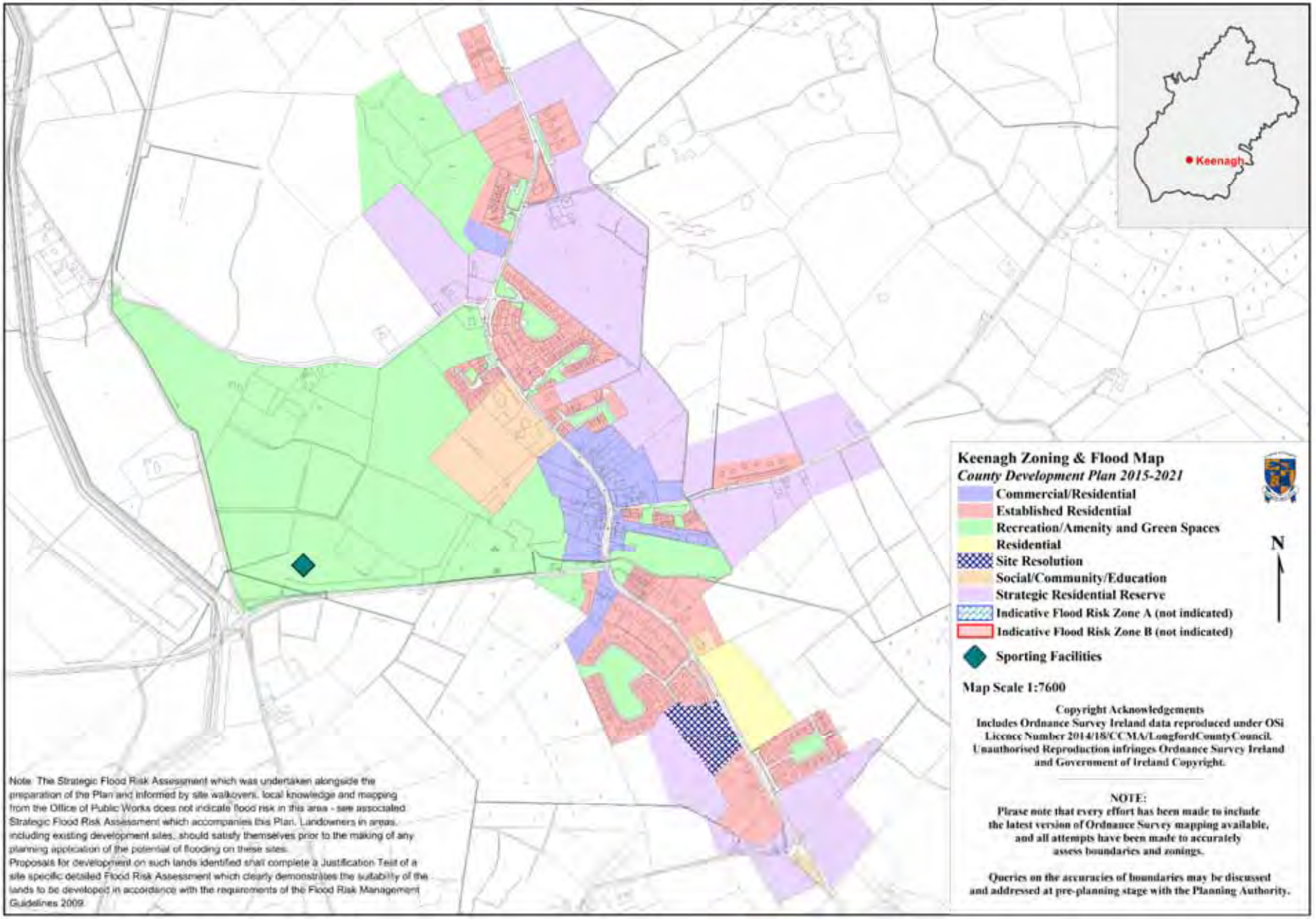


Figure 3.12 Keenagh Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

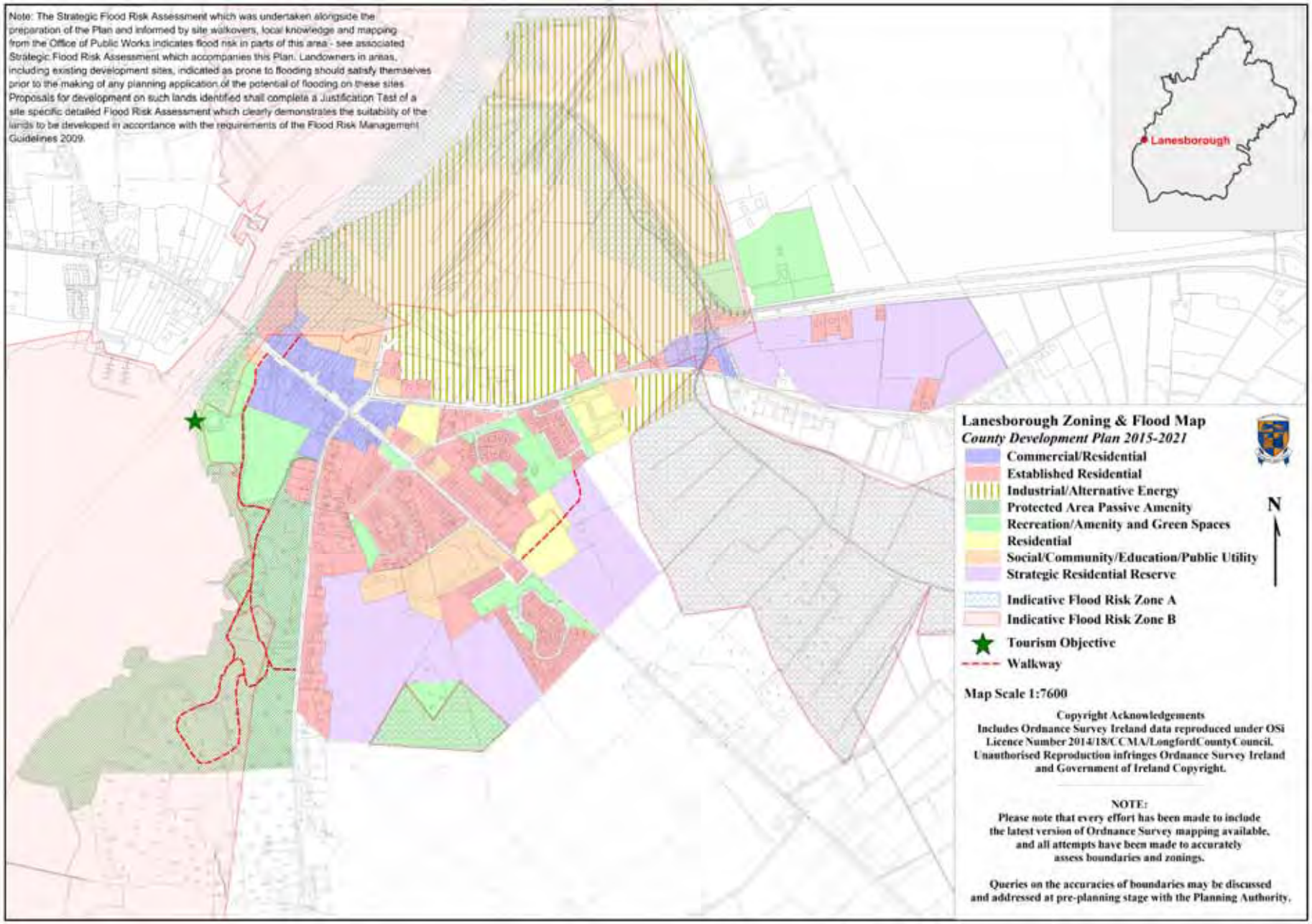


Figure 3.13 Lanesborough Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

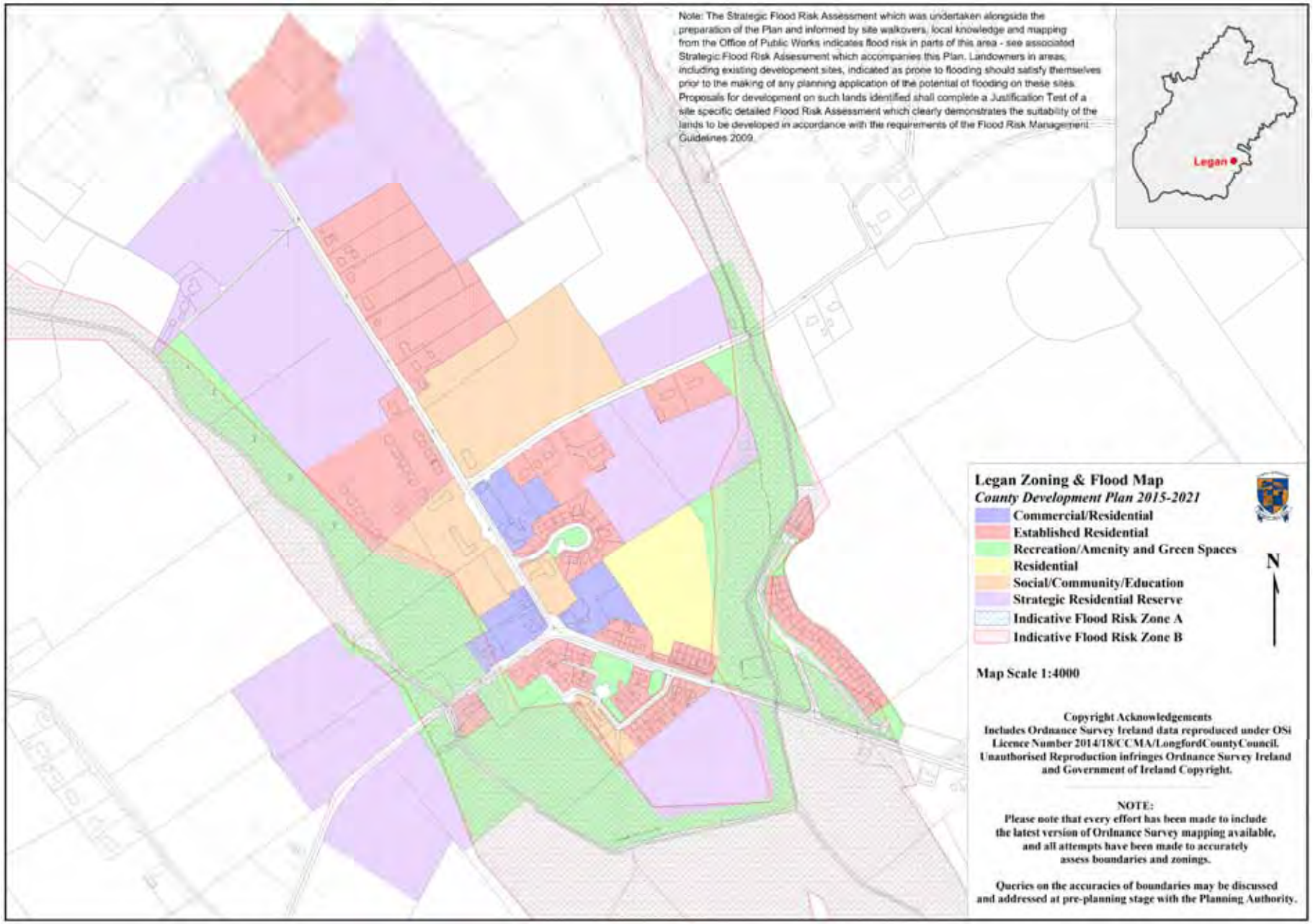


Figure 3.14 Legan Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

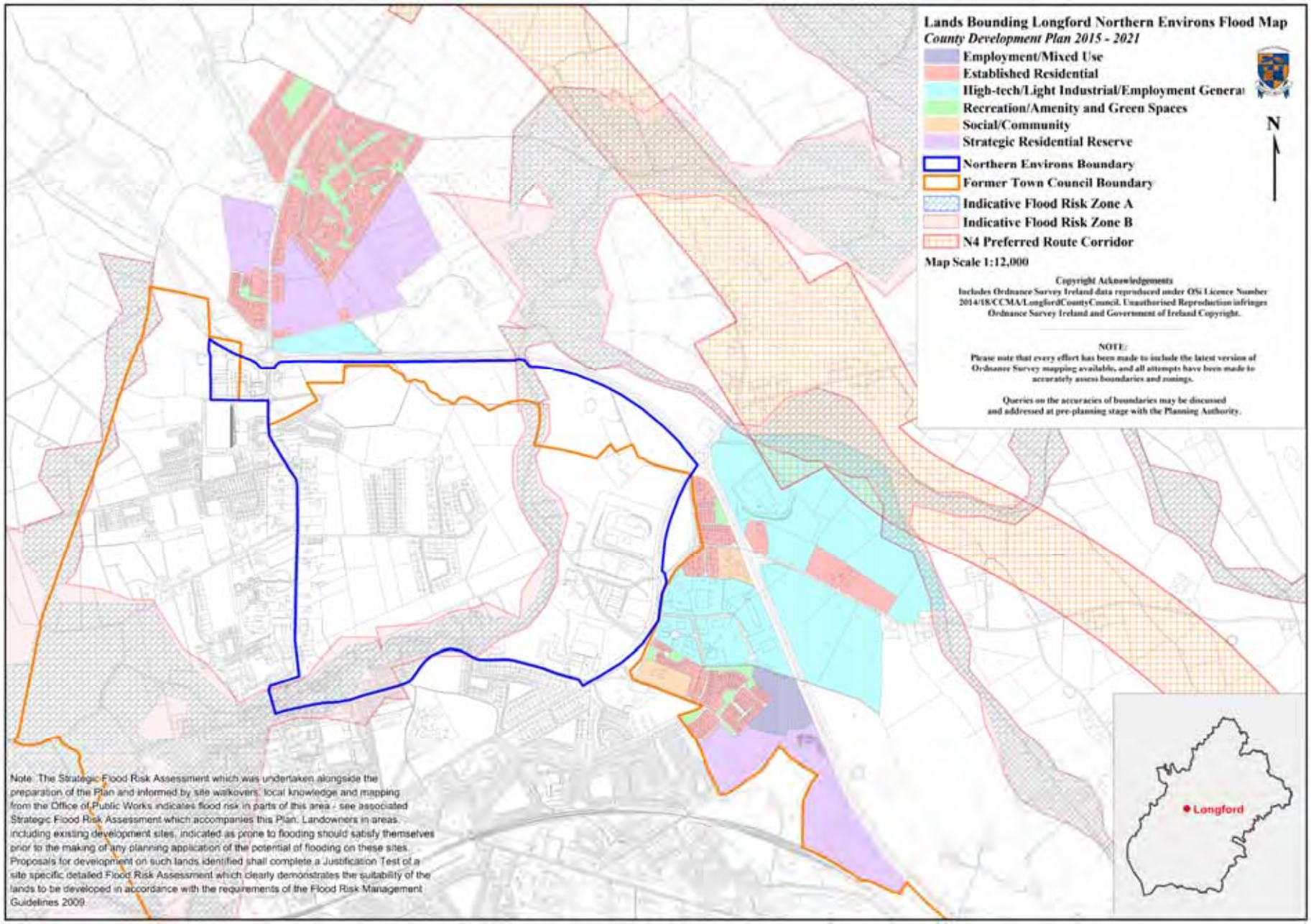


Figure 3.15 Longford Environs (Northern and Eastern) Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

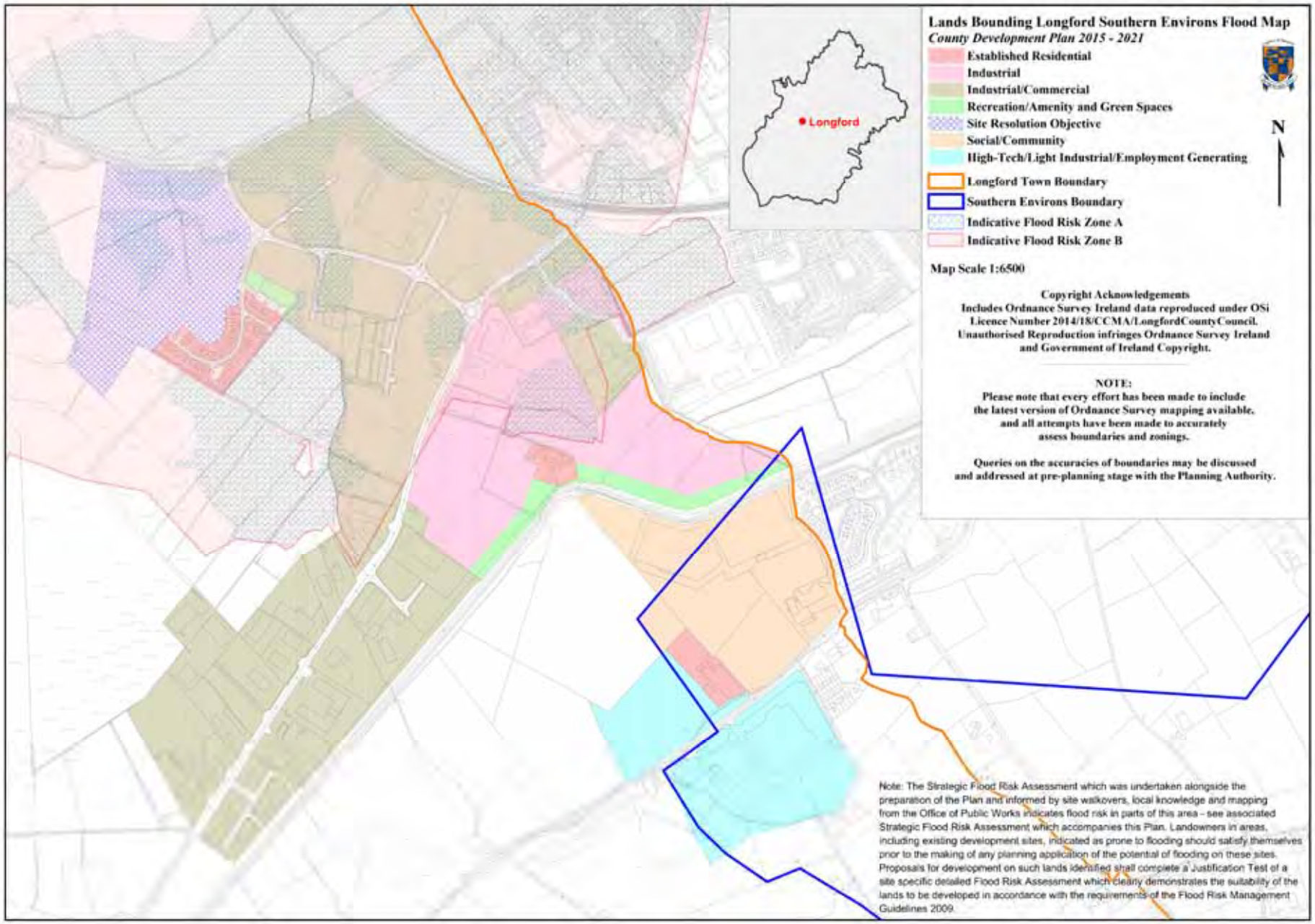


Figure 3.16 Longford Environs (Southern) Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

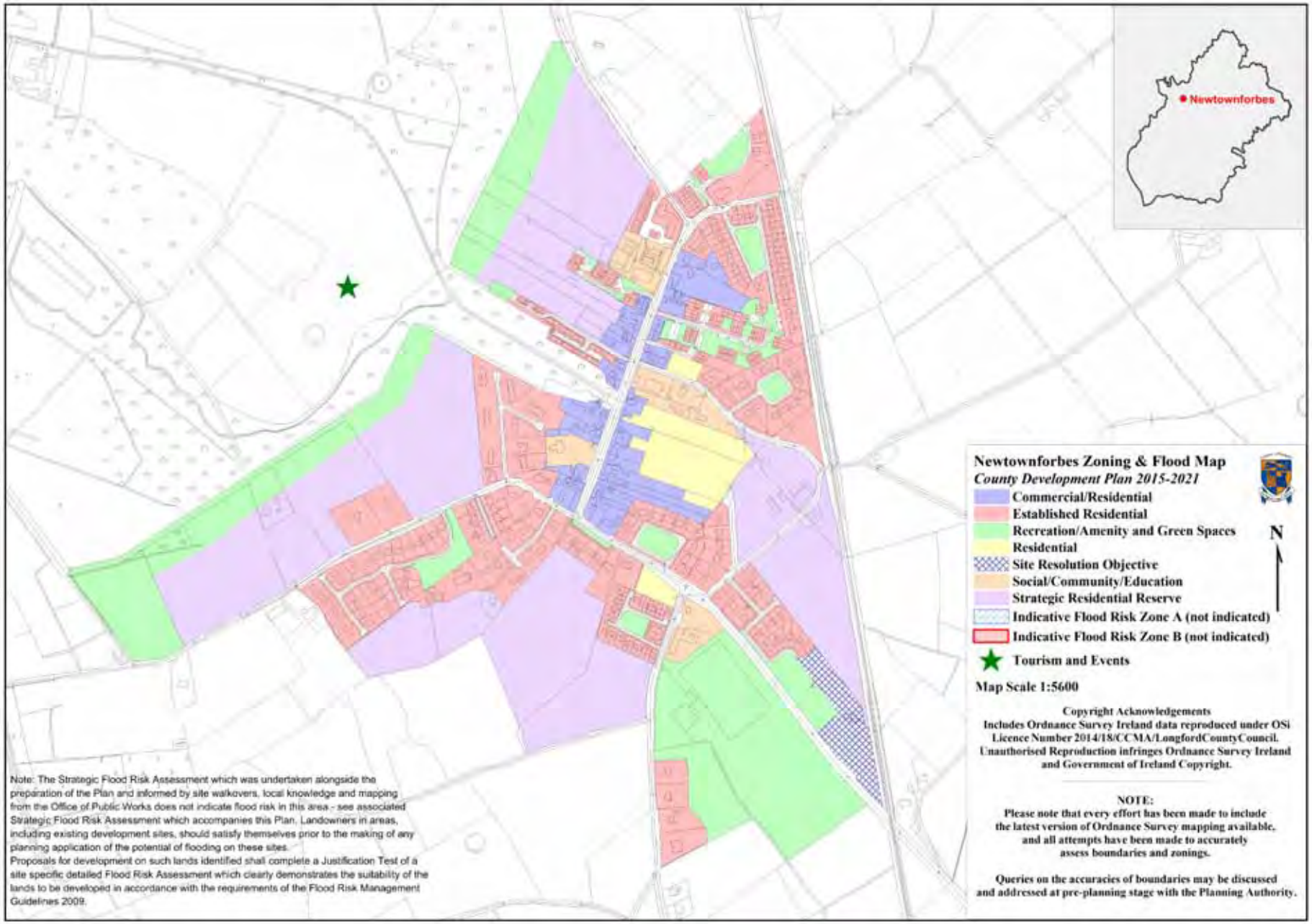


Figure 3.17 Newtownforbes Indicative Flood Risk Zones and adopted 2015 Land Use Zoning

Section 4 Recommendations

4.1 Overall Recommendation and Integration into the Plan

The Indicative Flood Zones detailed under Section 3.4 were used by the Planning Department in line with the provisions contained in the DEHLG Flood Guidelines which are summarised in Appendix III.

In addition, and arising from submissions made during the Plan preparation process, the following overall recommendations were integrated into the Plan.

No.	Recommendation
1.	To insert the following **bold** text as part of the paragraph 'Zoning Maps' at Section 2.1.5: Zoning Maps Following the population allocations set out in the Core Strategy Table, zoning maps are provided at Appendix 1 to reflect these figures and to indicate the quantum and locations of future development for the plan period. It is considered that the lands identified for residential development are sufficient to meet the population targets set out in the Core Strategy Table and reflect each settlements role in the Settlement Hierarchy. The amount and location of zoned lands required within each settlement was determined using an 'evidence based' approach which consisted of the following considerations; • Position of the Settlement in the Regional Settlement Hierarchy and the population allocations set out under the Regional Planning Guidelines; • Availability of services and infrastructure- planned and existing e.g. Smarter Travel and Irish Water's Capital Investment Plans; • Potential for economic and social development of the settlement; • Sequential Test; • The need to consolidate settlements, keeping them physically compact; • Flood risk assessment; • Ground and surface water vulnerability; • Environmental impact, including S.E.A and H.D.A. requirements; • Planning history; • Market availability/choice; **The extent to which development is permitted under theses zonings, including areas identified as at risk of flooding are referenced in the zoning descriptions provided at Appendix 1 of the Plan under the heading 'Flooding'.** **The SFRA has assessed the revised zonings to ensure that any potentially incompatible zoning – taking into account the flood risk zones, the provisions of the Guidelines and the flood risk management provisions contained within the Plan - has been removed from undeveloped lands.**
2.	To include the following wording on the zoning maps contained as part of Appendix 1; Note: The Strategic Flood Risk Assessment which was undertaken alongside the preparation of the Plan and informed by site walkovers, local knowledge and mapping from the Office of Public Works indicates flood risk in parts of this town - see associated Strategic Flood Risk Assessment which accompanies this Plan. Landowners in areas, including existing development sites, indicated as prone to flooding should satisfy themselves prior to the making of any planning application of the potential of flooding on these sites. Proposals for development on such lands identified shall complete a Justification Test of a site specific detailed Flood Risk Assessment which clearly demonstrates the suitability of the lands to be developed in accordance with the requirements of the Flood Risk Management Guidelines 2009.
3.	To include the following wording as part of the zoning descriptions associated with the zoning maps contained at Appendix 1; Flooding • The zoning included in the Plan for already developed areas within Flood Zones A and B is generally conferred by its' established use - as opposed to potential or suitability for any future use. • The Flood Risk Zones A/B layer is taken from the Stage 2 SFRA which accompanies the Plan. The SFRA is a live document which will be updated to take account of any new information which is scheduled to be released by the OPW. • The zoning does not represent an intention to allow unlimited developments or developments which are incompatible with flood risk zones. • Any new development will have to comply with the provisions of the Plan with respect to flood risk management (including Policy SFRA 1 to Policy SFRA 11) as well as the Flood Risk Management Guidelines • [Only] Compatible developments associated with the zoning would be permitted when accompanied by an

	appropriately detailed flood risk assessment showing that the proposed site design for any proposed development does not displace flood water thereby exposing lands elsewhere to unacceptable levels of flood risk and satisfies the applicant and the Council that the development itself will not be exposed to unacceptable levels of flood risk. • Landowners or developers in areas so indicated should satisfy themselves prior to the making of any planning application of the potential of flooding on these sites.
4.	Plan maps to be updated to show a hatched 'Flood Zone A/B' (taken from the SFRA) overlayed on zoning.
5.	To add the following additional bullet point to the zoning descriptions associated with the zoning maps contained at Appendix 1; Flooding • Where Flood Risk Zones A and B are indicated on the land use zoning maps in areas which have been previously developed, it is the objective of the plan to facilitate the appropriate management and sustainable use of flood risk areas within this zone. The zoning in these locations shall limit new development, while recognising that existing development uses within these zones may require small scale development over the life of the Local Area Plan, which would contribute towards the compact and sustainable urban development of the village. The underlying zoning or the existing permitted uses are deemed to be acceptable in principle for minor developments to existing buildings (such as small extensions to houses, most changes of use of existing buildings), which are unlikely to raise significant flooding issues, provided they do not obstruct important flow paths, introduce a significant additional number of people into flood risk areas or entail the storage of hazardous substances. Development proposals within this zone shall be accompanied by a detailed Flood Risk Assessment, carried out in accordance with The Planning System and Flood Risk Assessment Guidelines & Circular PL 2/2014 (or as updated), which shall assess the risks of flooding associated with the proposed development. Proposals shall only be considered where it is demonstrated to the satisfaction of the Planning Authority, that they would not have adverse impacts or impede access to a watercourse, floodplain or flood protection and management facilities, or increase the risk of flooding to other locations. The nature and design of structural and non- structural flood risk management measures required for development in such areas will also be required to be demonstrated, so as to ensure that flood hazard and risk will not be increased. Measures proposed shall follow best practice in the management of health and safety for users and residents of the development. Specifications for developments in flood vulnerable areas as set out below[1] shall be complied with as appropriate.

[1] Applications for developments in flood vulnerable zones shall provide details of structural and non-structural risk management measures to include, but not be limited to specifications of the following:

Floor Levels

In areas of limited flood depth, the specification of the threshold and floor levels of new structures shall be raised above expected flood levels to reduce the risk of flood losses to a building, by raising floor heights within the building structure using a suspended floor arrangement or raised internal concrete platforms.

When designing an extension or modification to an existing building, an appropriate flood risk reduction measure shall be specified to ensure the threshold levels into the building are above the design flood level. However, care must also be taken to ensure access for all is provided in compliance with Part M of the Building Regulations.

Where threshold levels cannot be raised to the street for streetscape, conservation or other reasons, the design shall specify a mixing of uses vertically in buildings - with less vulnerable uses located at ground floor level, along with other measures for dealing with residual flood risk.

Internal Layout

Internal layout of internal space shall be designed and specified to reduce the impact of flooding [for example, living accommodation, essential services, storage space for provisions and equipment shall be designed to be located above the predicted flood level]. In addition, designs and specifications shall ensure that, wherever reasonably practicable, the siting of living accommodation (particularly sleeping areas) shall be above flood level.

With the exception of single storey extensions to existing properties, new single storey accommodation shall not be deemed appropriate where predicted flood levels are above design floor levels.

In all cases, specifications for safe access, refuge and evacuation shall be incorporated into the design of the development.

Flood-Resistant Construction

Developments in flood vulnerable zones shall specify the use of flood-resistant construction aimed at preventing water from entering buildings - to mitigate the damage floodwater caused to buildings.

Developments shall specify the use of flood resistant construction prepared using specialist technical input to the design and specification of the external building envelope – with measures to resist hydrostatic pressure (commonly referred to as "tanking") specified for the outside of the building fabric.

The design of the flood resistant construction shall specify the need to protect the main entry points for floodwater into buildings - including doors and windows (including gaps in sealant around frames), vents, air-bricks and gaps around conduits or pipes passing through external building fabric.

The design of the flood resistant construction shall also specify the need to protect against flood water entry through sanitary appliances as a result of backflow through the drainage system.

Note on Clondra

With respect to the settlement of Clondra, it is noted that, the land use zoning 'Tourism/Mixed Use with Provision of Marina' occurs on lands which partially flood.

The mapping provided clearly indicates the location and extent of lands that are flood-prone and those that are not.

Similarly the zoning clearly envisages some uses that are fully compatible with areas prone to flooding [such as marina structures, open spaces, parking, some types of marina-related tourism, shopping and commercial facilities, recreational developments and associated access roads] and others that are clearly not [such as residential uses] (see table below).

Good planning envisages highly integrated developments where a number of uses are combined to ensure convenience and sustainable patterns of mobility and land land-utilisation. Thus 'mixed use' developments require a number of adjacent and integrated uses to be permissible.

The objective of both the Development Plan and the Guidelines is to direct those components of the zoning into those parts of the lands which are most compatible – e.g. to direct the residential or potentially polluting uses away from flood prone areas and to direct uses such as the marina, parking marina-related commercial [such as boat storage/repair] and the open space into the water-side [and hence flood-prone] areas where they belong.

The area in question clearly contains lands of sufficient extent to accommodate both and therefore there is no need to modify the land use zoning.

Flood-Resilient Construction

Developments in flood vulnerable zones that are at risk of occasional inundation shall incorporate design and specification for flood resilient construction which accepts that floodwater will enter buildings and provides for this in the design and specification of internal building services and finishes. These measures limit damage caused by floodwater and allow relatively quick recovery.

This can be achieved by specifying wall and floor materials such as ceramic tiling that can be cleaned and dried relatively easily, provided that the substrate materials (e.g. blockwork) are also resilient. Electrics, appliances and kitchen fittings shall also be specified to be raised above floor level, and one-way valves shall be incorporated into drainage pipes.

Emergency Response Planning

In addition to considering physical design issues for developments in flood vulnerable zones, the developer shall specify that the planning of new development also takes account of the need for effective emergency response planning for flood events in areas of new development.

- Applications for developments in in flood vulnerable zones shall provide details that the following measures will be put in place and maintained:
- Provision of flood warnings, evacuation plans and ensuring public awareness of flood risks to people where they live and work;
- Coordination of responses and discussion with relevant emergency services i.e. Local Authorities, Fire & Rescue, Civil Defence and An Garda Siochána through the SFRA; and
- Awareness of risks and evacuation procedures and the need for family flood plans.

Access and Egress During Flood Events

Applications for developments in in flood vulnerable zones shall include details of arrangements for access and egress during flood events. Such details shall specify that:

- flood escape routes have been kept to publicly accessible land.
- such routes will have signage and other flood awareness measures in place, to inform local communities what to do in case of flooding.
- this information will be provided in a welcome pack to new occupants.

Further Information

Further and more detailed guidance and advice can be found at http://www.flooding.ie and in the Building Regulations.

Uses	Appropriate within Flood Risk Zone A?	Appropriate within Flood Zone B?	Appropriate outside of Flood Risk Zones A and B
Water-based recreation and tourism (excluding sleeping accommodation);	Yes	Yes	Yes
Amenity open space, outdoor sports and recreation and essential facilities	Yes	Yes	Yes
Essential ancillary sleeping or residential accommodation for staff required by Marina uses (subject to a specific warning and evacuation plan)	Yes	Yes	Yes
Car Park	Yes	Yes	Yes
Marina structures	Yes	Yes	Yes
Open spaces	Yes	Yes	Yes
Mixed use	Justification Test may be required to be undertaken, depending on type of development	Justification Test may be required to be undertaken, depending on type of development	Yes
Residential uses	Justification Test must be undertaken	Justification Test must be undertaken	Yes
Social and community facilities	Justification Test must be undertaken	Justification Test must be undertaken	Yes
Recreational facilities	Justification Test may be required to be undertaken, depending on type of development	Yes	Yes
Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions	Justification Test must be undertaken	Yes	Yes
Local transport infrastructure	Justification Test must be undertaken	Yes	Yes
Supporting tourism development	Justification Test may be required to be undertaken, depending on type of development	Justification Test may be required to be undertaken, depending on type of development	Yes

4.2 Flood Risk Management Policies

The following recommendations were integrated into the Plan as policies or objectives. These measures will contribute towards both flood risk management in the county and compliance with the Flood Risk Management Guidelines.

No.	Title	Provision	Integration into the Plan
1	**Floods Directive, Regulations and CFRAMS**	It is the policy of the Council to support, in co-operation with the OPW, the implementation of the EU Flood Risk Directive (2007/60/EC), the Flood Risk Regulations (SI No. 122 of 2010) and the DEHLG/OPW publication Flood Risk Management Guidelines 2009 (and any updated/superseding legislation or policy guidance). The Council will also take account of the North Western and Shannon International Catchment Flood Risk Assessment and Management Studies.	Policy SFRA 1
2	**Catchment Planning**	The Council will actively work with the CFRAM Programme and catchment based Flood Planning Groups, especially in the east of the County where catchments go beyond the Council's administrative boundary, in the development and implementation of catchment-based strategies for the management of flood risk - including those relating to storage and conveyance. Such strategies would be most important in areas where significant changes in the levels of development are likely to occur and may be informed by monitoring changes in upstream hydrology including those relating to land cover.	Policy SFRA 2
3	**Protection of water bodies etc. and buffers**	Protect water bodies and watercourses within the County from inappropriate development, including rivers, streams, associated undeveloped riparian strips, wetlands and natural floodplains. This will include protection buffers in riverine and wetland areas as appropriate. Promote the sustainable management and uses of water bodies and avoid, where possible, culverting or realignment of these features.	Policy SFRA 3
4	**Improvement and/or restoration of natural flood risk management functions**	Where resources are available, the Council will contribute towards the improvement and/or restoration of the natural flood risk management functions of flood plains. Where possible these functions should be aligned with other functions including those relating to recreation and amenity, habitat protection and management of water quality.	Policy SFRA 4
5	**Surface Water Drainage and SuDS**	Maintain and enhance, as appropriate, the existing surface water drainage system in the County, ensure that new developments are adequately serviced with surface water drainage infrastructure and promote the use of Sustainable Drainage Systems in all new developments. Surface water runoff from development sites will be limited to pre-development levels and planning applications for new developments will be required to provide details of surface water drainage and Sustainable Drainage Systems proposals.	Policy SFRA 5
6	**Principles of the FRM Guidelines**	The Council shall implement the key principles of flood risk management set out in the Flood Risk Management Guidelines as follow: • Avoid development that will be at risk of flooding or that will increase the flooding risk elsewhere, where possible;	Policy SFRA 6

		• Substitute less vulnerable uses, where avoidance is not possible; and • Mitigate and manage the risk, where avoidance and substitution are not possible. Development will not be permitted in flood risk areas, particularly floodplains, except where there are no alternative and appropriate sites available in lower risk areas that are consistent with the objectives of proper planning and sustainable development. Development in areas which have the highest flood risk should be avoided and/or only considered in exceptional circumstances (through a prescribed Justification Test) if adequate land or sites are not available in areas which have lower flood risk. Most types of development would be considered inappropriate in areas which have the highest flood risk. Only water-compatible development such as docks and marinas, dockside activities that require a waterside location, amenity open space, outdoor sports and recreation and essential transport infrastructure that cannot be located elsewhere would be considered appropriate in these areas.	
7	**SFRA of lower tier plans**	Lower tier plans shall undertake SFRA in compliance with the Flood Risk Management Guidelines and in consultation with the OPW. As part of a Stage 1 SFRA (flood risk identification), the flood risk indicators identified in the SFRA for the County Development Plan as well as any newly available information should be examined in order to determine whether further investigation and Stage 2 SFRA (initial flood risk assessment) is required. This examination should use the Council's GIS database of flood risk indicators which will be kept up to date and will add, as appropriate, new information made available through the CFRAM Programme. Stage 2 SFRAs for lower tier plans will, at a minimum, undertake: • A confirmation of the sources of flooding; • An appraisal of the adequacy of the available flood risk indicator information for the settlement; • Consultation with area engineer/local foreman and local knowledge, where available; • Groundtruthing of flood risk indicators and site walkovers facilitating the identification of, inter alia, vegetation associated with frequent inundation and micro-topography; • The identification of flood risk zones. The Council shall take into account the findings of the assessments undertaken (including that which may be provided as part of any Stage 3 SFRA, detailed flood risk assessment) during the preparation of the lower tier plans, including those provisions relating to land use zoning.	Policy SFRA 7
8	**FRA for Planning Applications**	Site-specific Flood Risk Assessment (FRA) is required for all planning applications in areas at risk of flooding, even for developments appropriate to the particular Flood Zone. The detail of these site-specific FRAs will depend on the level of risk and scale of development. A detailed	Policy SFRA 8

		site-specific FRA should quantify the risks, the effects of selected mitigation and the management of any residual risks. Further details with regard to the requirements for site-specific FRAs are provided in the Technical Appendices of the Flood Risk Management Guidelines.	
9	**Climate Change**	SFRAs and site-specific FRAs shall provide information on the implications of climate change with regard to flood risk in relevant locations. The 2009 OPW Draft Guidance on 'Assessment of Potential Future Scenarios for Flood Risk Management' (or any superseding document) shall be consulted with to this effect.	Policy SFRA 9
10	**Specific Projects**	A detailed site-specific FRA may be requested for projects specified in the County Development Plan. Such projects could include waste water treatment plants, collection networks, drinking water treatment plants, transport infrastructure and water-compatible developments that have the potential to affect the movement of flood waters.	Policy SFRA 10
11	**EIA**	Flood risk may constitute a significant environmental effect of a development proposal that in certain circumstances may trigger a sub-threshold EIS. FRA should therefore be an integral part of any EIA undertaken for projects within the County.	Policy SFRA 11
12	**Land Use in Flood Zones A and B**	It is the policy of the Council to protect Flood Zone A and Flood Zone B from inappropriate development and direct developments/ land uses into the appropriate Flood Zone in accordance with the Flood Risk Management Guidelines 2009 (or any superseding document). Where a development/land use is proposed that is inappropriate within the Flood Zone, then the development proposal will need to be accompanied by a Development Management Justification Test and site-specific FRA in accordance with the criteria set out under the Flood Risk Management Guidelines.	Policy FLO 2
13	**Detailed Implementation of Flood Risk Management Guidelines**	The Council shall implement the recommendations and provisions of of the DEHLG/OPW publication Flood Risk Management Guidelines 2009 (or any updated/superseding document) in relation to flood risk management within the County. This will include the following: a) Avoid, reduce and/or mitigate, as appropriate in accordance with the Flood Risk Management Guidelines, the risk of flooding within the flood risk areas indicated on Flood Zones A and B, including fluvial, pluvial and groundwater flooding, and any other flood risk areas that may be identified during the period of the Plan or in relation to a planning application. b) Development proposals in areas where there is an identified or potential risk of flooding (including pluvial and/or groundwater flooding) or that could give rise to a risk of flooding elsewhere may be required to carry out a site-specific FRA, and Justification Test where appropriate, in accordance with the provisions of The Planning System and Flood Risk Management Guidelines. Any FRA should include an assessment of the potential impacts of climate change, such as an increase in the extent or probability of flooding, and any associated measures necessary to address these impacts.	Policy FLO 3

		c) Development that would be subject to an inappropriate risk of flooding or that would cause or exacerbate such a risk at other locations shall not normally be permitted. Where certain measures proposed to mitigate or manage the risk of flooding associated with new developments are likely to result in significant effects to the environment or European sites downstream, such measures will undergo environmental assessment and Habitats Directive Assessment, as appropriate.	
14	**Groundwater and Pluvial Flood Risk**	Planning applications on lands identified within groundwater and pluvial PFRA areas shall be accompanied by a site-specific FRA that corresponds with that outlined under Chapter 5 'Flooding and Development Management' of the Flood Risk Management Guidelines. Such assessments shall be prepared by suitably qualified experts with hydrological experience and shall quantify the risks and the effects of any necessary mitigation, together with the measures needed or proposed to manage residual risks.	Policy FLO 6
15	**Flood Zone C**	Where the probability of flooding from rivers is low (less than 0.1%, flood zone C) the developer should satisfy him or herself that the probability of flooding is appropriate to the development being proposed. Among other things, mapping including the OPW's Pluvial and Groundwater Preliminary Flood Risk Assessment mapping should be considered for this purpose.	Policy FLO 9
16	**Lands Transected by Flood Zones**	In the case of lands transected by the outer boundary of Flood Zone A or B, where it can be demonstrated to the satisfaction of the Planning Authority (by more detailed local topographic survey information) that the outer boundary does not reflect local topographical and /or flood path conditions, the Planning Authority may consider the extension of uses allowed in an adjacent land use zone into the Flood Zone area. The proposal will also be subject to the submission of a site-specific FRA and Justification Test as appropriate and the developer satisfying the Planning Authority and him/herself that the probability of flooding is appropriate to the development being proposed and will not increase flood risk elsewhere.	Policy FLO 7
17	**Where Flood Zones have been amended to take into account information submitted by landowner**	Where Flood Zones have been zoned according to the information contained in a site-specific FRA provided by the land owner this should be noted on the relevant zoning map.	Policy FLO 8

Table 4.1 Flood Risk Management Policies/Objectives

Appendix I: Flood Risk Indicator Mapping

Please note that the following are not mapped in this report but have been taken into account in the determination of Flood Risk Zones which are included in Section 3.4:

- The Council's flood time aerial photography for certain locations; and
- Data from the River Camlin Flood Study Integrated Report (Nicholas O'Dwyer on behalf of Longford County Council).

Flood risk indicators are overlain on an older version of the Land Use Zoning for each of the settlements (the Land Use Zoning from the adopted 2015 Plan is provided for each settlement under Section 4).

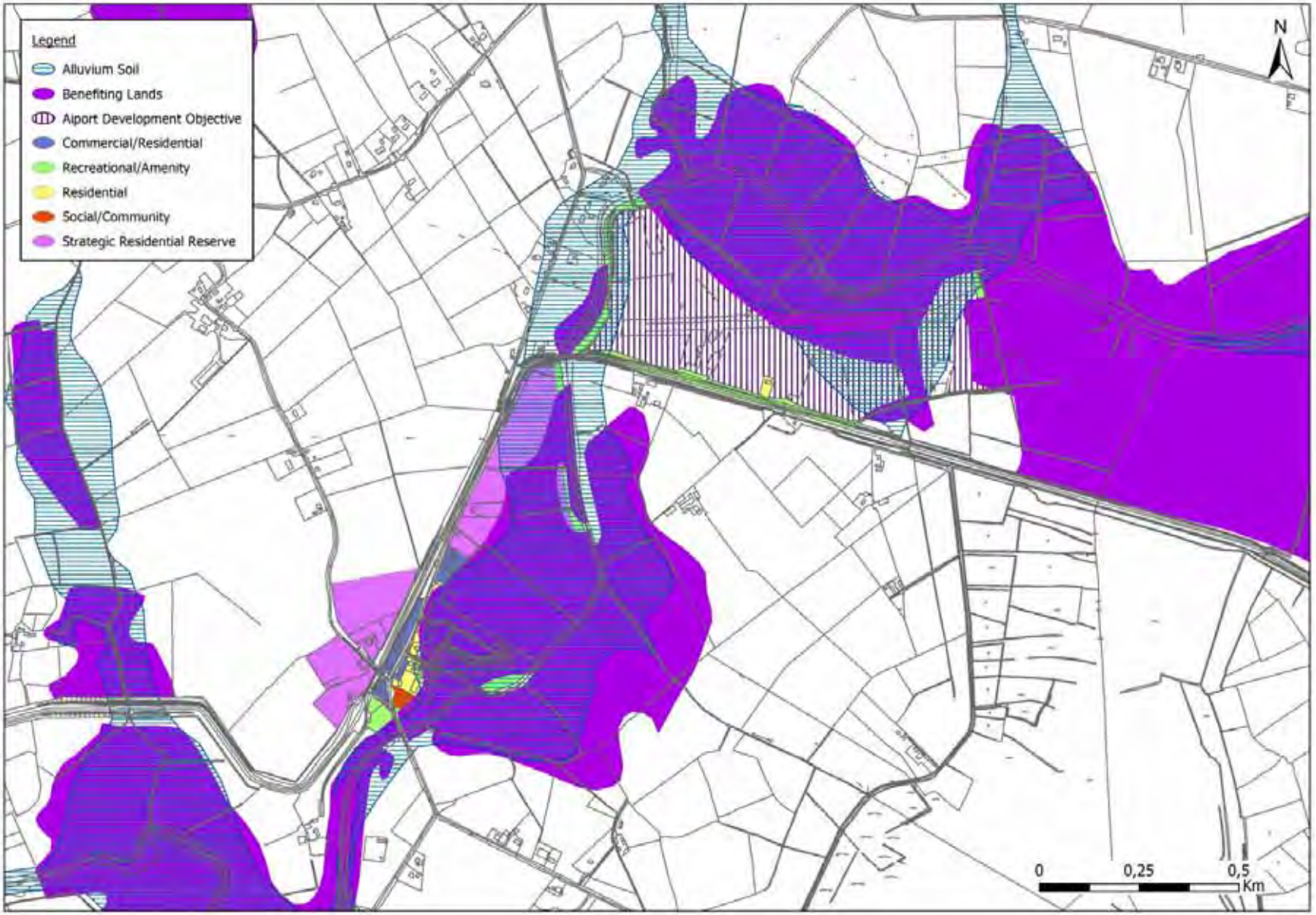


Figure AI.1 Abbeyshrule Historical Flood Risk Indicators (overlain on older version of the Draft Land Use Zoning)

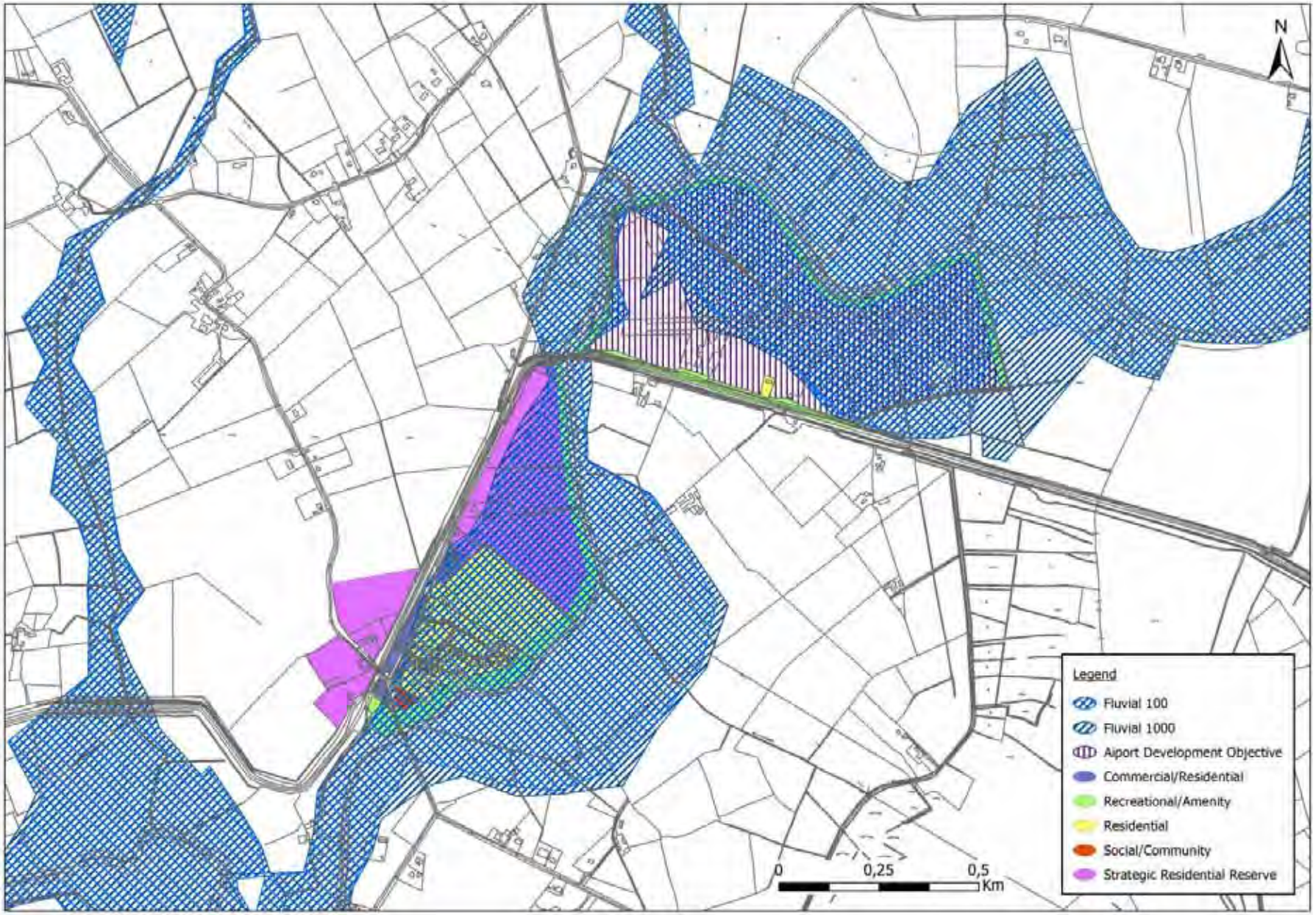


Figure AI.2 Abbeyshrule PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

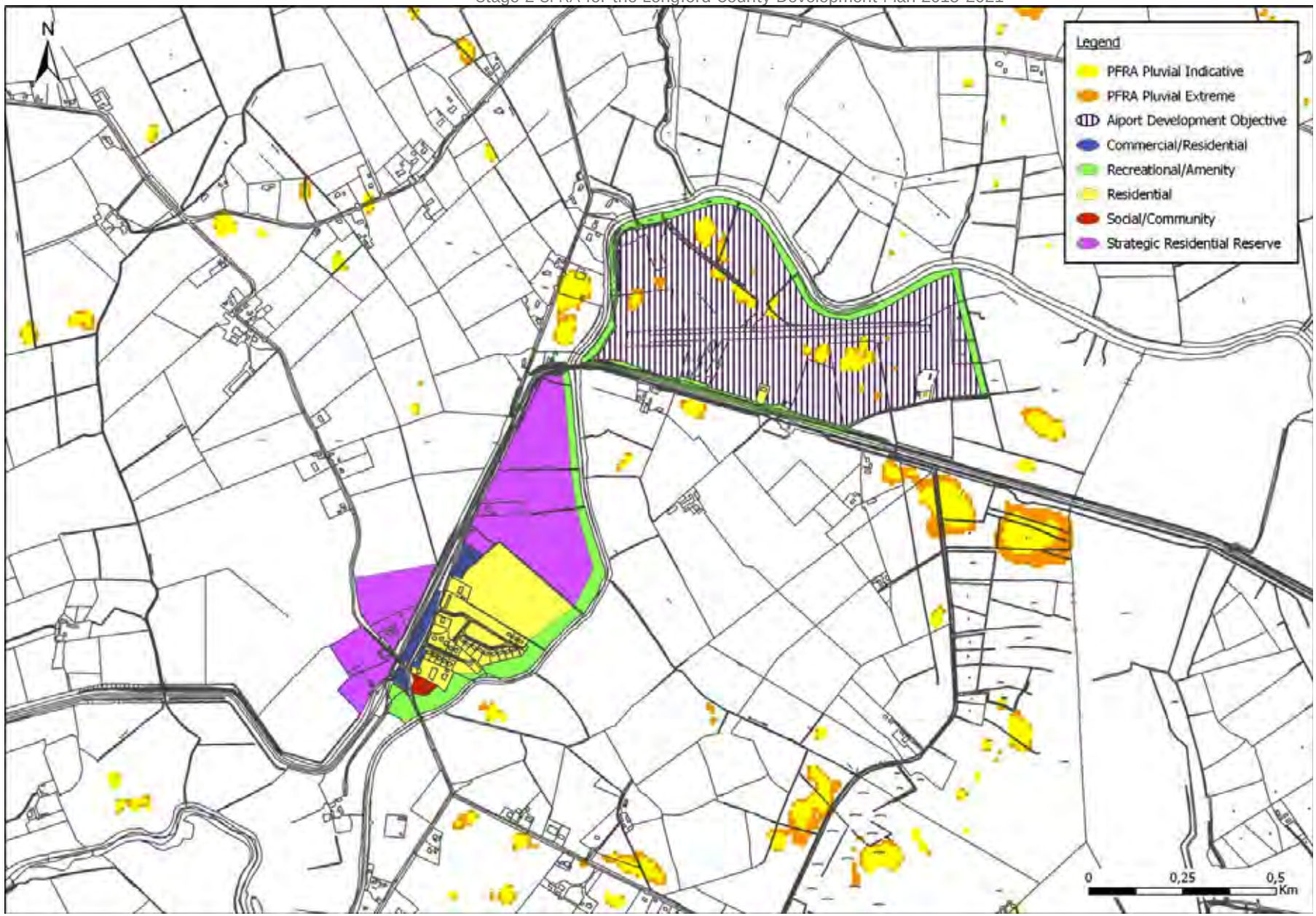


Figure AI.3 Abbeyshrule PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

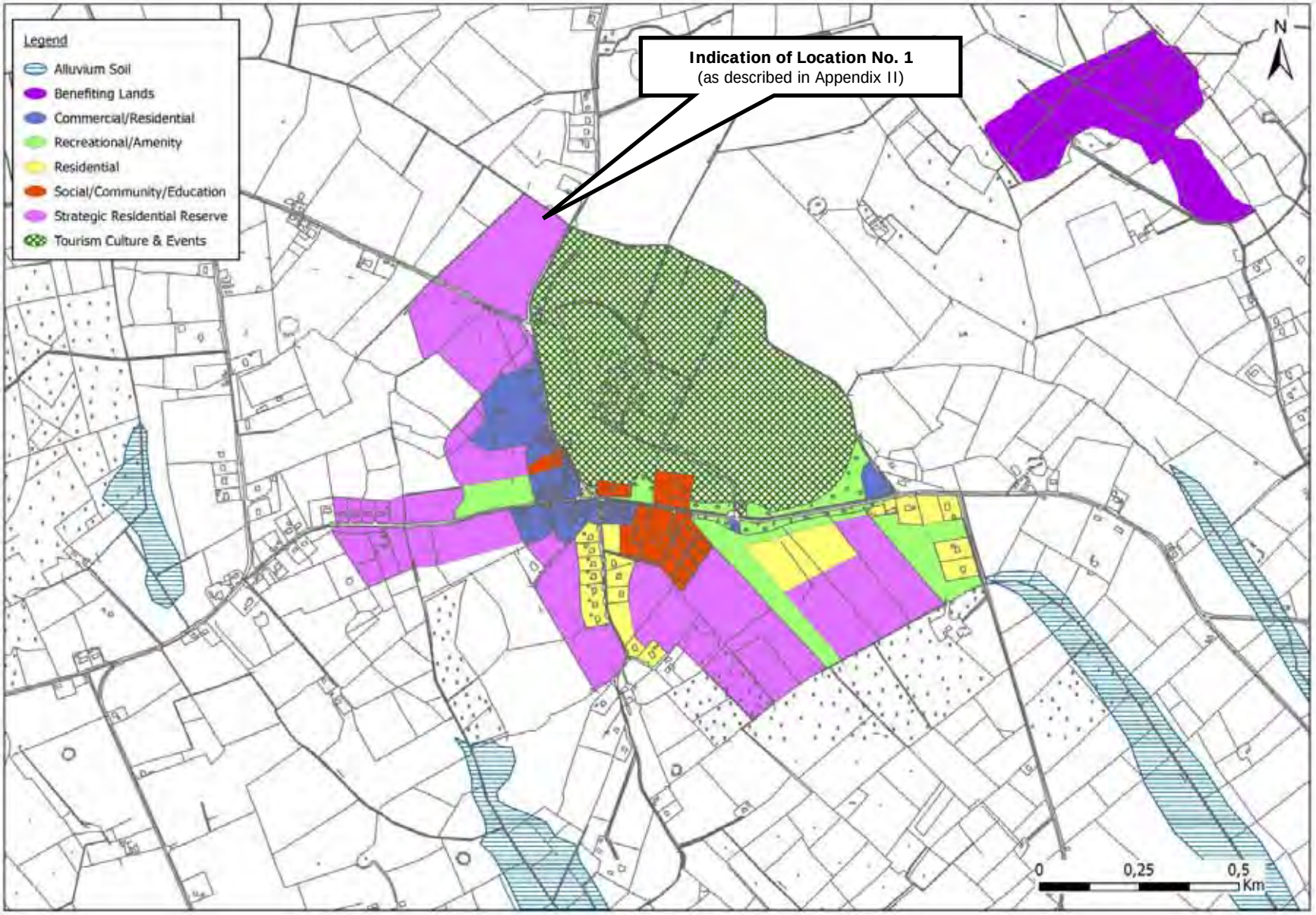


Figure AI.4 Ardagh Historical Flood Risk Indicators (overlain on older version of the Draft Land Use Zoning)

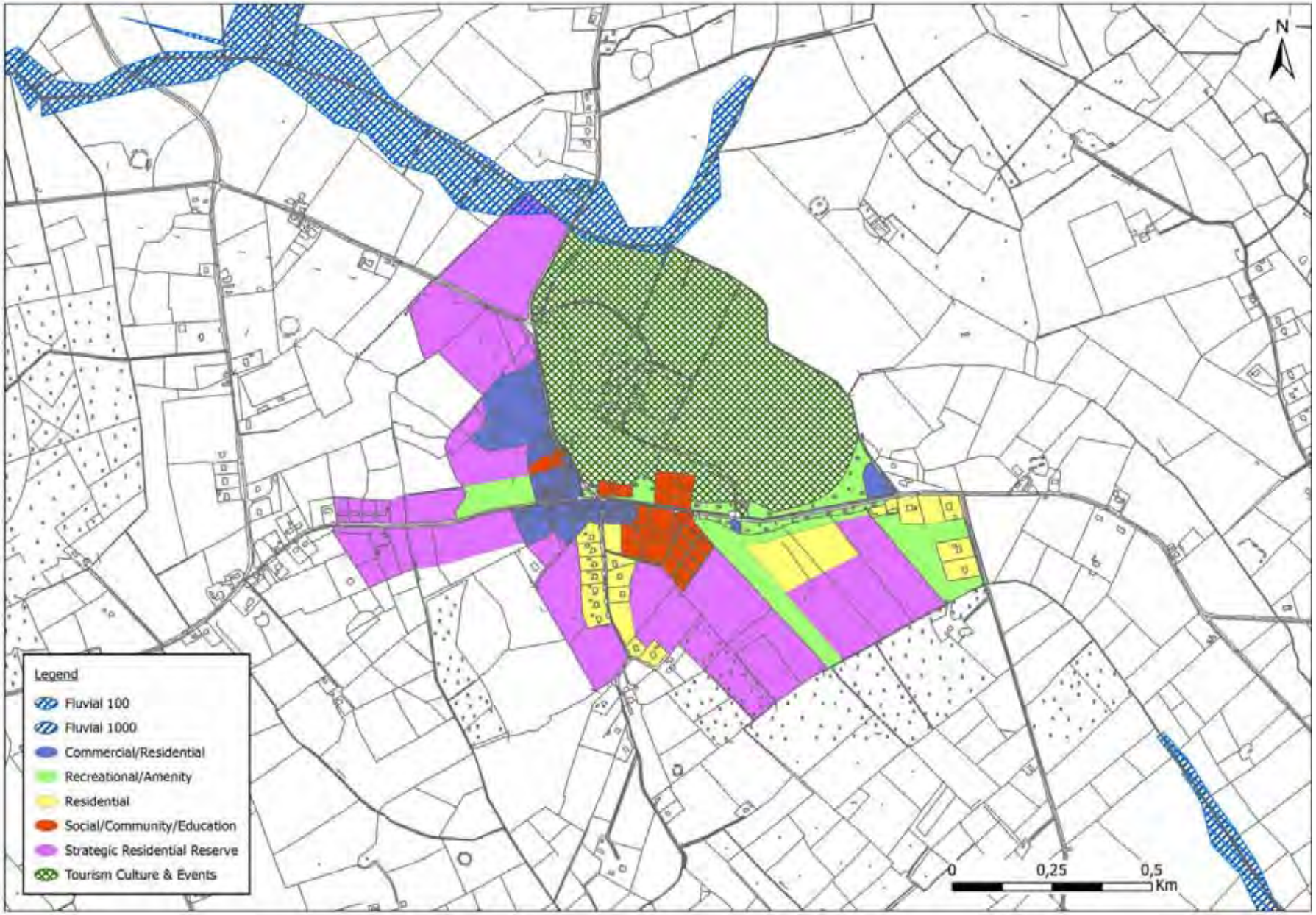


Figure AI.5 Ardagh PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

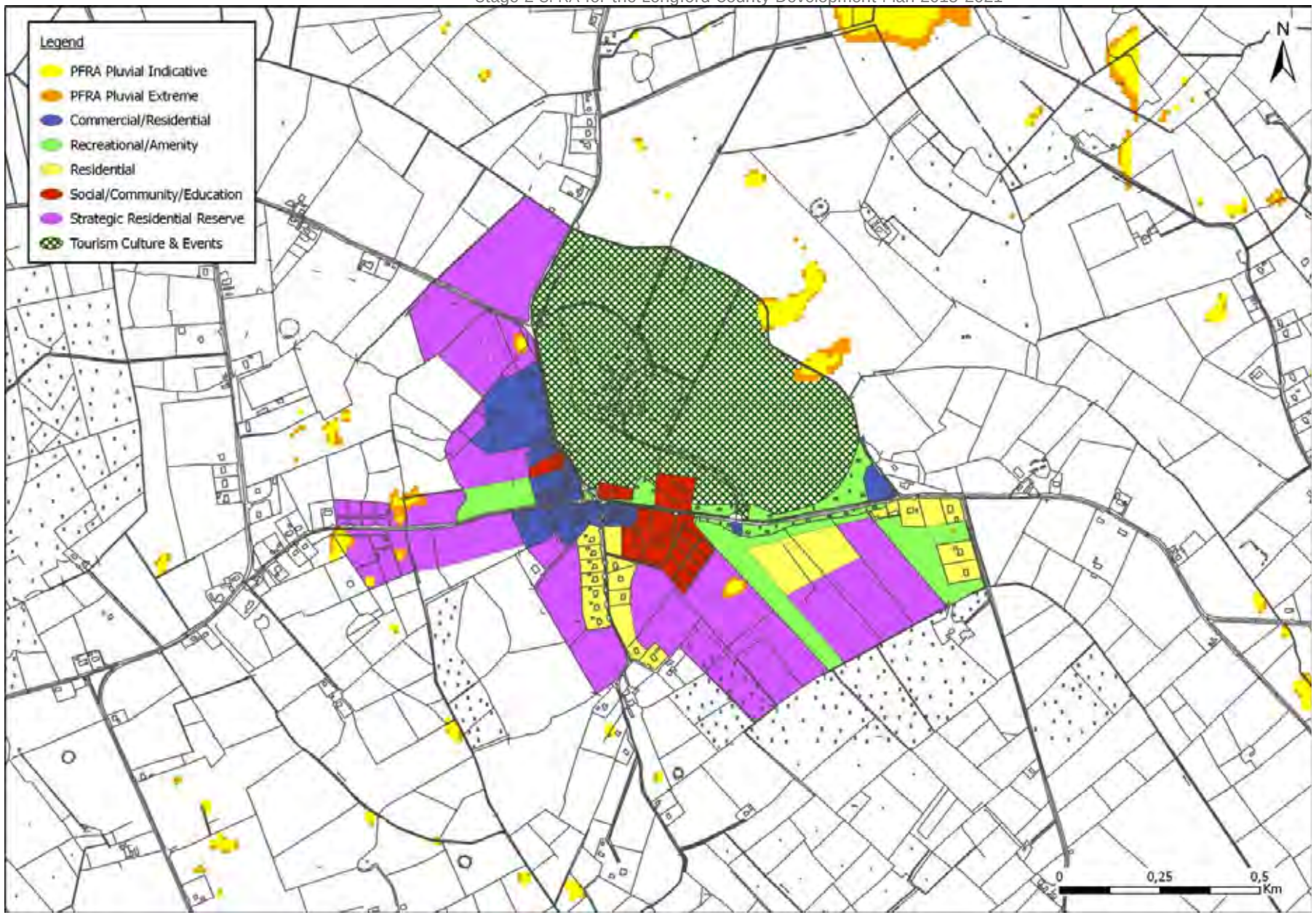


Figure A1.6 Ardagh PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

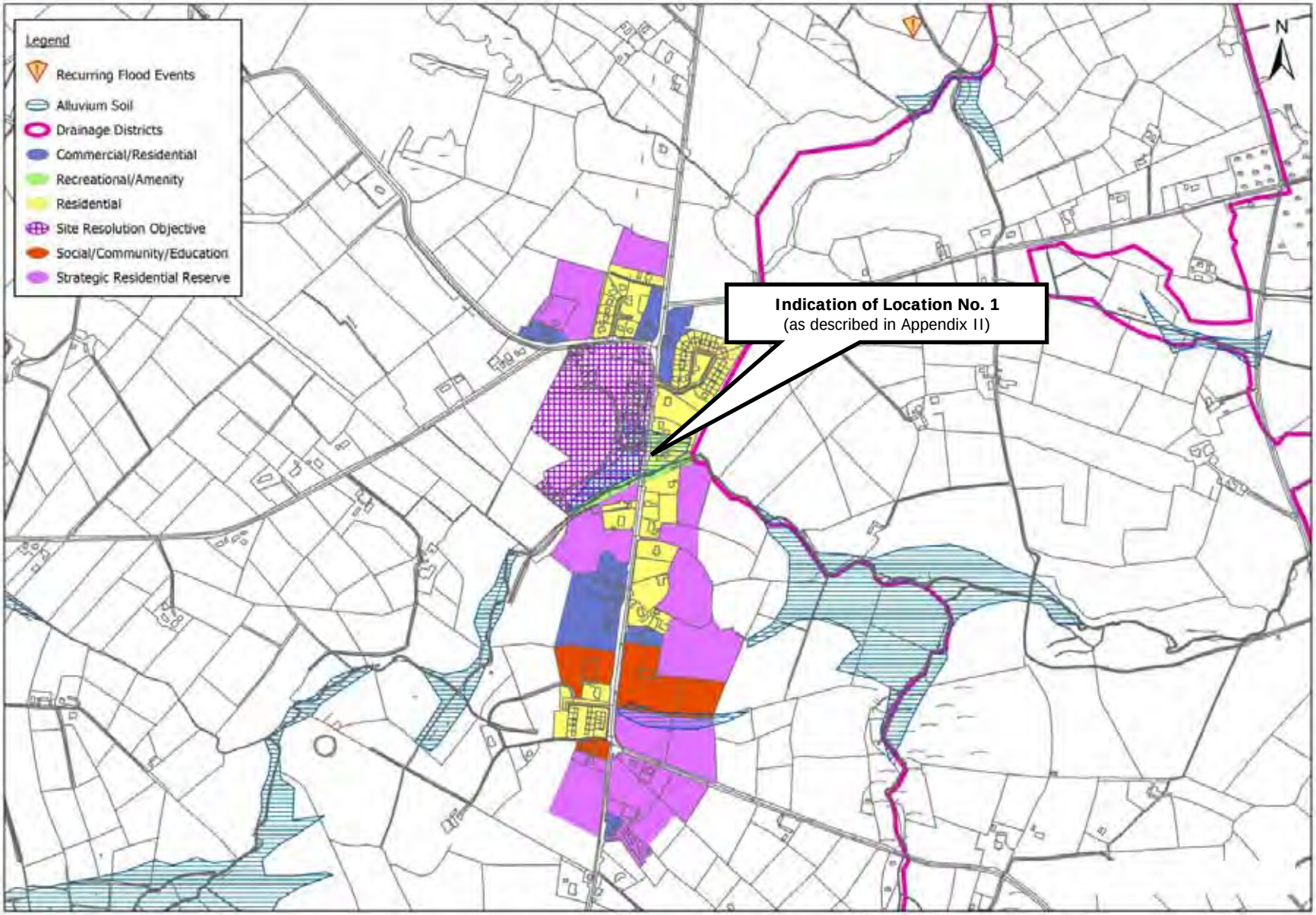


Figure AI.7 Aughnacliffe Historical Flood Risk Indicators (overlain on older version of the Draft Land Use Zoning)

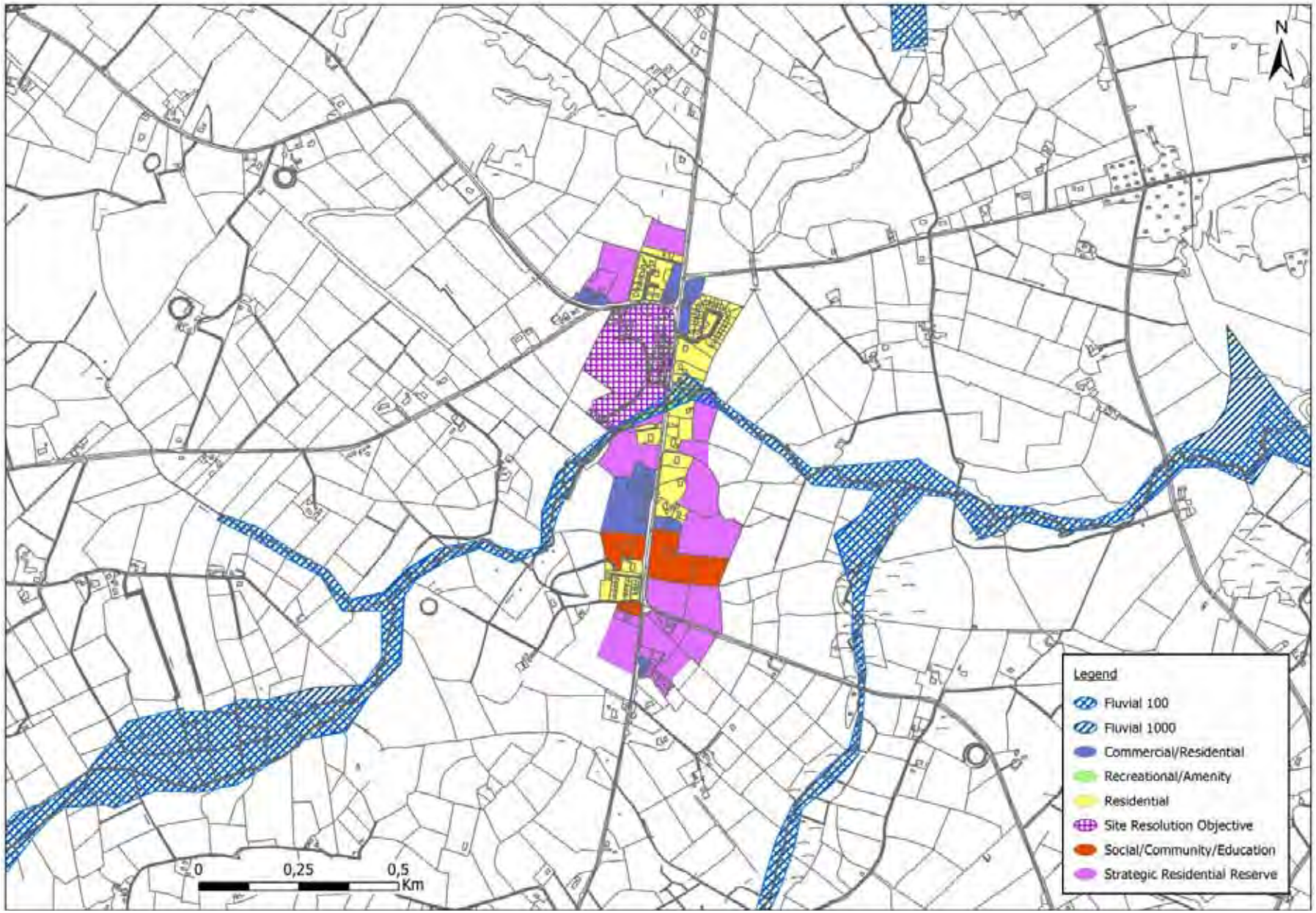


Figure A1.8 Aughnacliffe PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

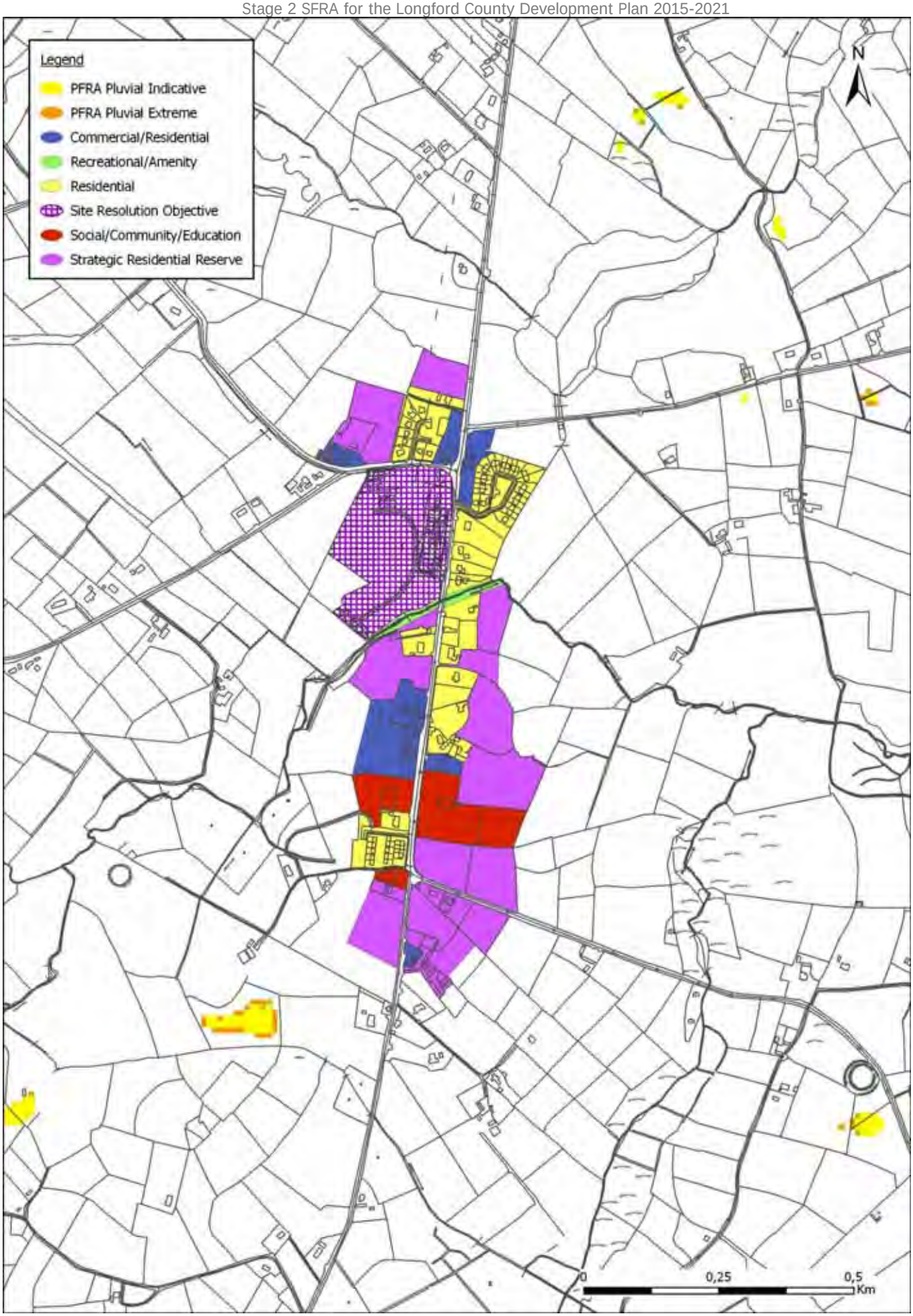


Figure AI.9 Aughnacliffe PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

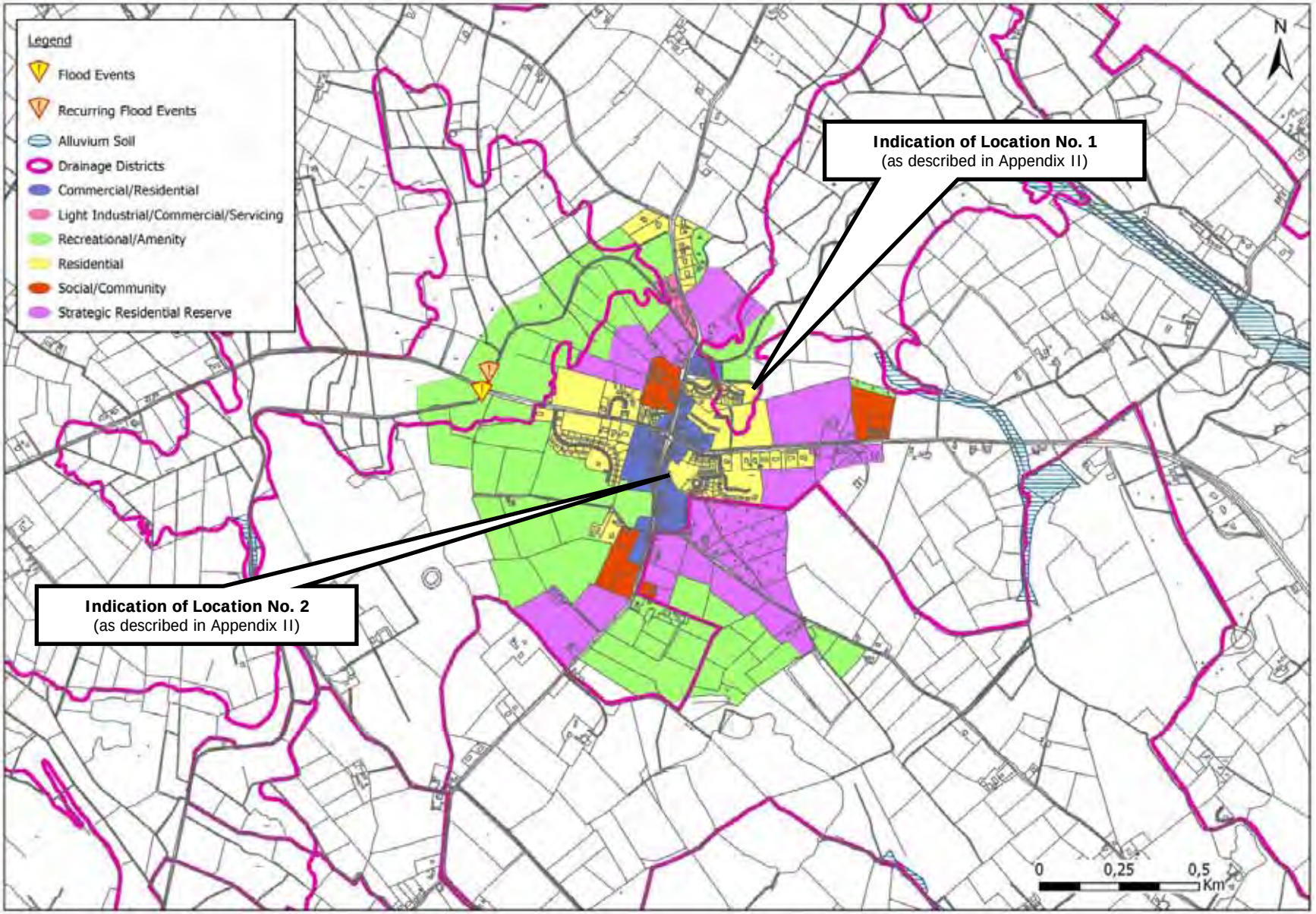


Figure AI.10 Ballinalee Historical Flood Risk Indicators (overlain on older version of the Draft Land Use Zoning)

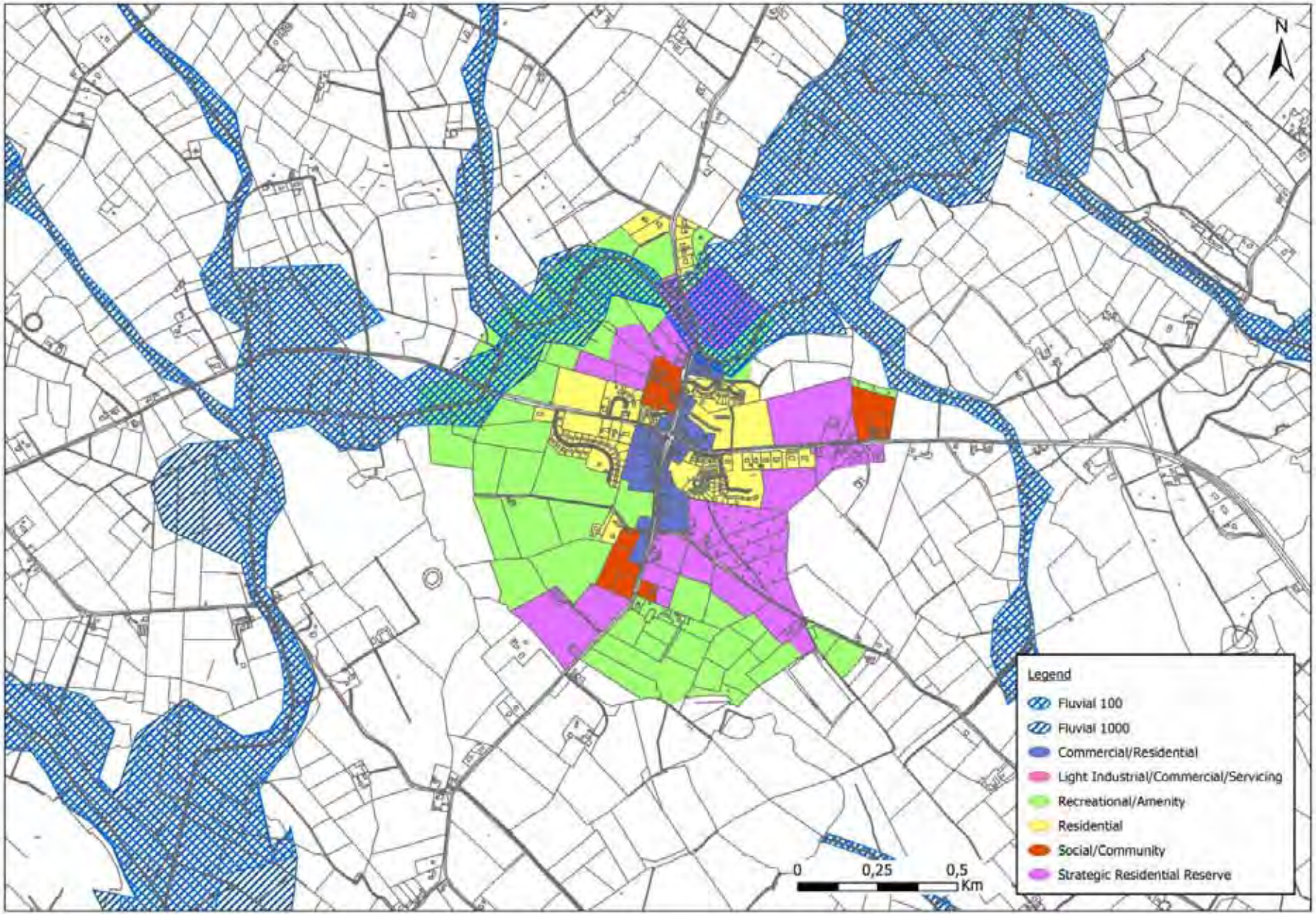


Figure AI.11 Ballinalee PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

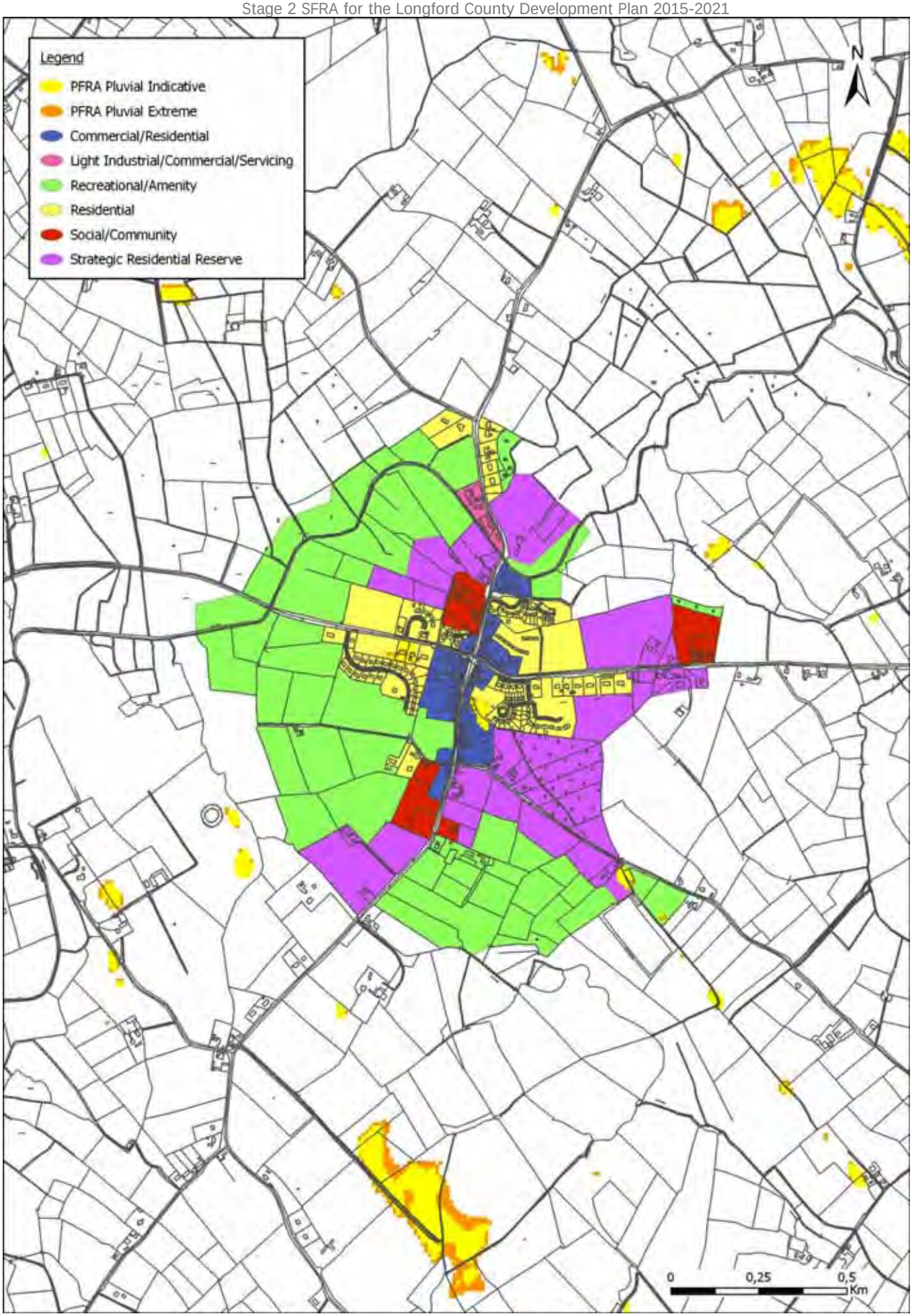


Figure AI.12 Ballinalee PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

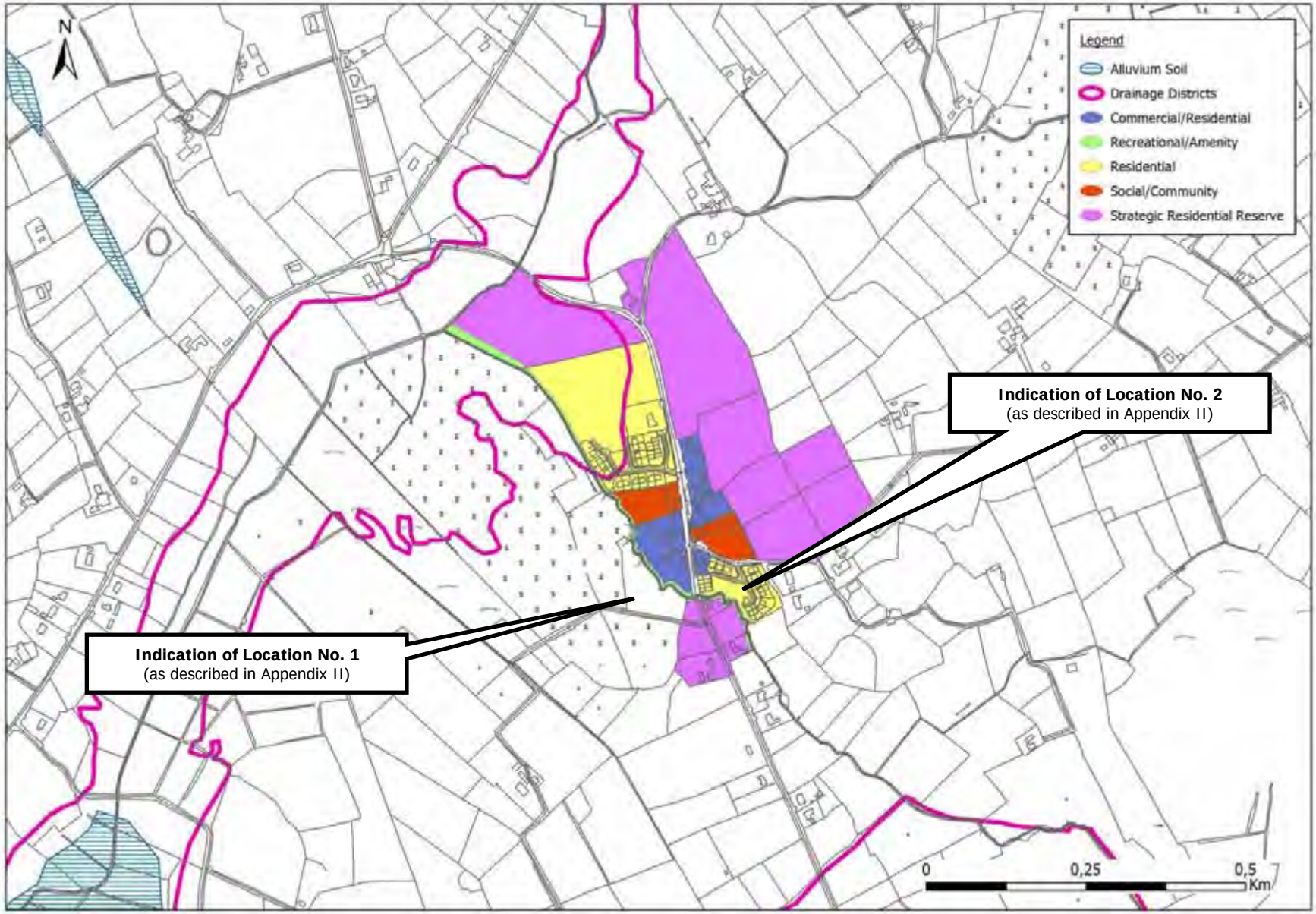


Figure AI.13 Ballinamuck Historical Flood Risk Indicators (overlain on older version of the Draft Land Use Zoning)

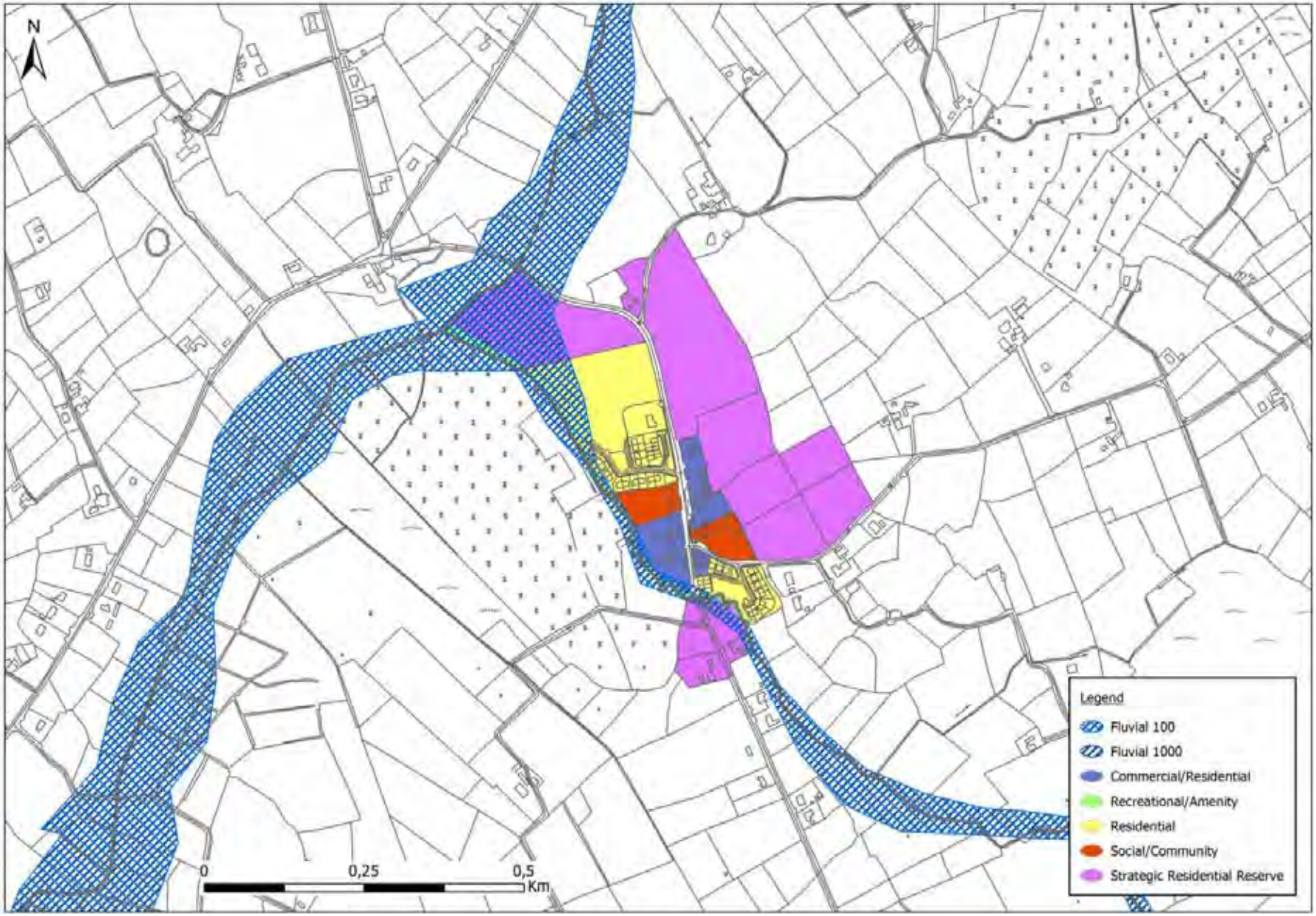


Figure AI.14 Ballinamuck PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

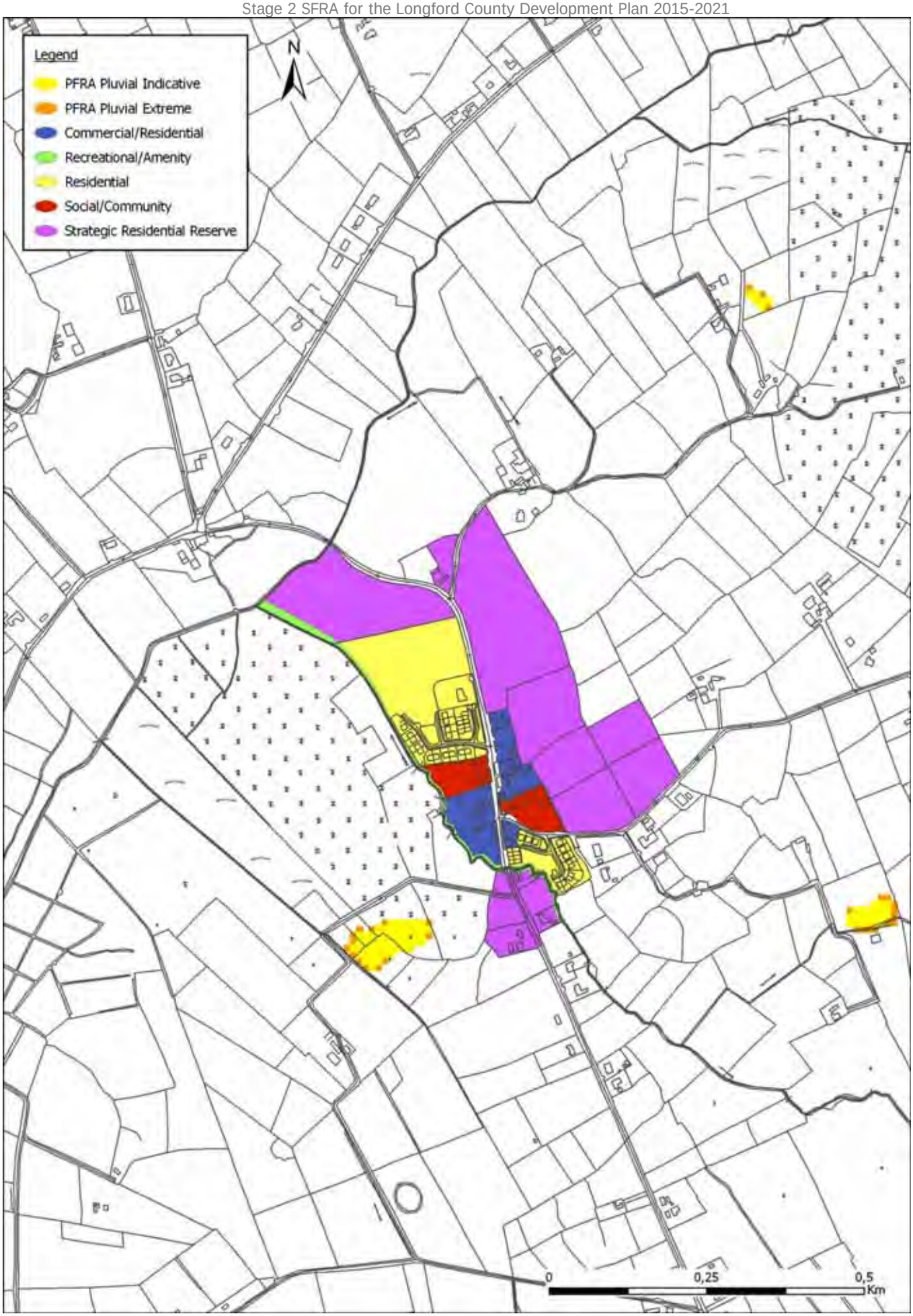


Figure AI.15 Ballinamuck PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

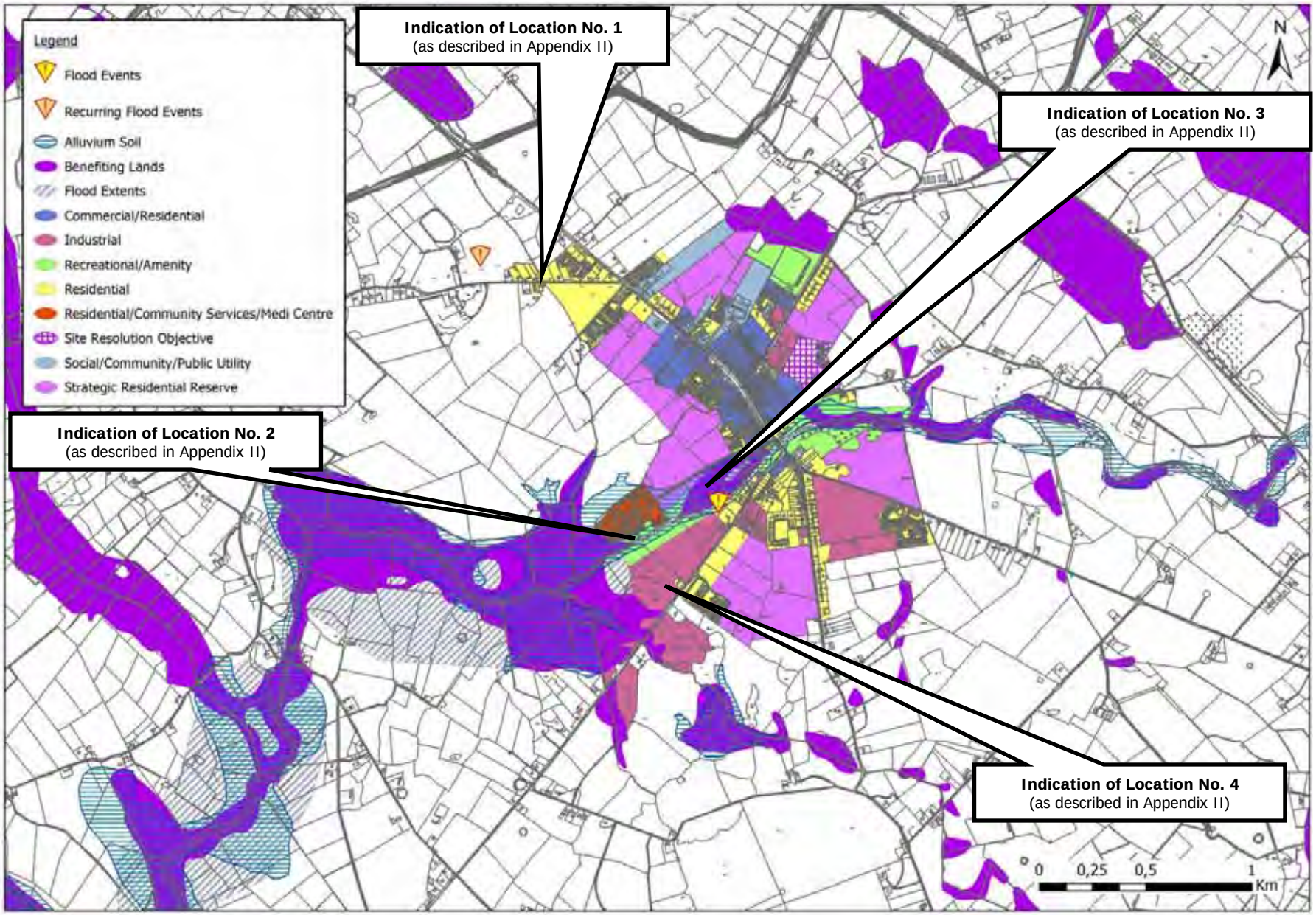


Figure AI.16 Ballymahon Historical Flood Risk Areas (overlain on older version of the Draft Land Use Zoning)

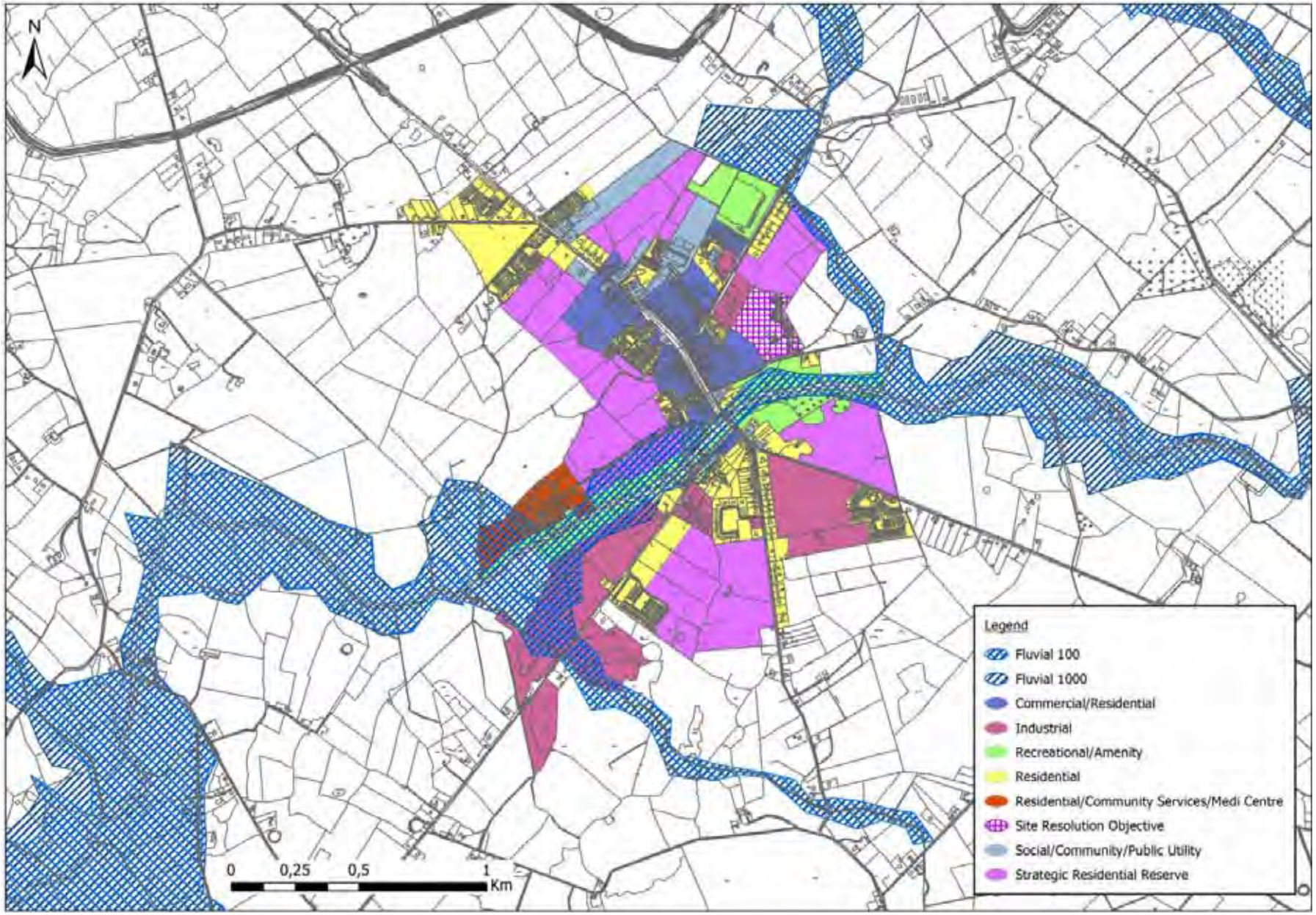


Figure AI.17 Ballymahon PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

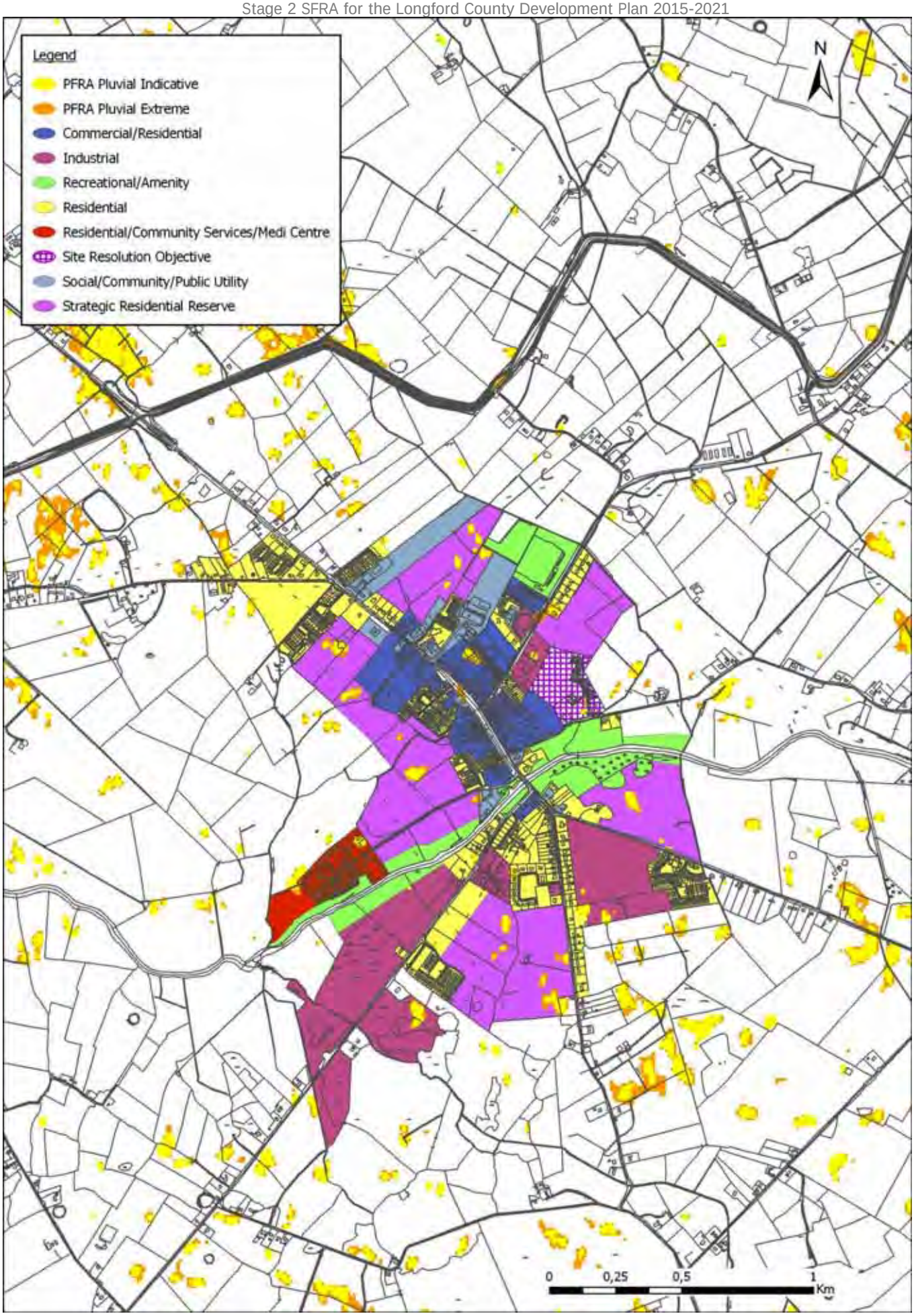


Figure AI.18 Ballymahon PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

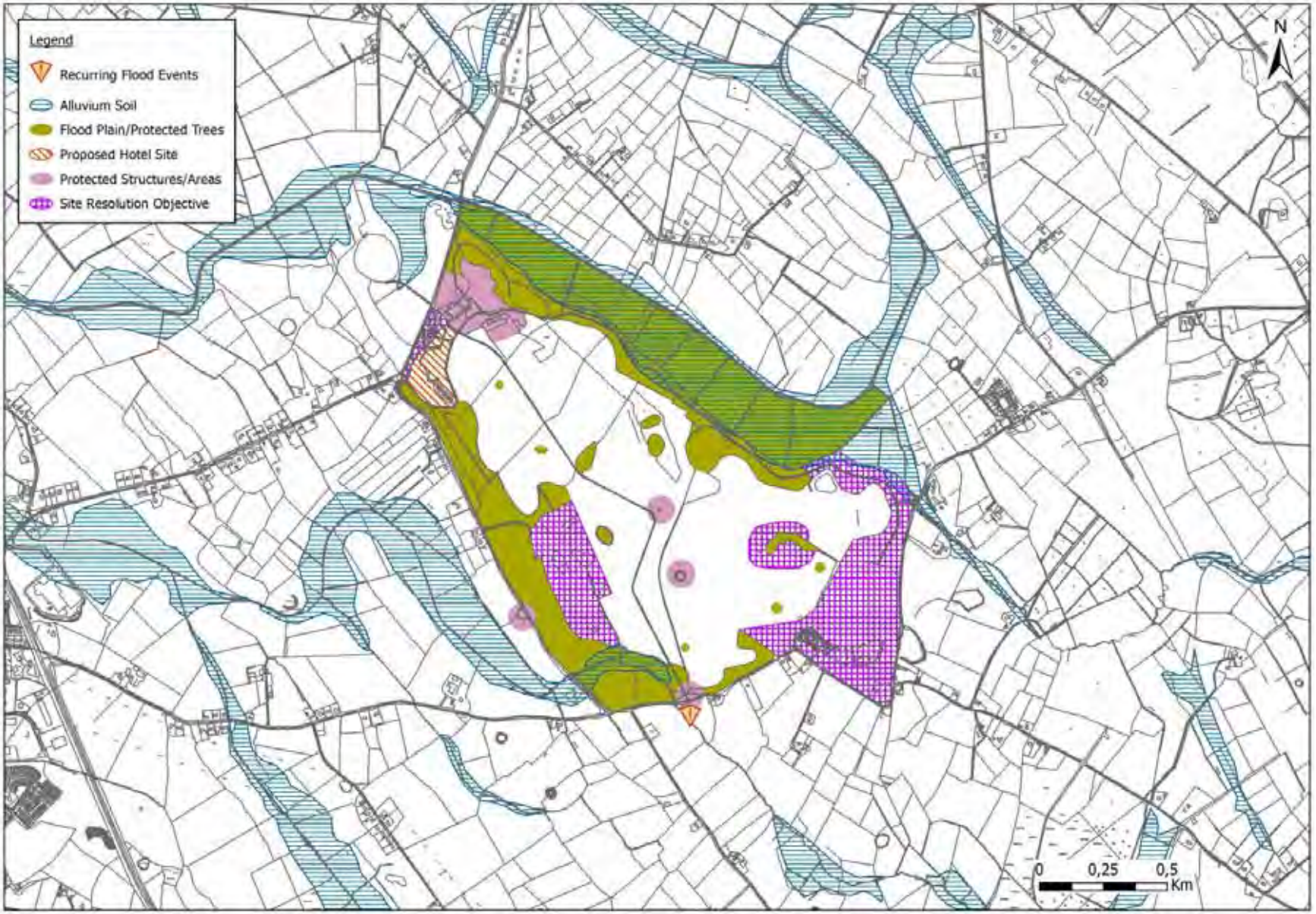


Figure AI.19 Carrickglass Historical Flood Risk Indicators (overlain on older version of the Draft Land Use Zoning)

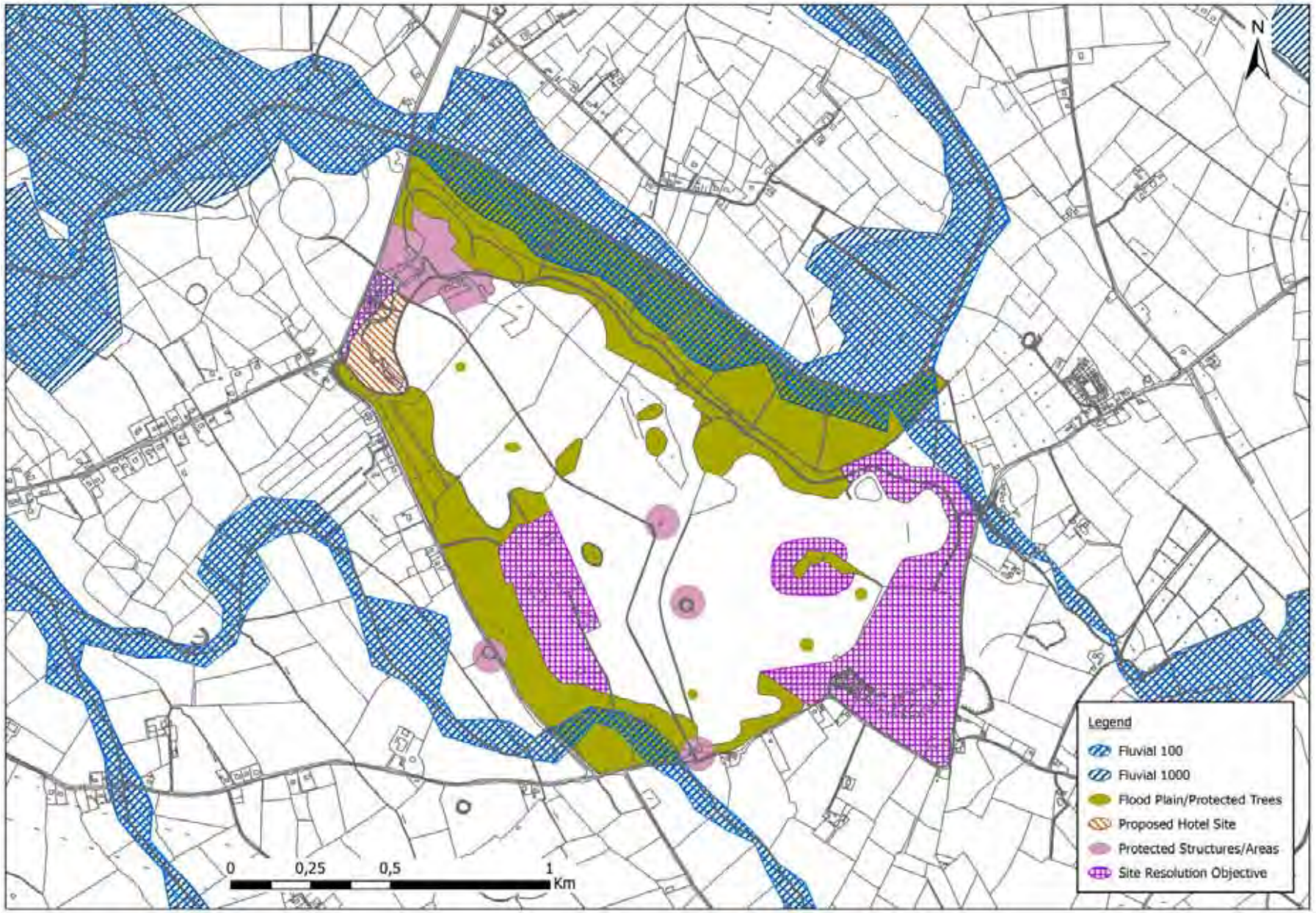


Figure AI.20 Carrickglass PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

Figure AI.21 Carrickglass PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

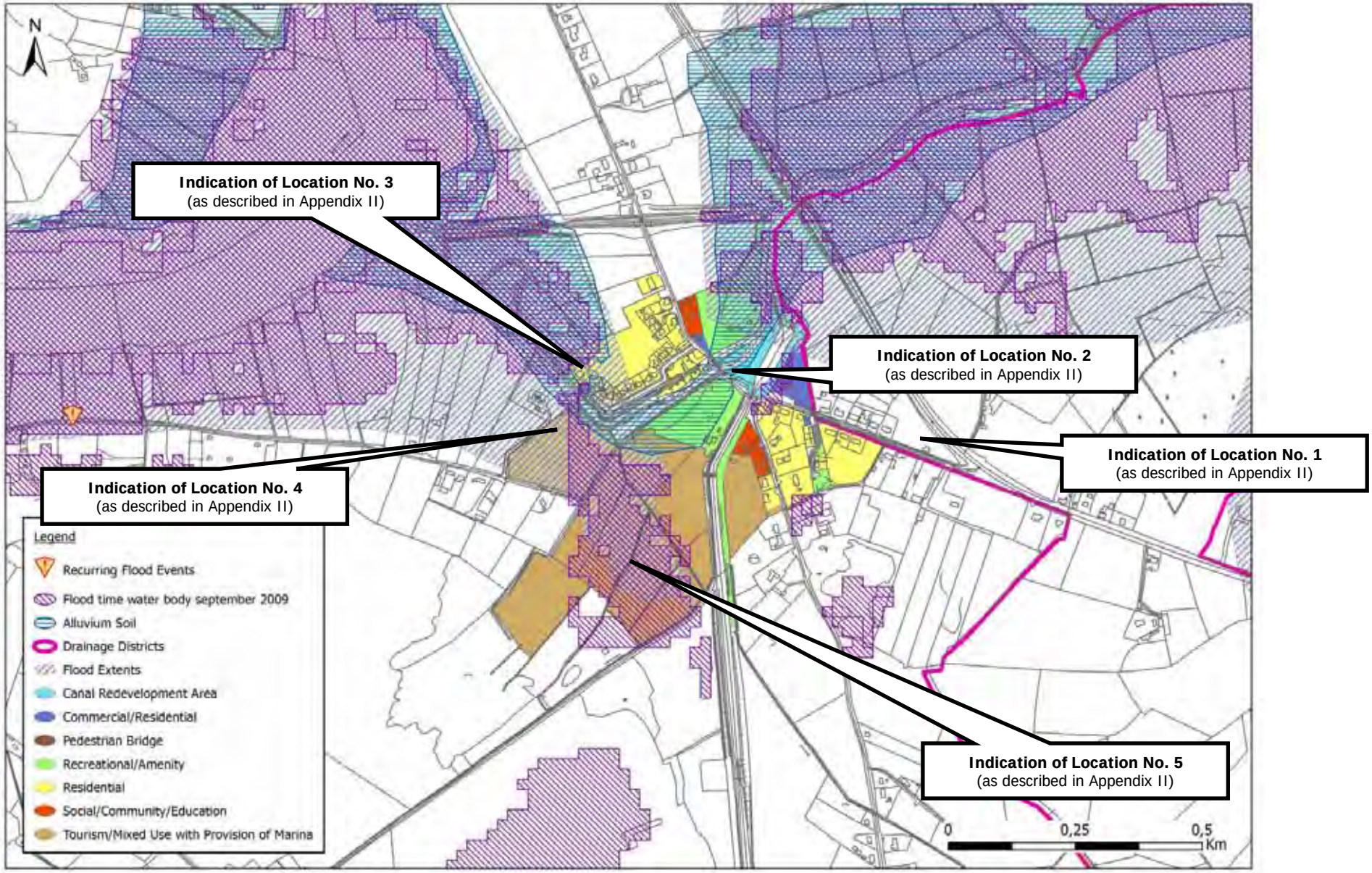


Figure AI.22 Clondra Historical Flood Risk Indicators (overlain on older version of the Draft Land Use Zoning)

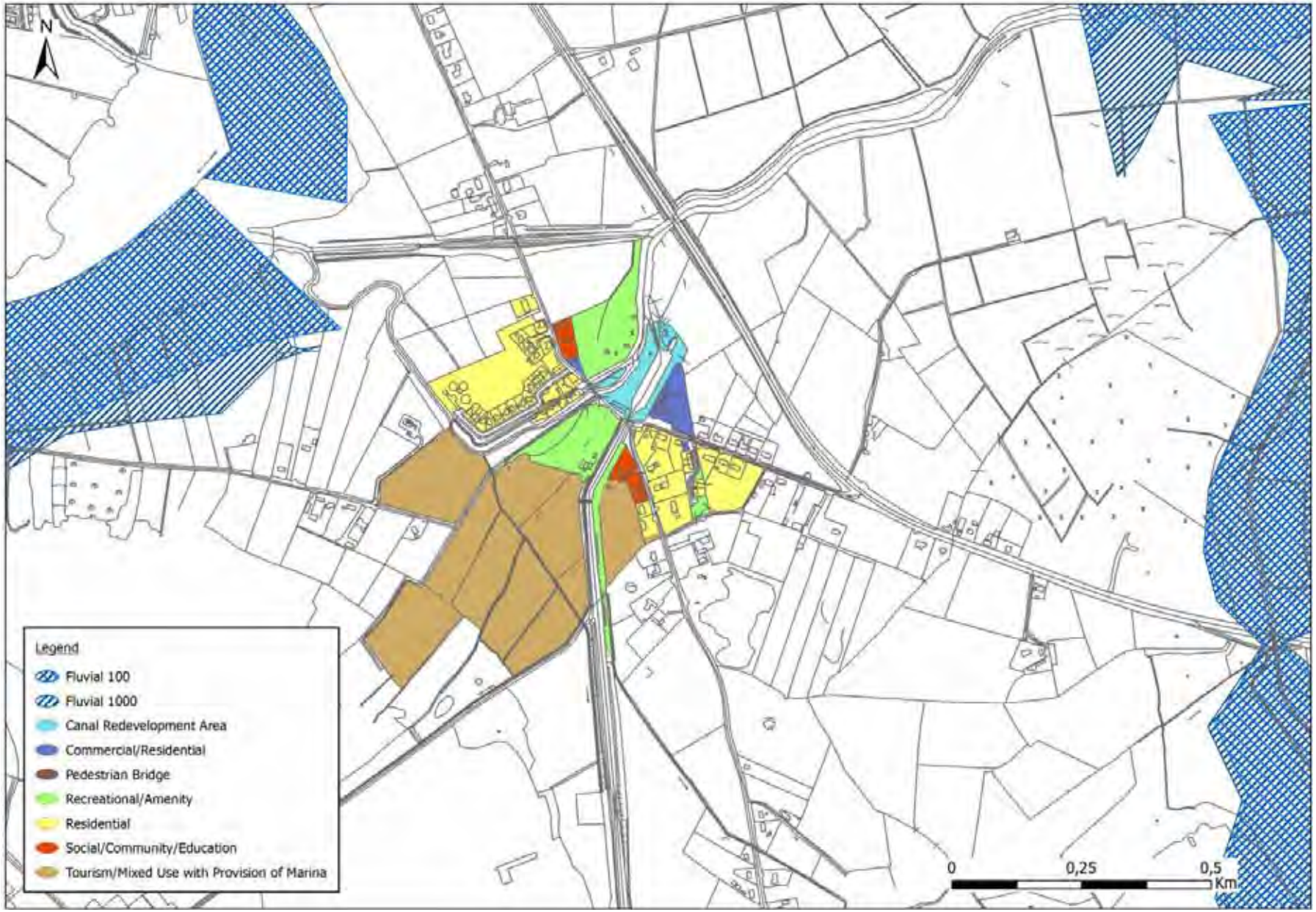


Figure A1.23 Clondra PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

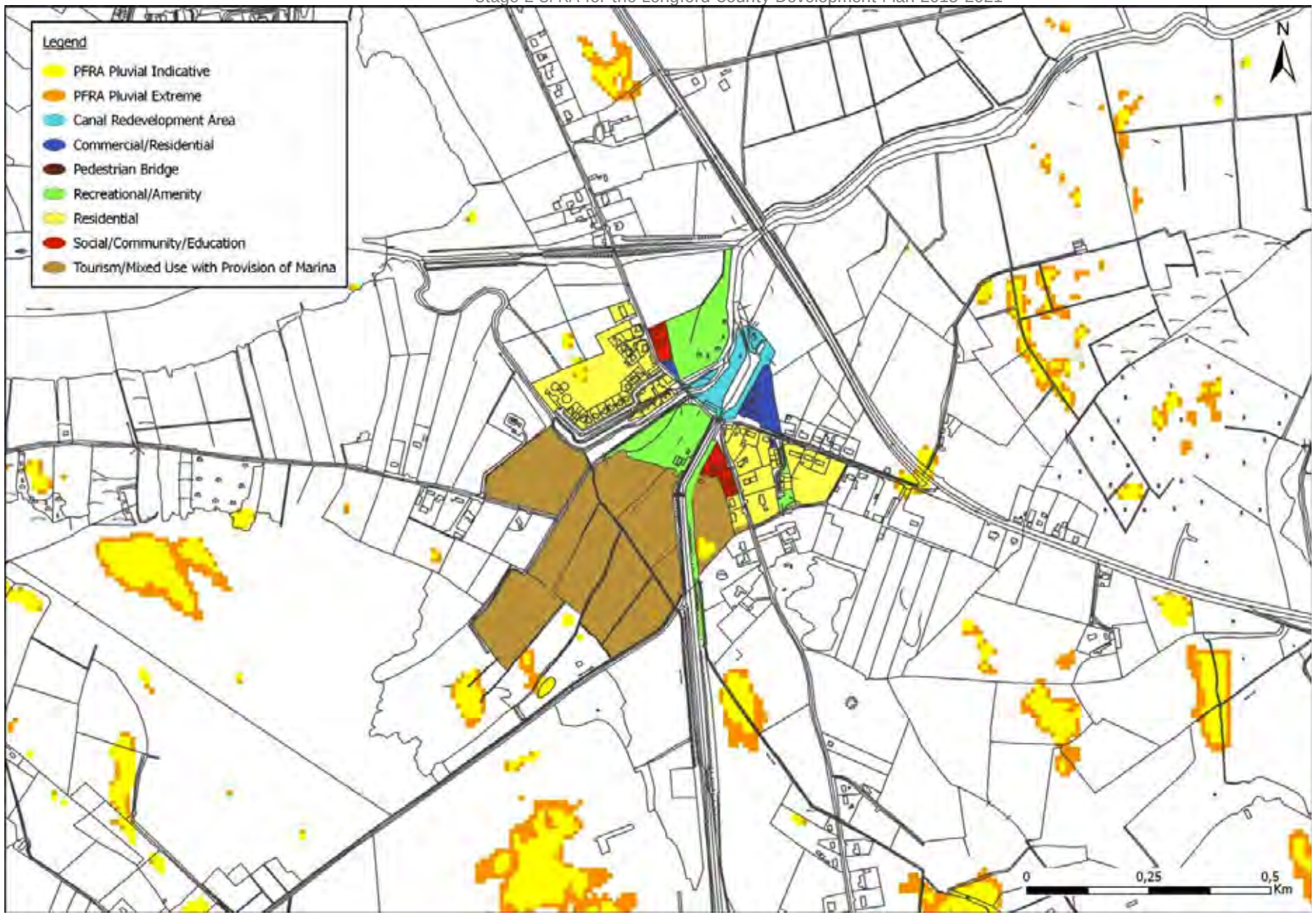


Figure AI.24 Clondra PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

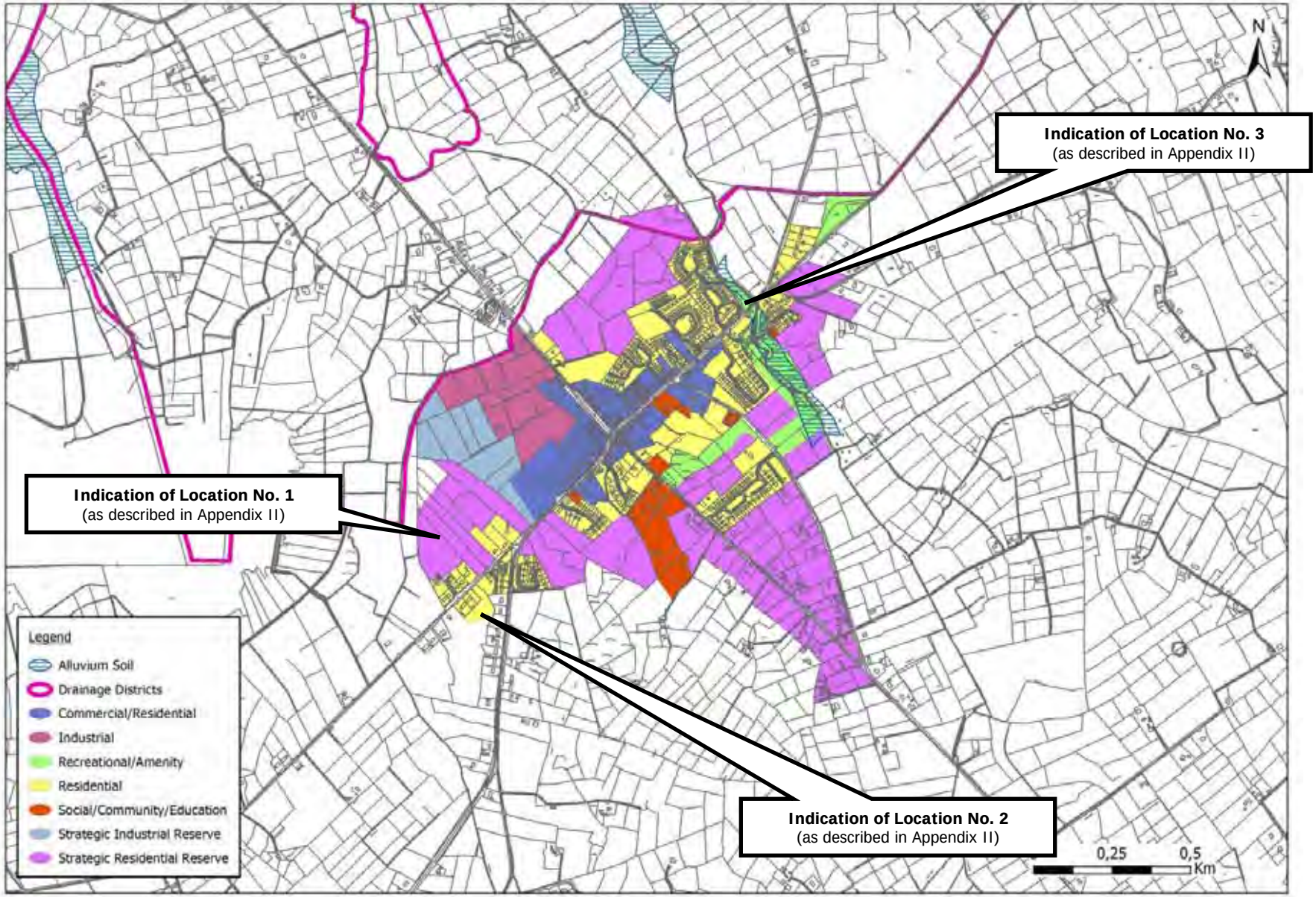


Figure AI.25 Drumlish Historical Flood Risk Indicators (overlain on older version of the Draft Land Use Zoning)

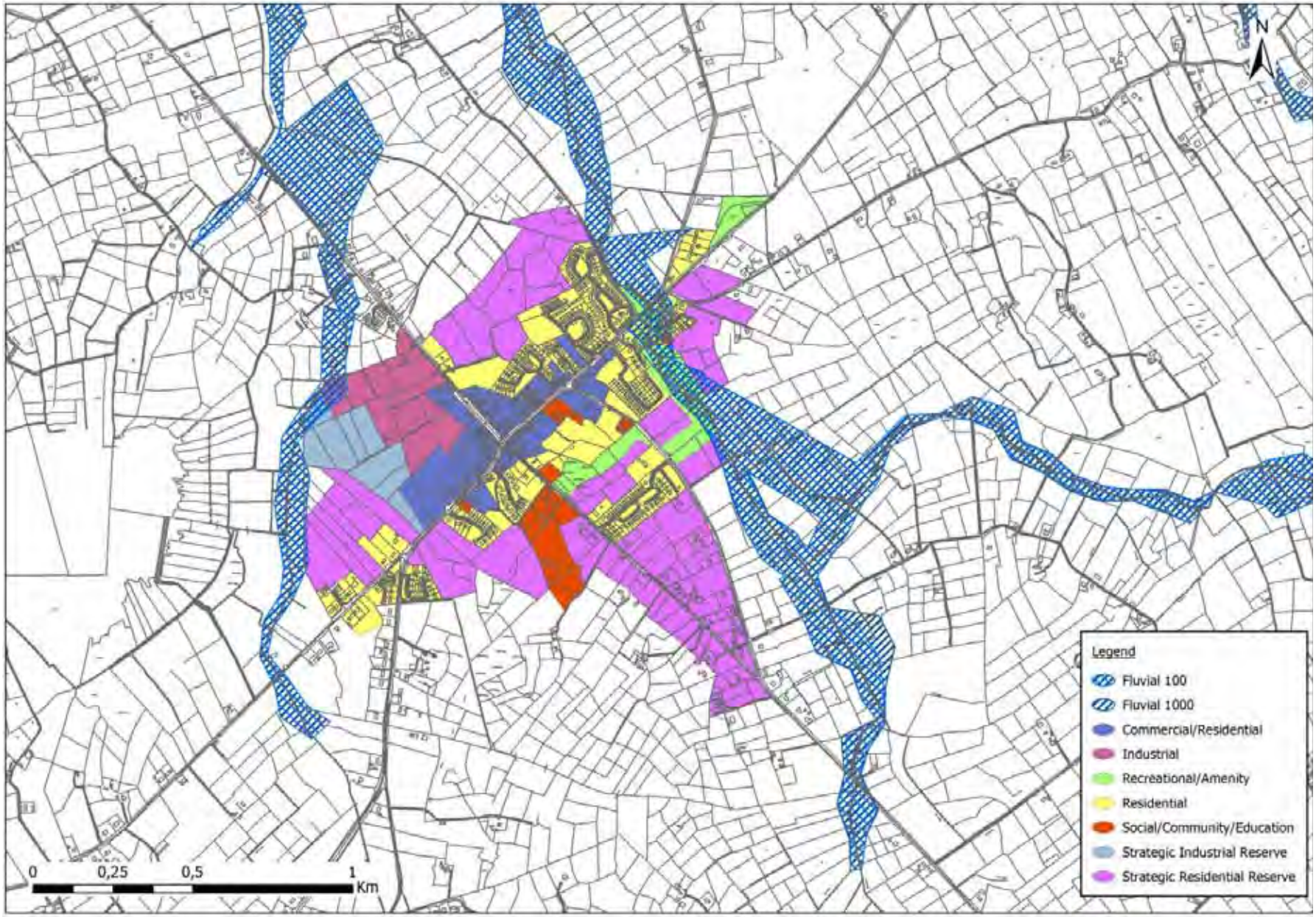


Figure AI.26 Drumlish PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

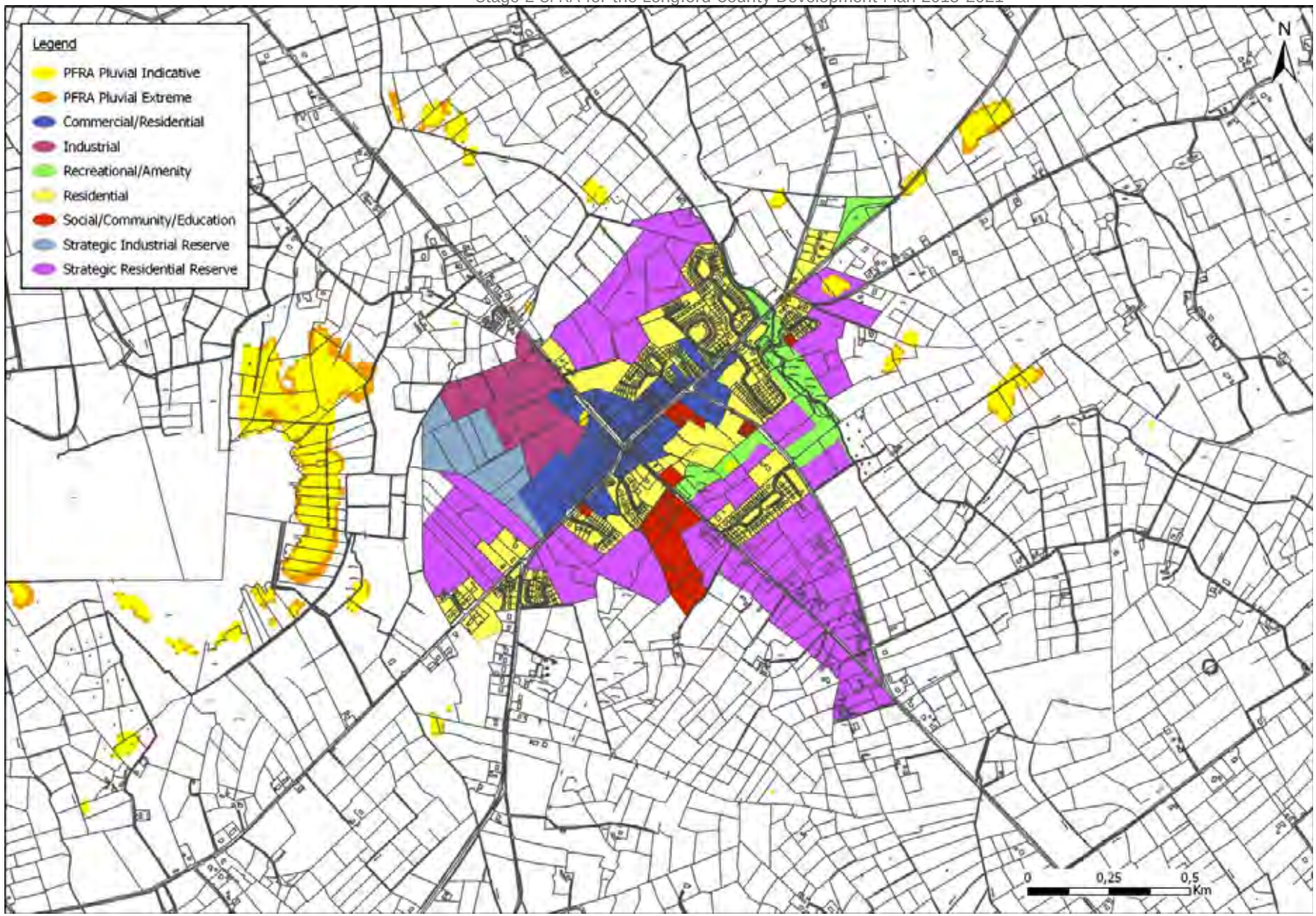


Figure AI.27 Drumlish PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

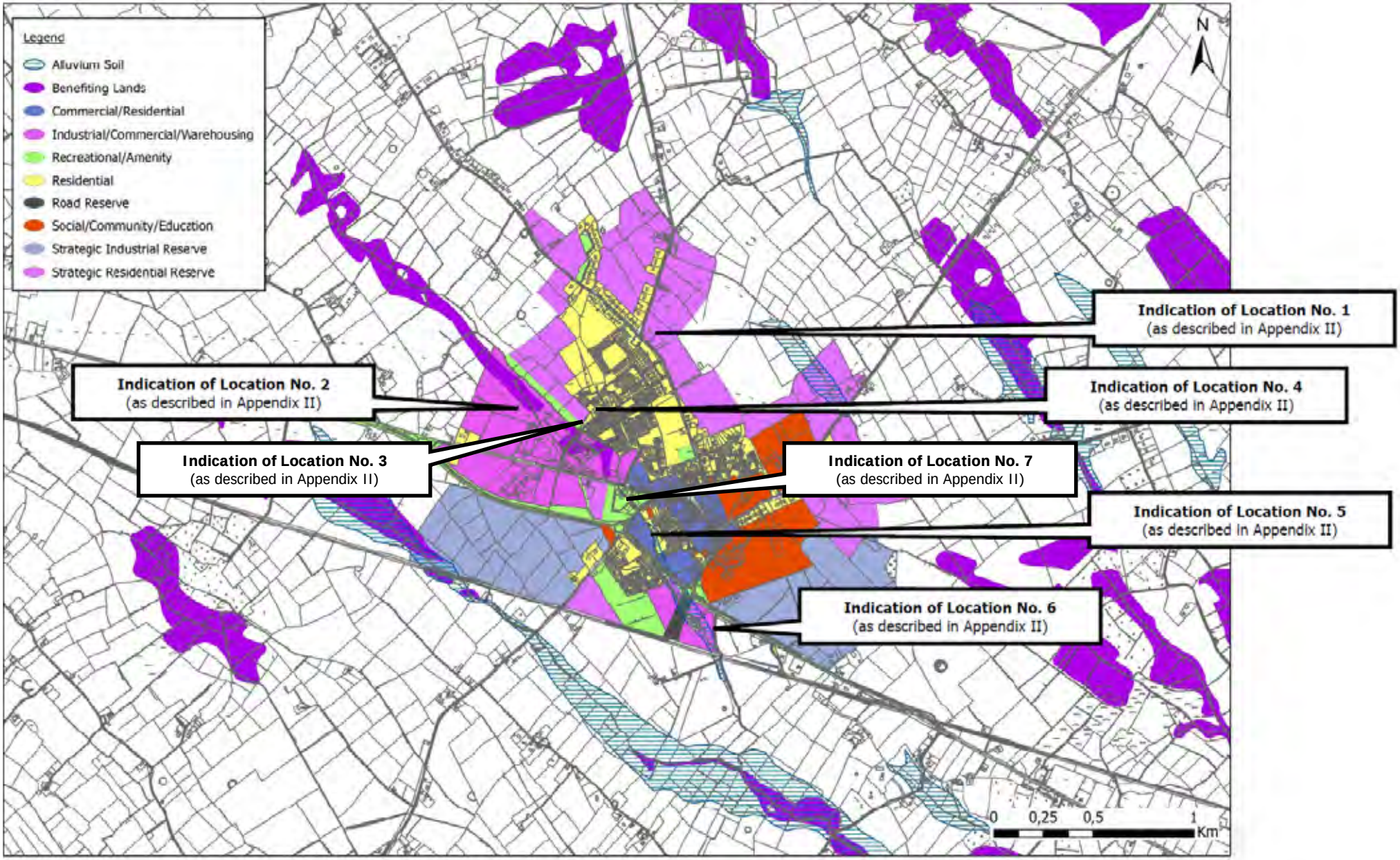


Figure AI.28 Edgeworthstown Historical Flood Risk Indicators (overlain on older version of the Draft Land Use Zoning)

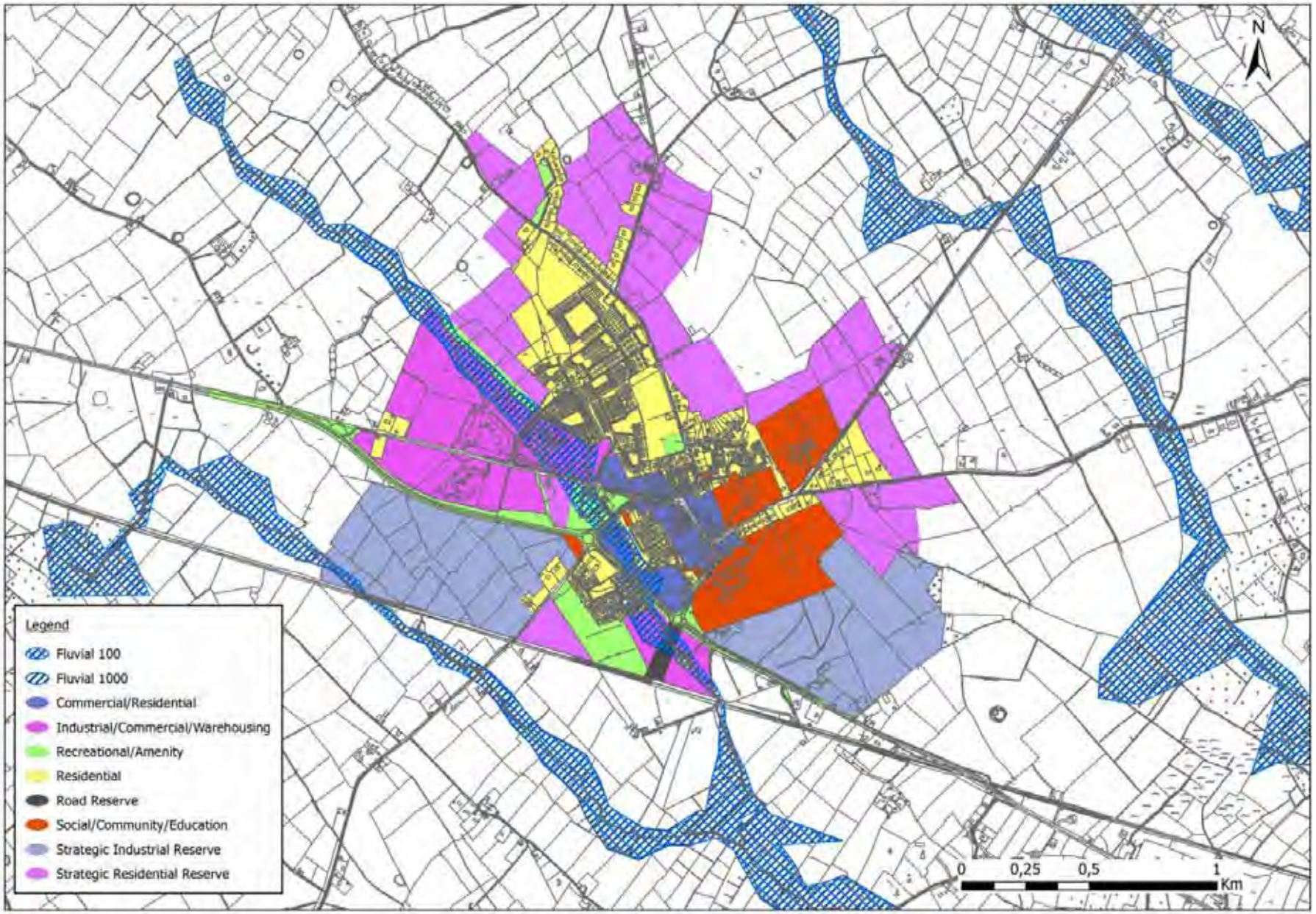


Figure AI.29 Edgeworthstown PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

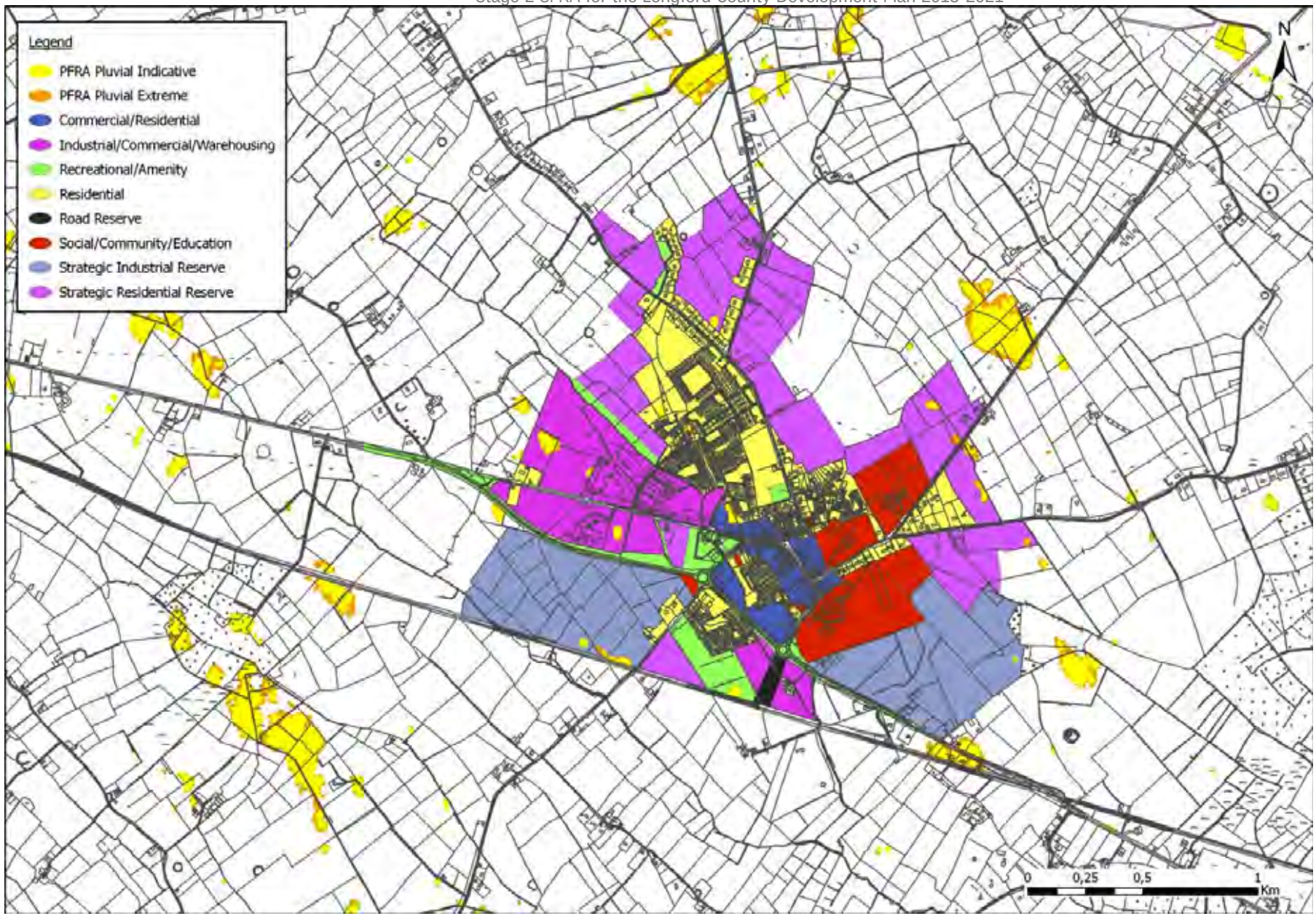


Figure AI.30 Edgeworthstown PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

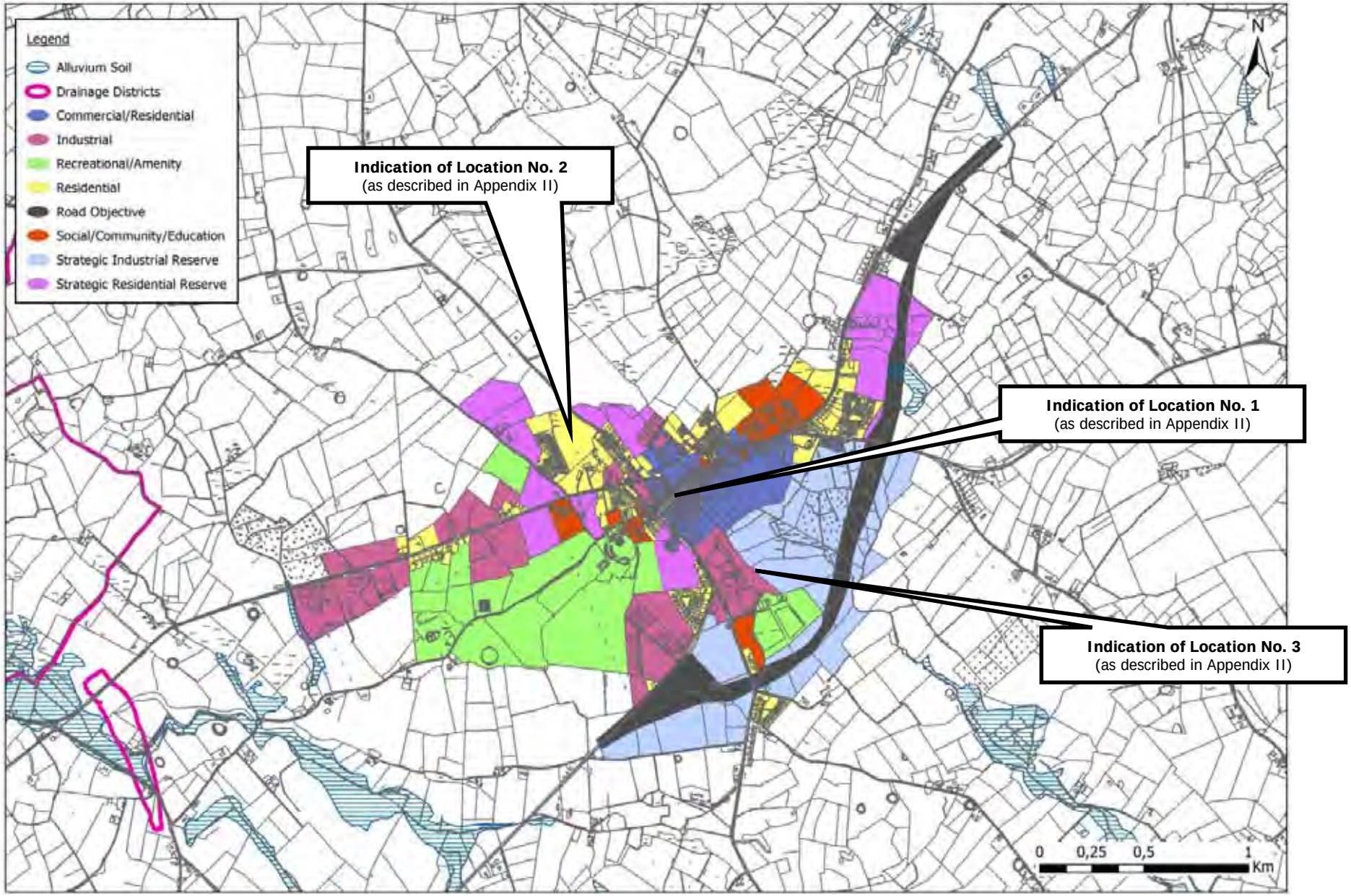


Figure AI.31 Granard Historical Flood Risk Indicators (overlain on older version of the Draft Land Use Zoning)

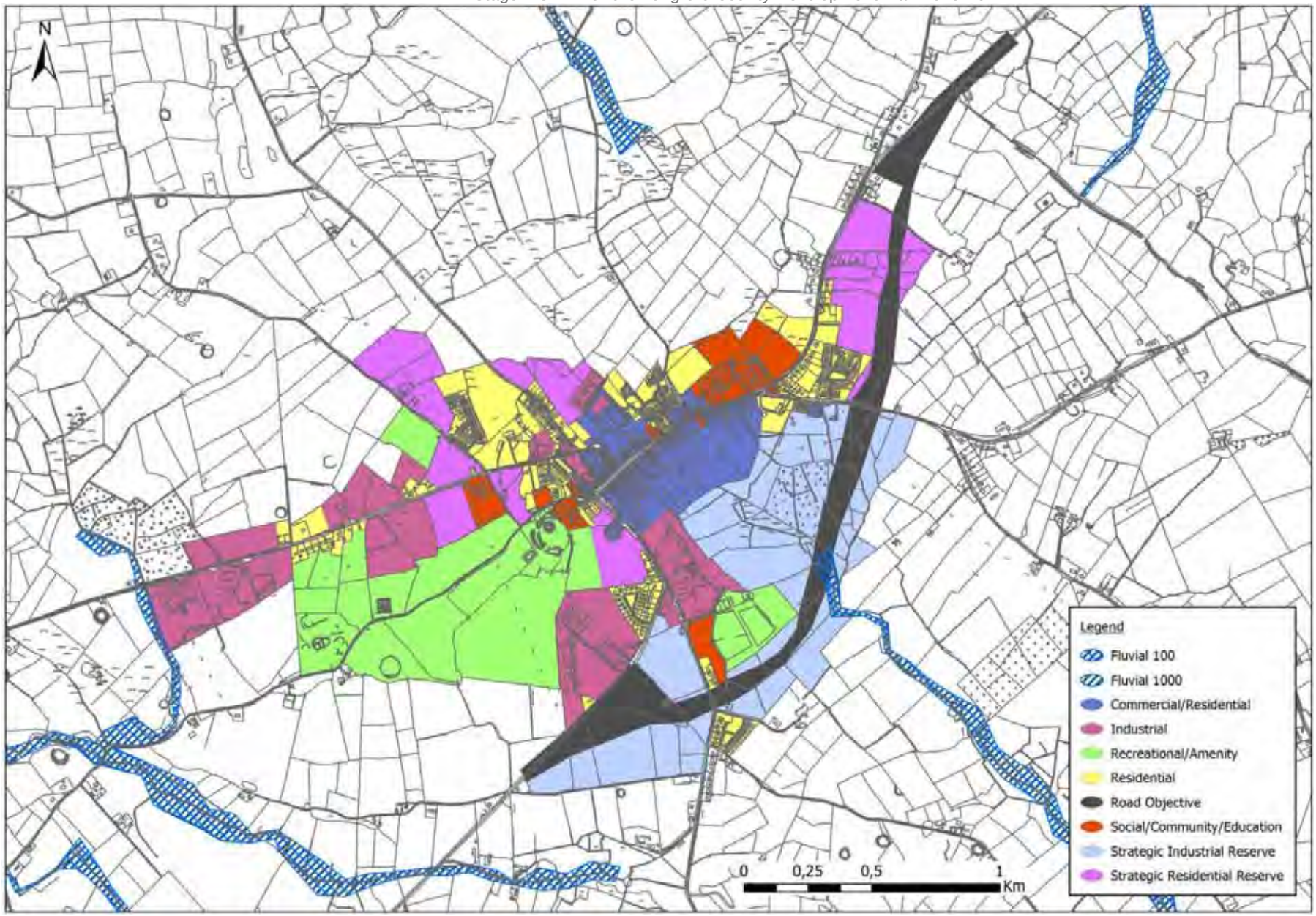


Figure AI.32 Granard PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

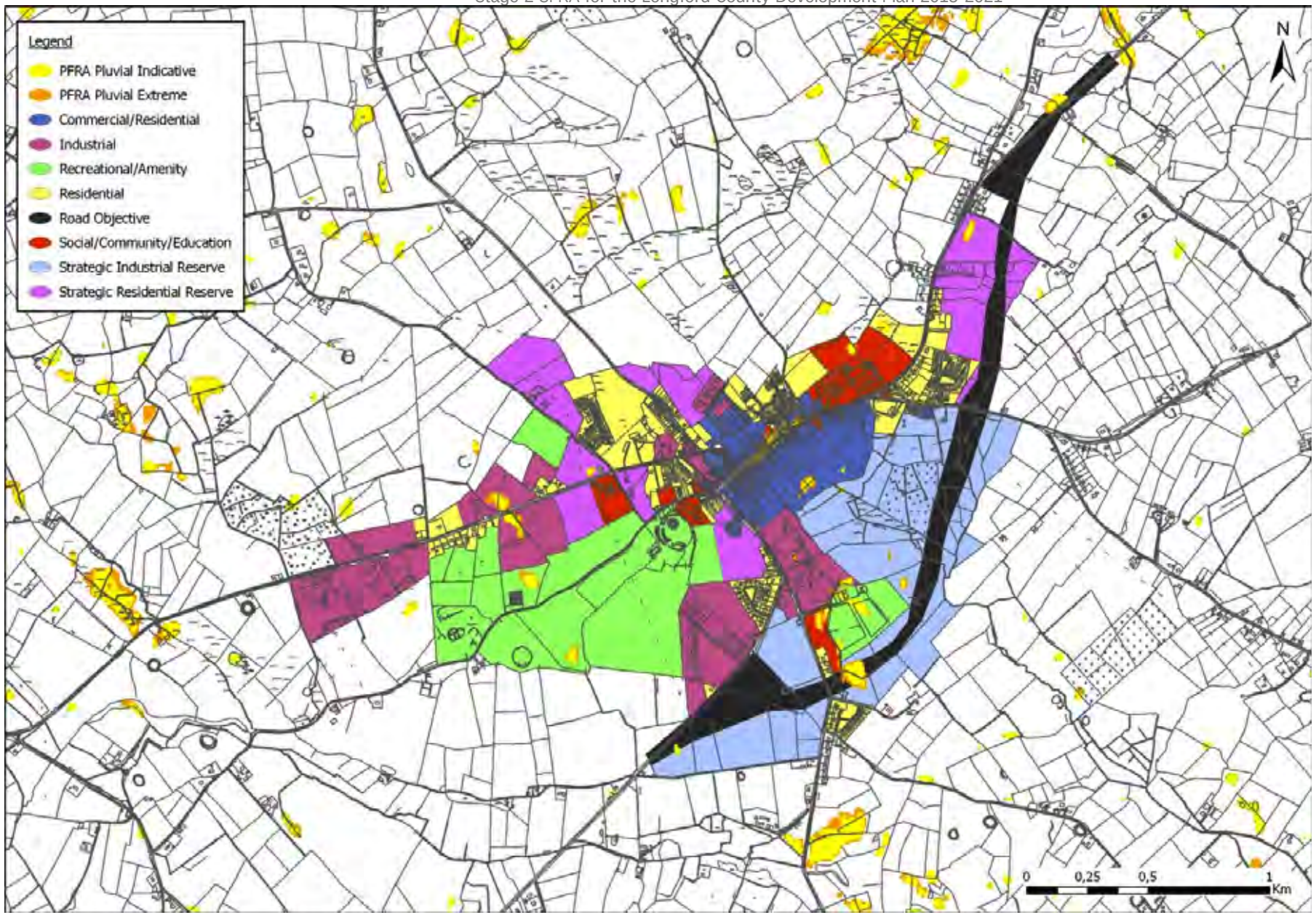


Figure AI.33 Granard PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

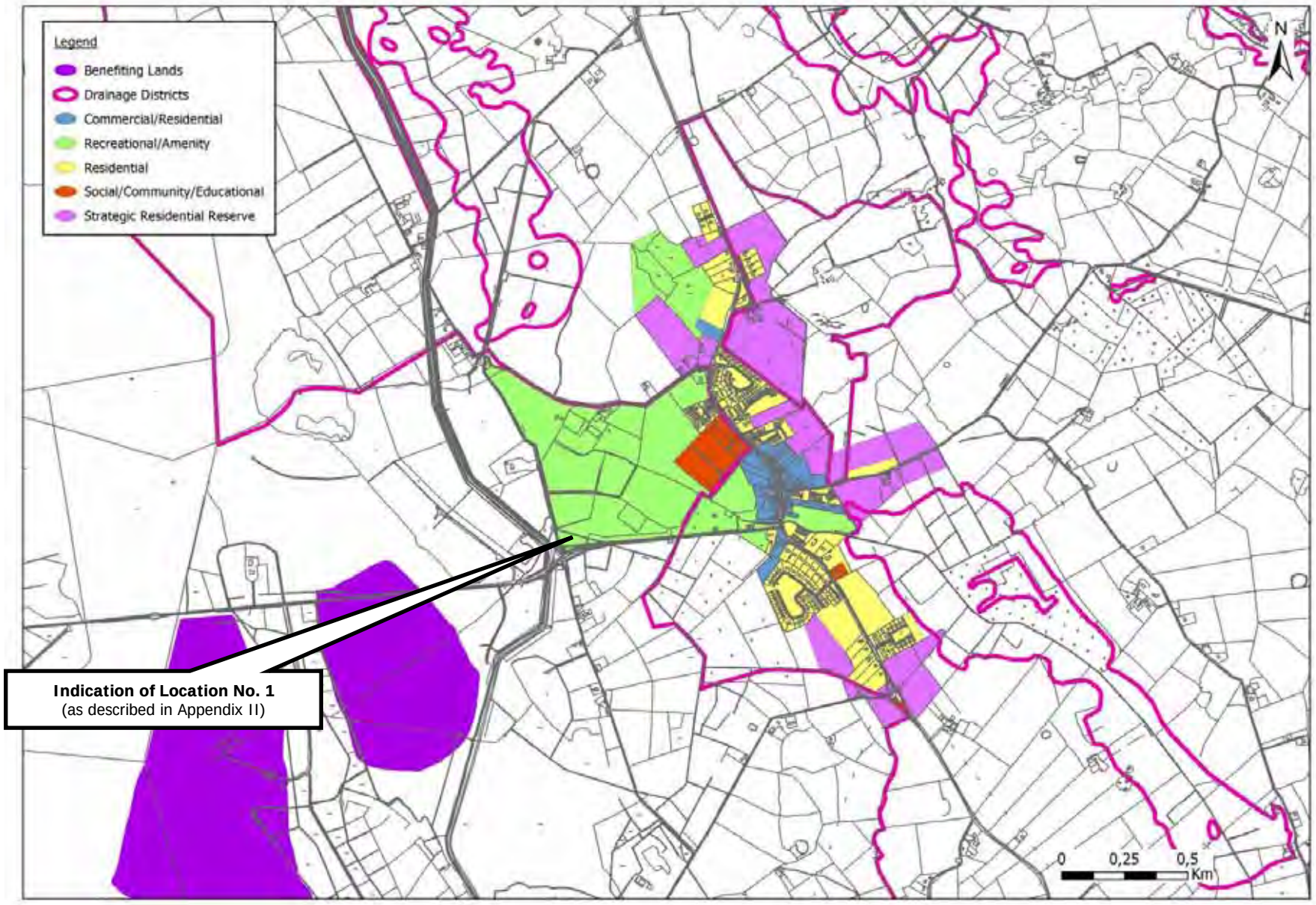


Figure AI.34 Keenagh Historical Flood Risk Indicators (overlain on older version of the Draft Land Use Zoning)

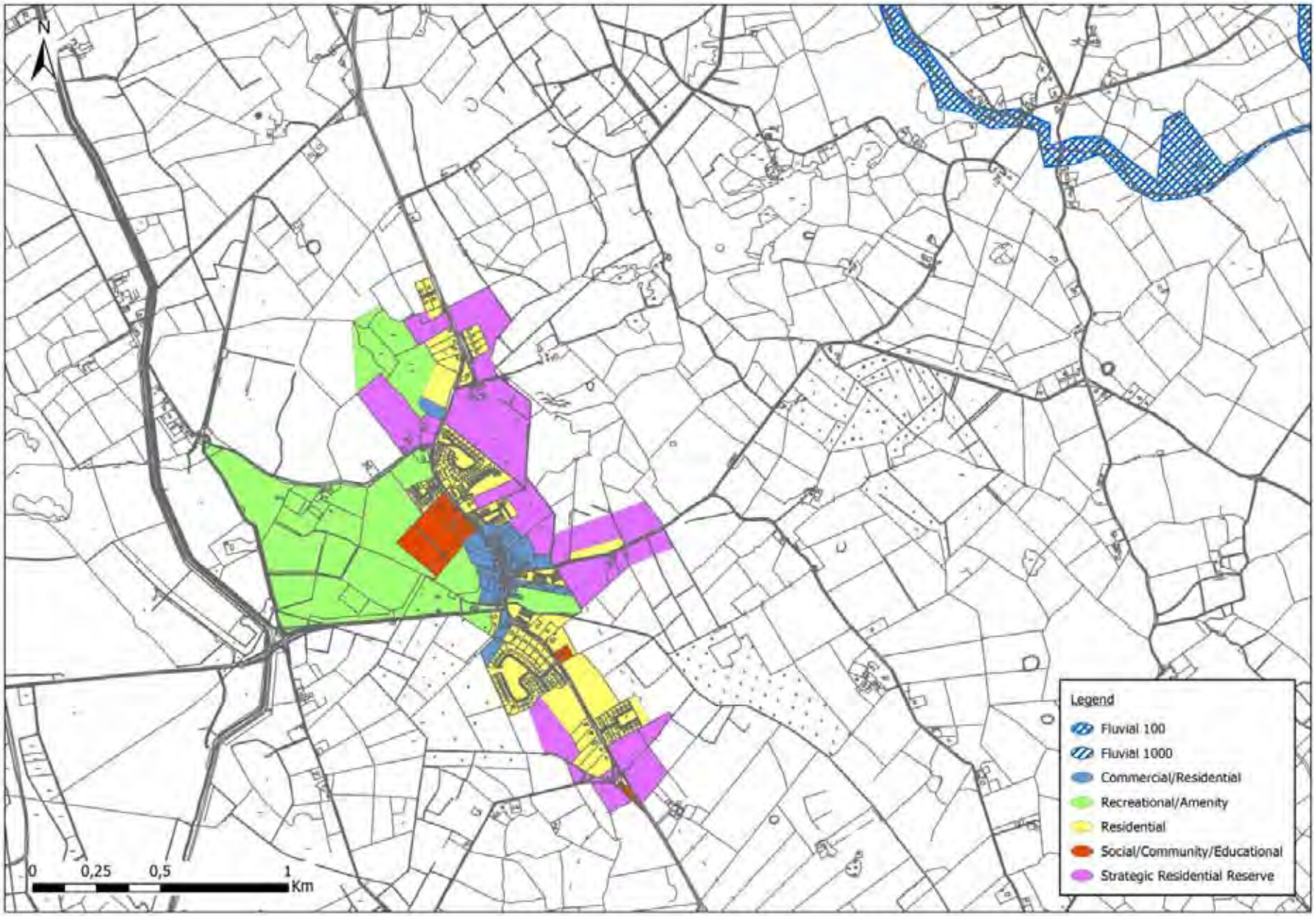


Figure AI.35 Keenagh PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

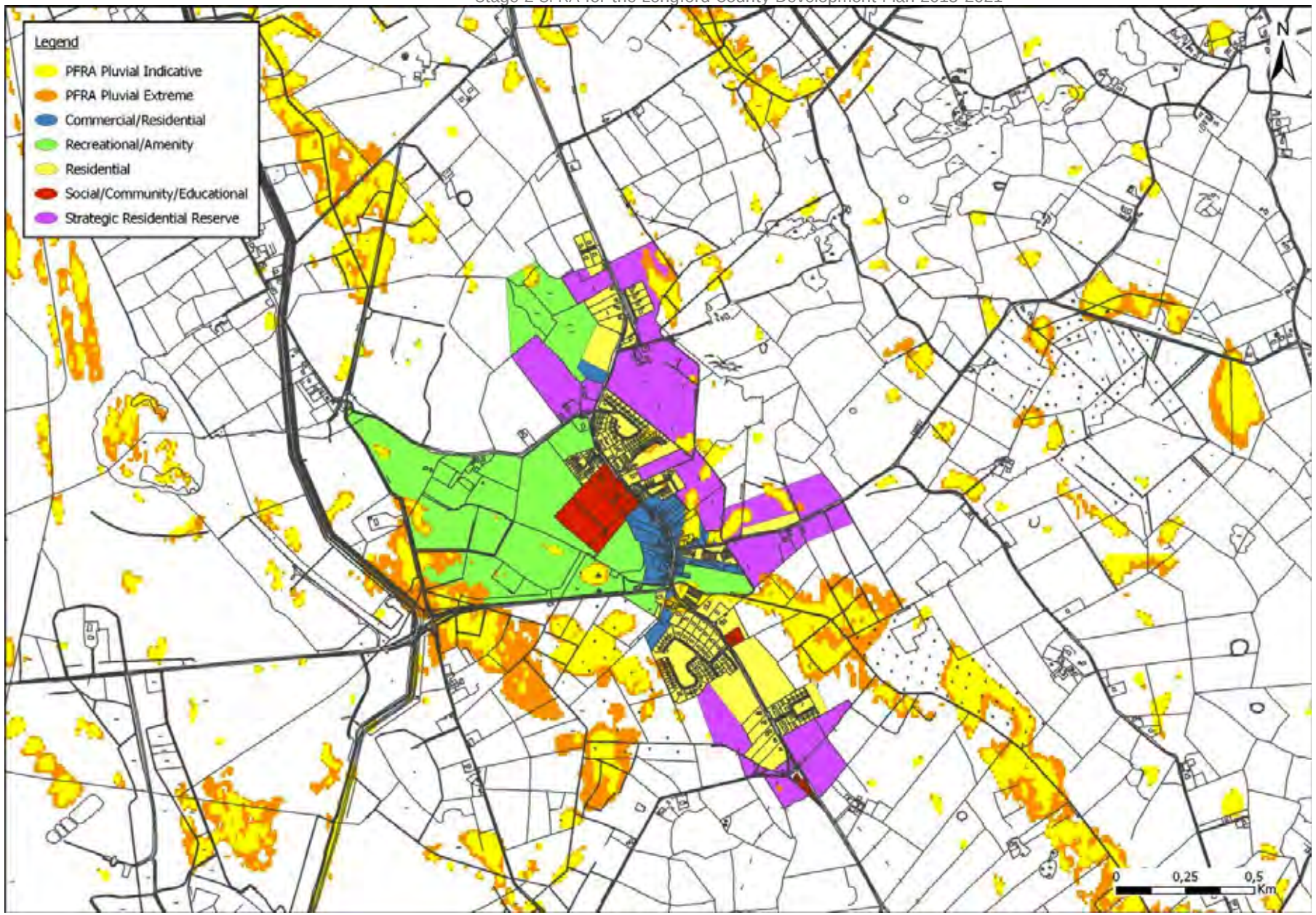


Figure AI.36 Keenagh PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

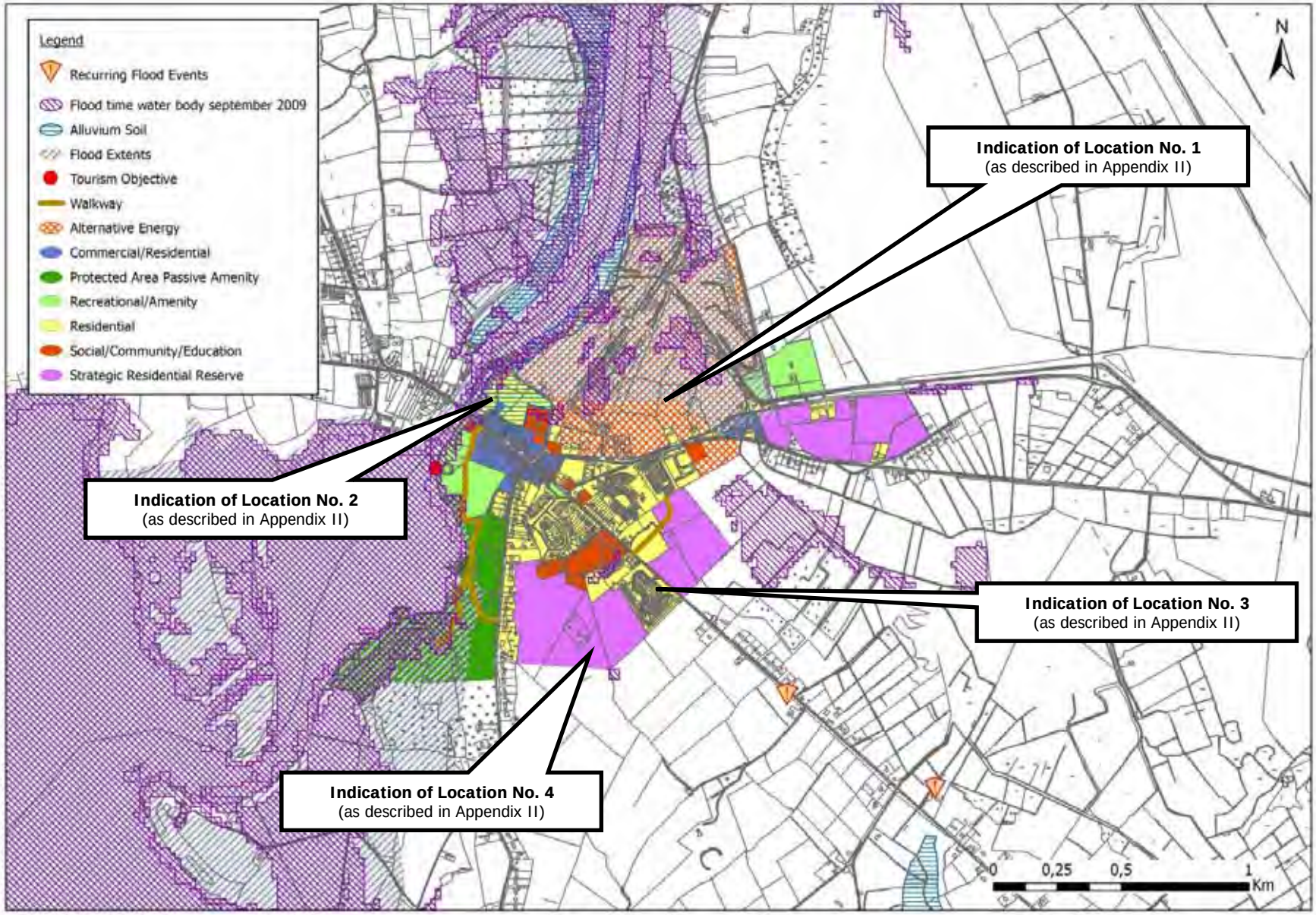


Figure AI.37 Lanesborough Historical Flood Risk Indicators (overlain on older version of the Draft Land Use Zoning)

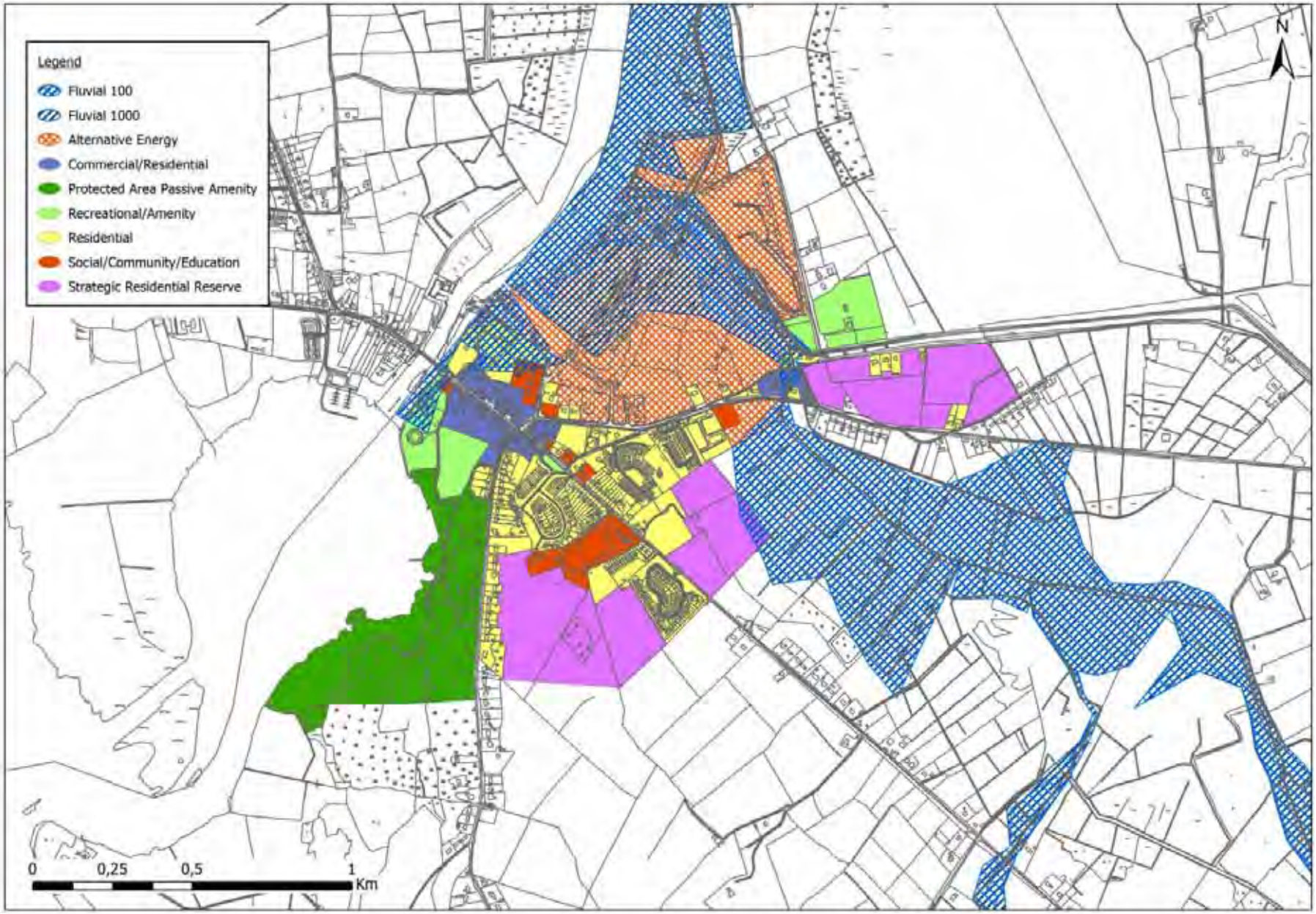


Figure AI.38 Lanesborough PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

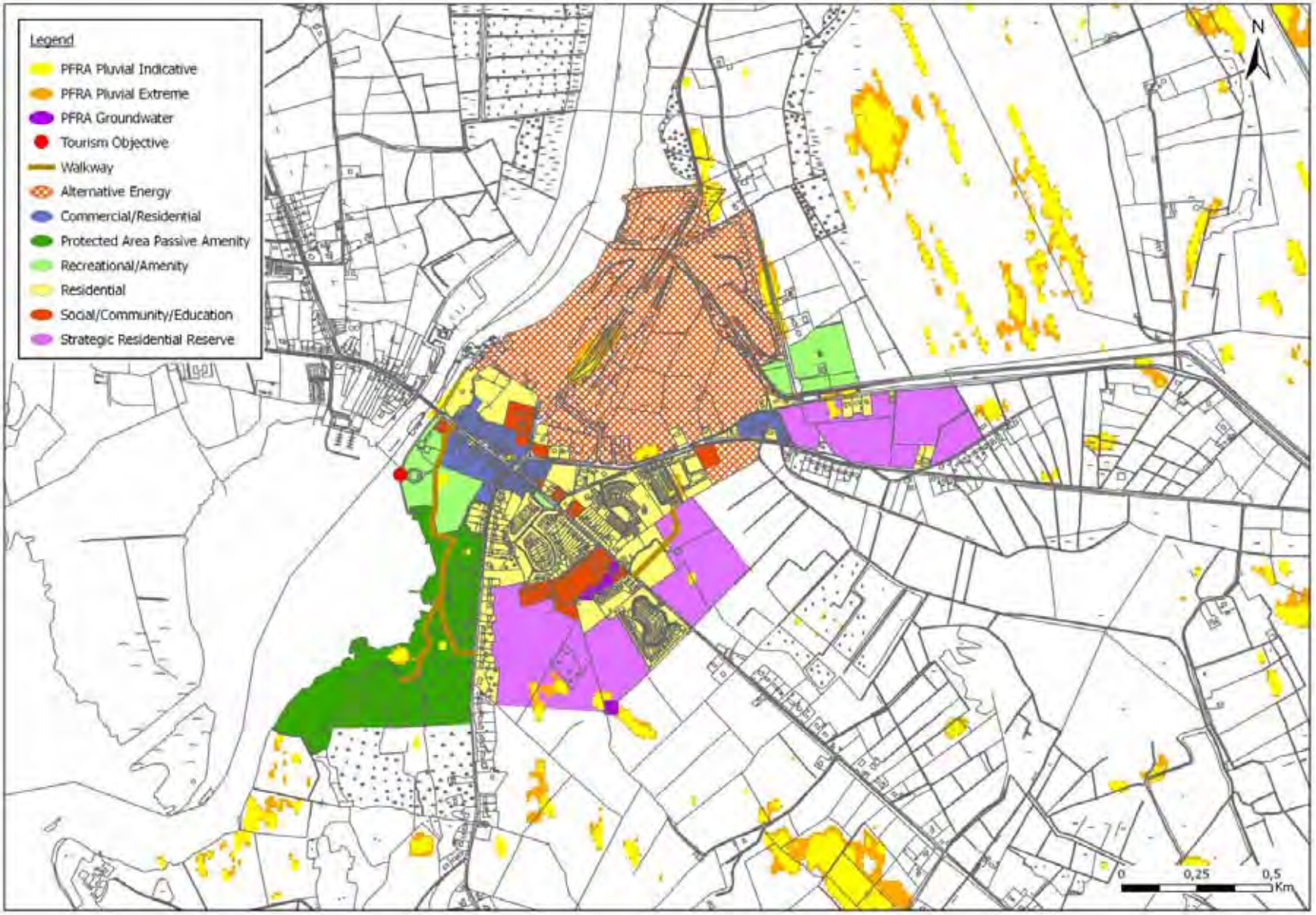


Figure AI.39 Lanesborough PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

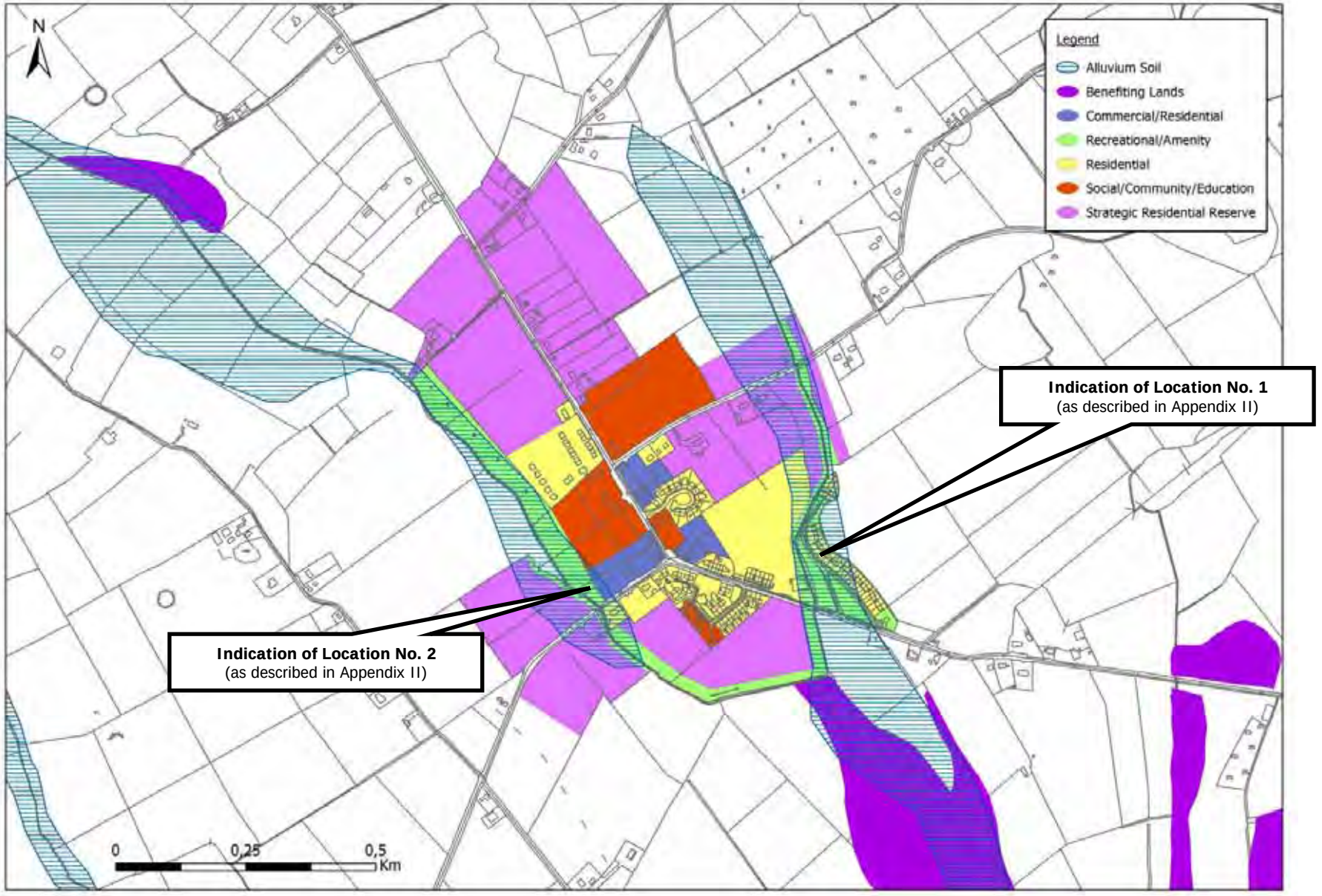


Figure AI.40 Legan Historical Flood Risk Indicators (overlain on older version of the Draft Land Use Zoning)

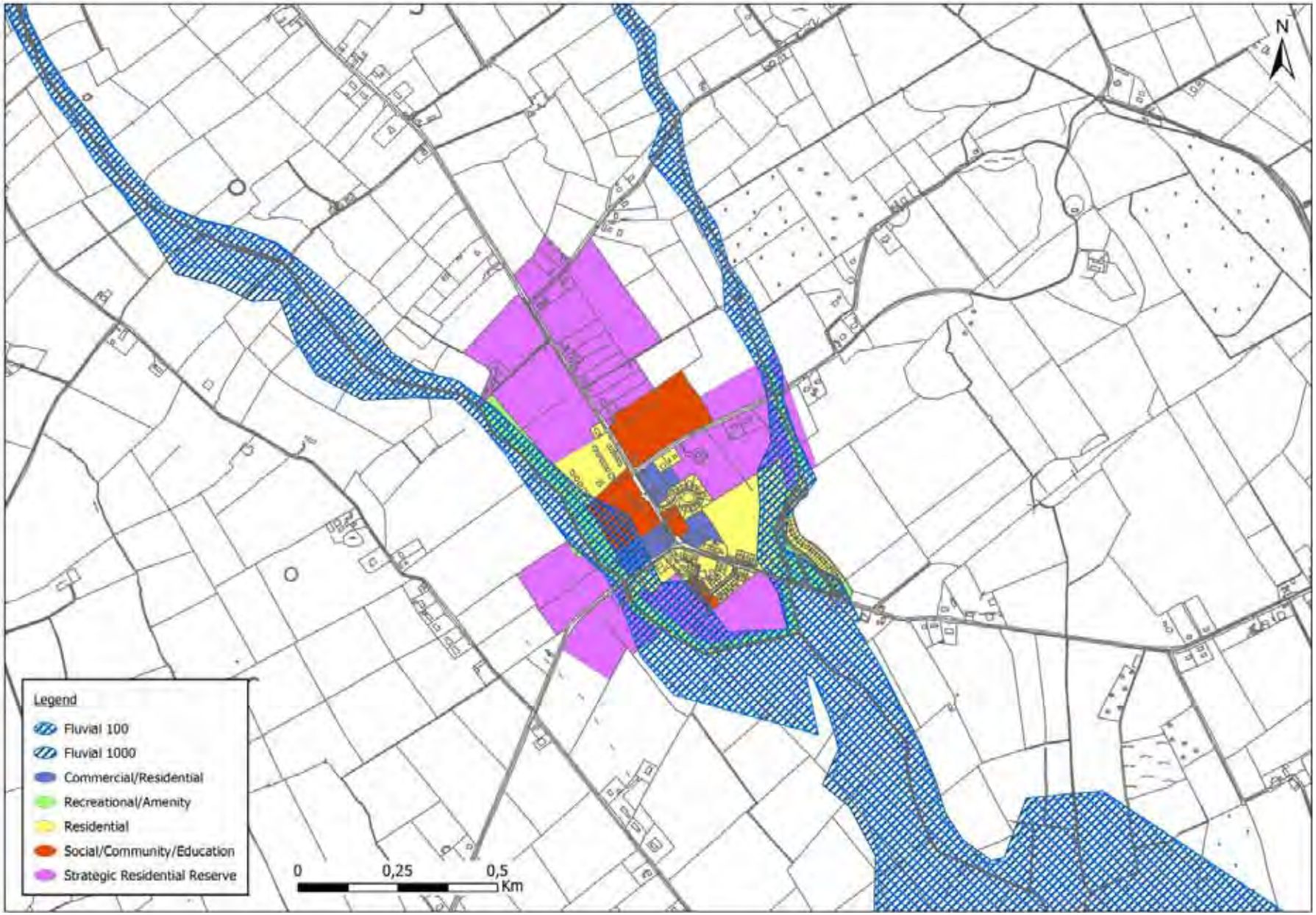


Figure AI.41 Legan PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

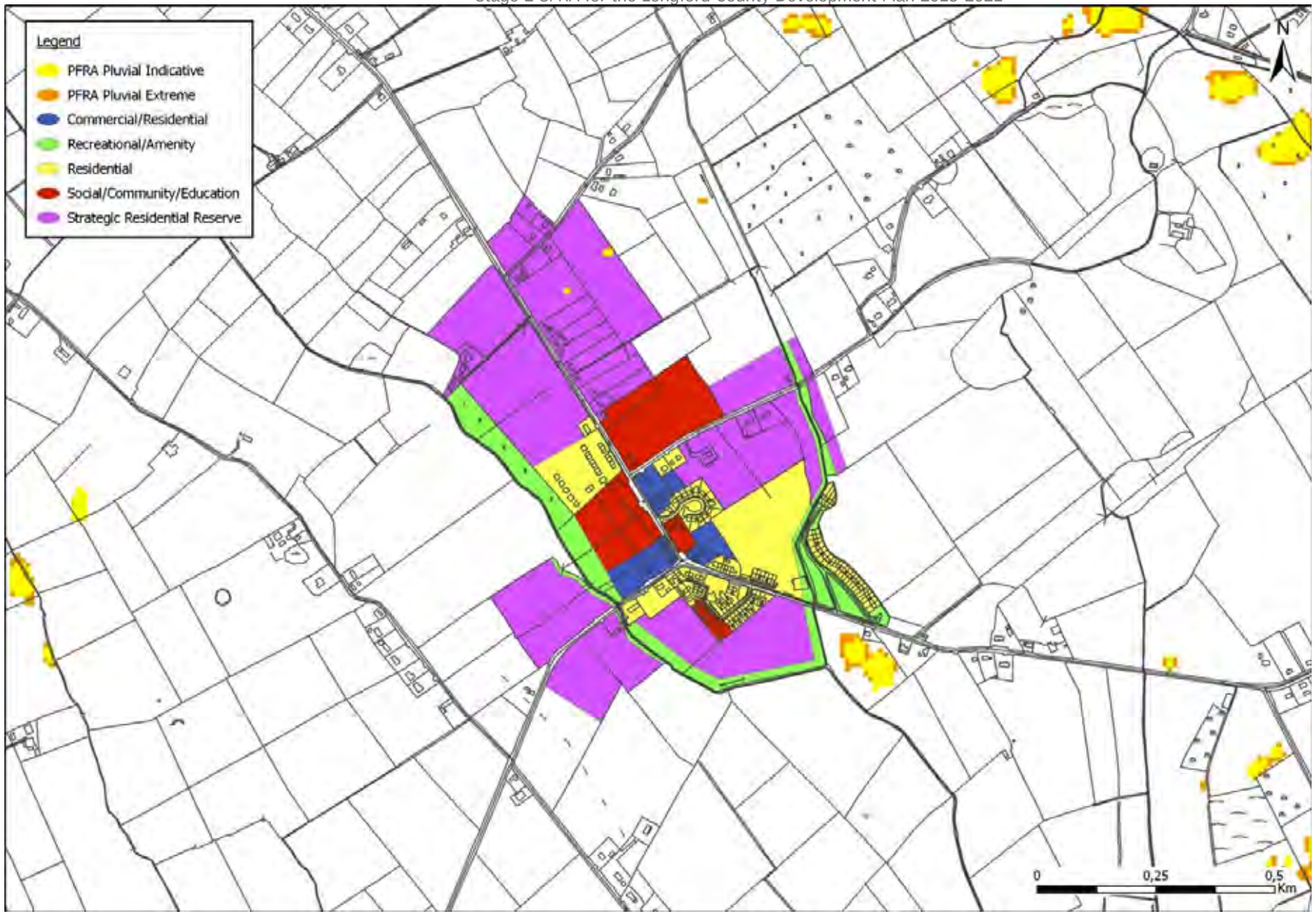


Figure AI.42 Legan PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

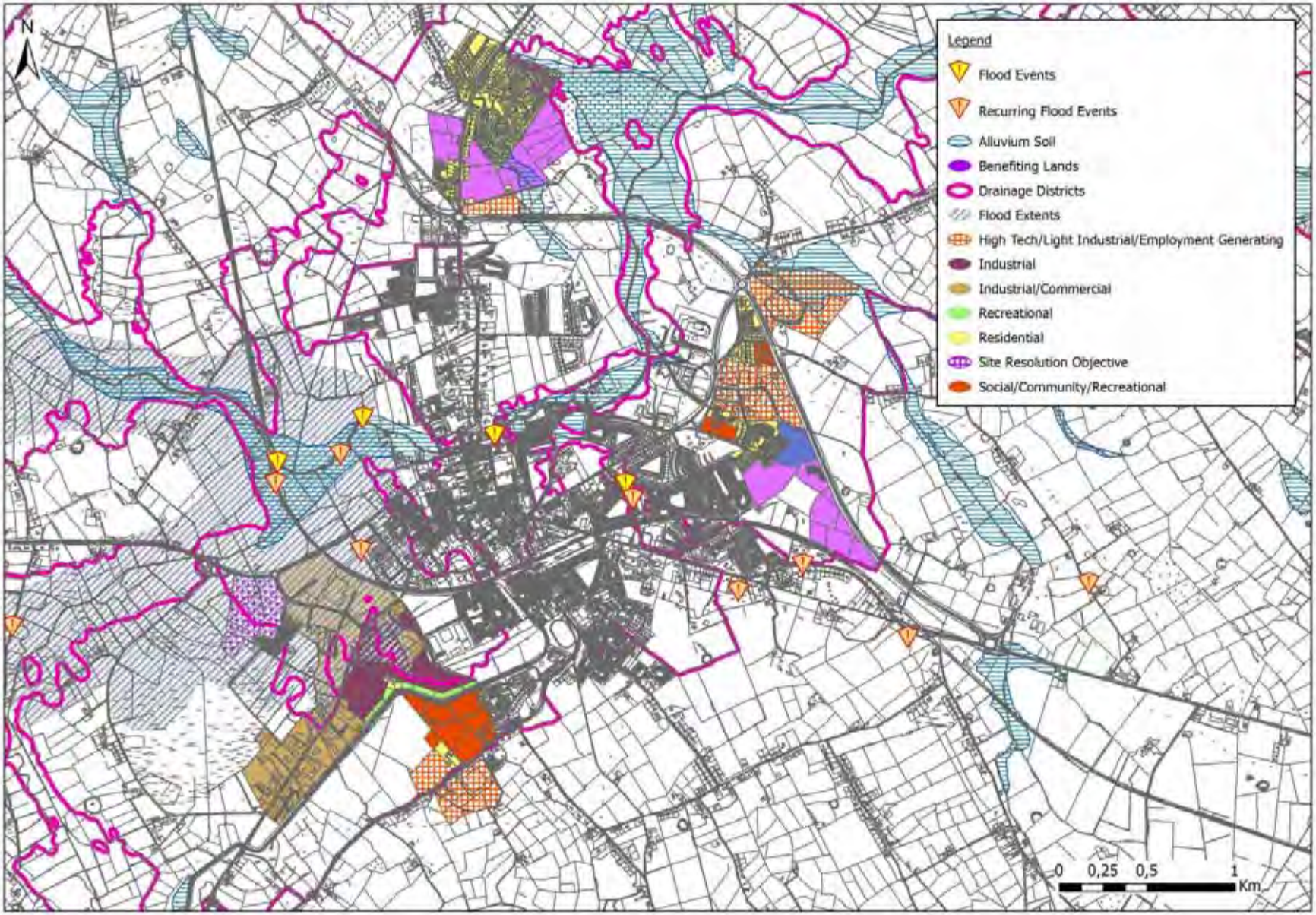


Figure AI.43 Longford Environs Historical Flood Risk Indicators (overlain on older version of the Draft Land Use Zoning)

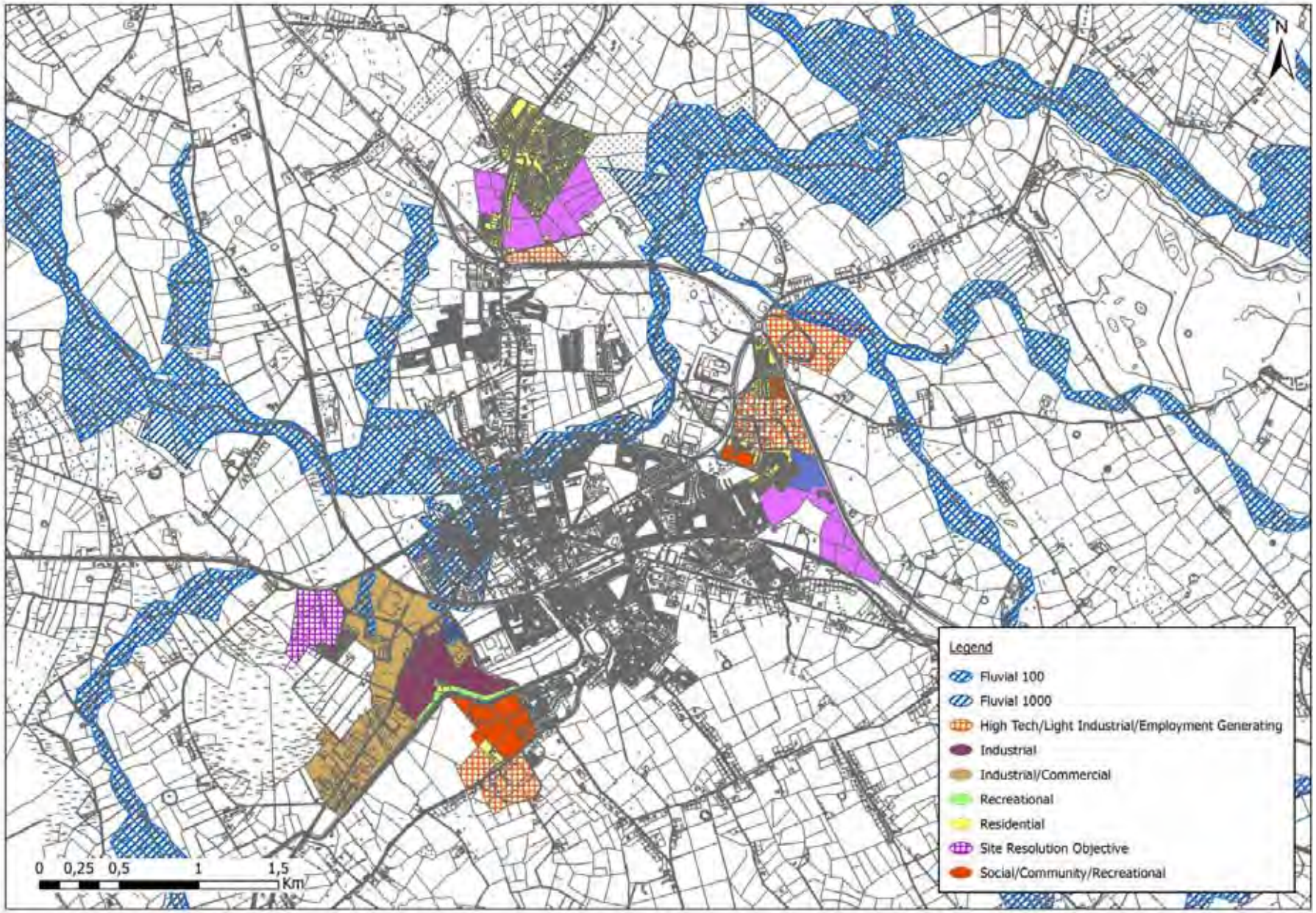


Figure AI.44 Longford Environs PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

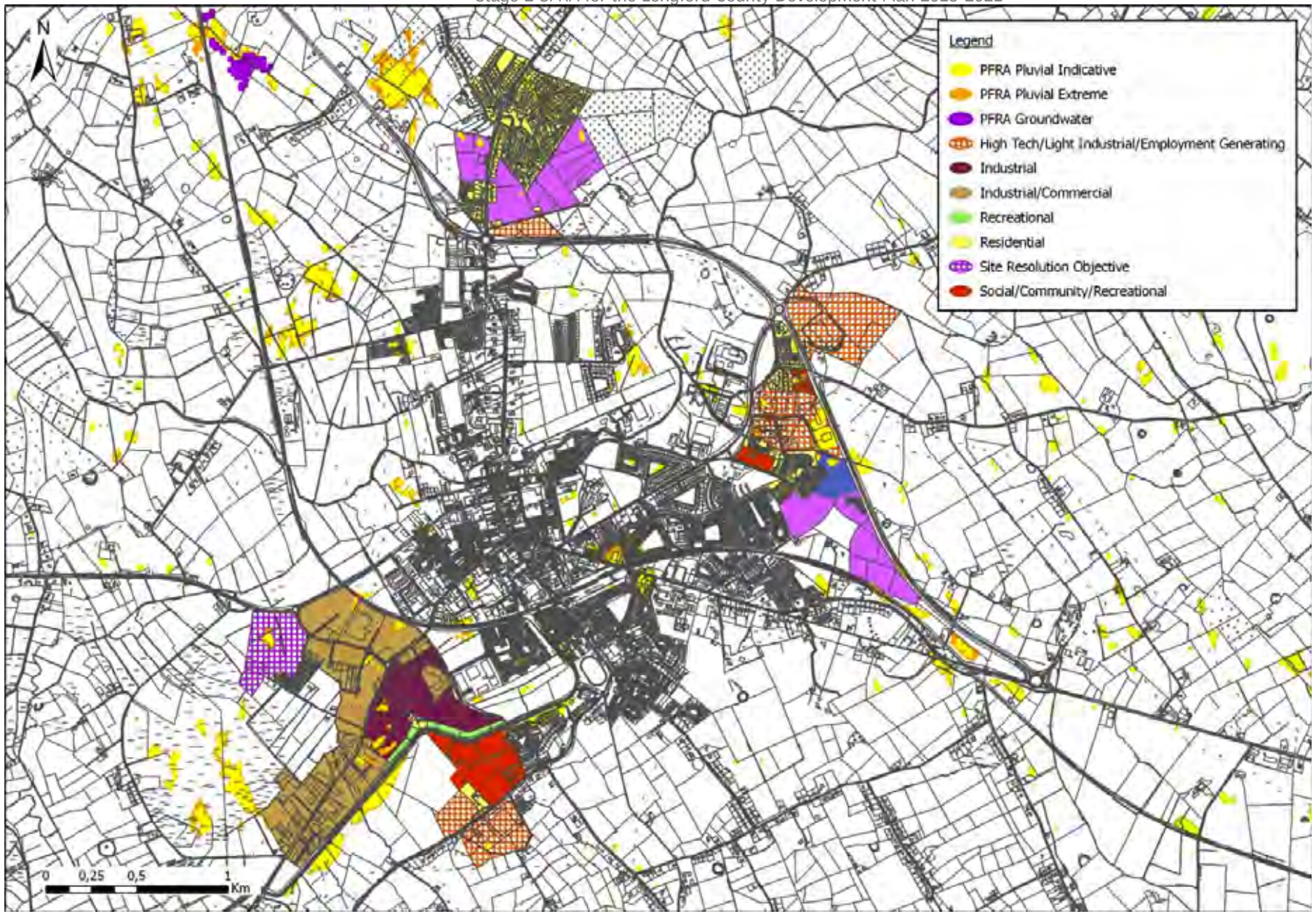


Figure AI.45 Longford Environs PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

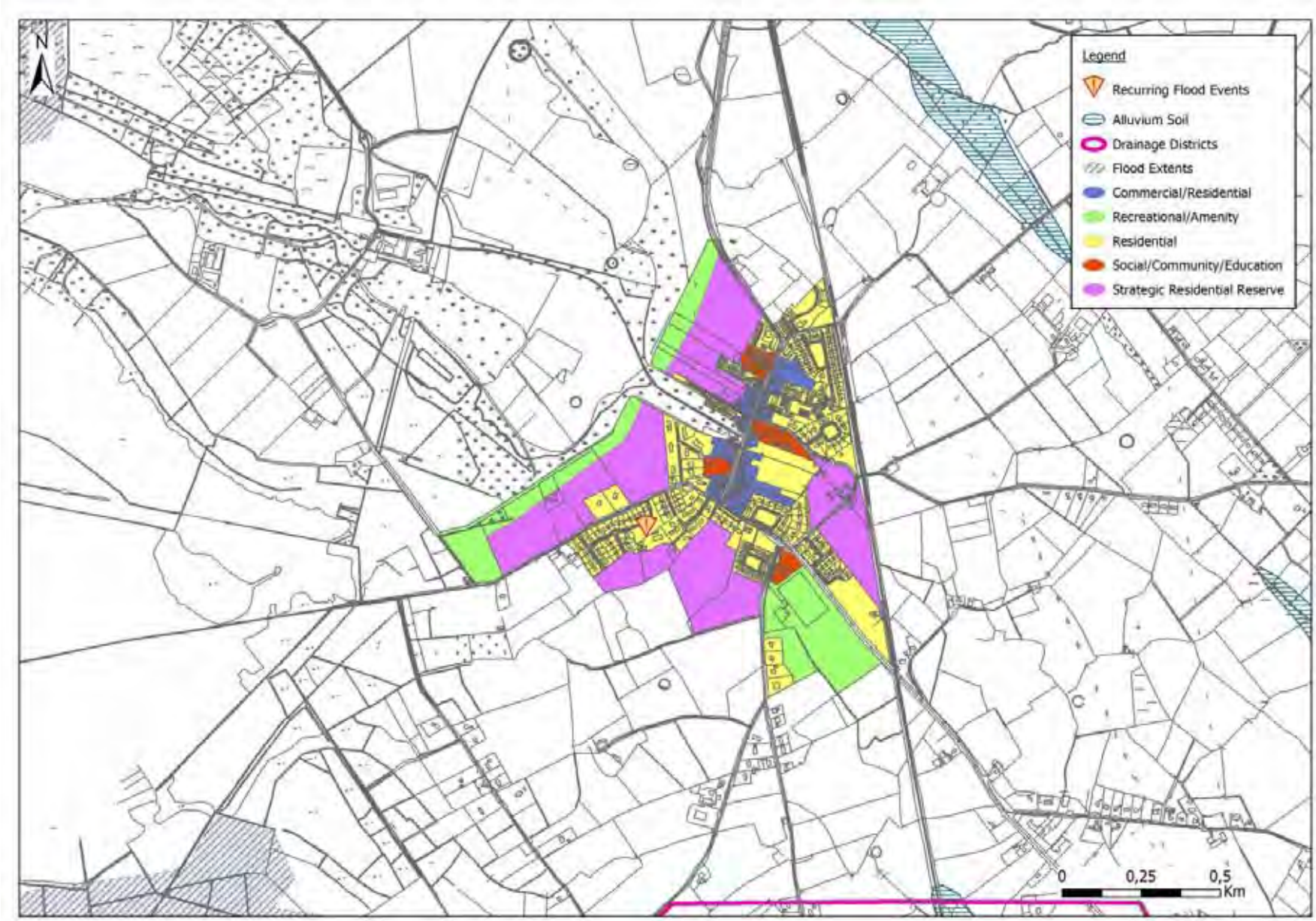


Figure AI.46 Newtownforbes Historical Flood Risk Indicators (overlain on older version of the Draft Land Use Zoning)

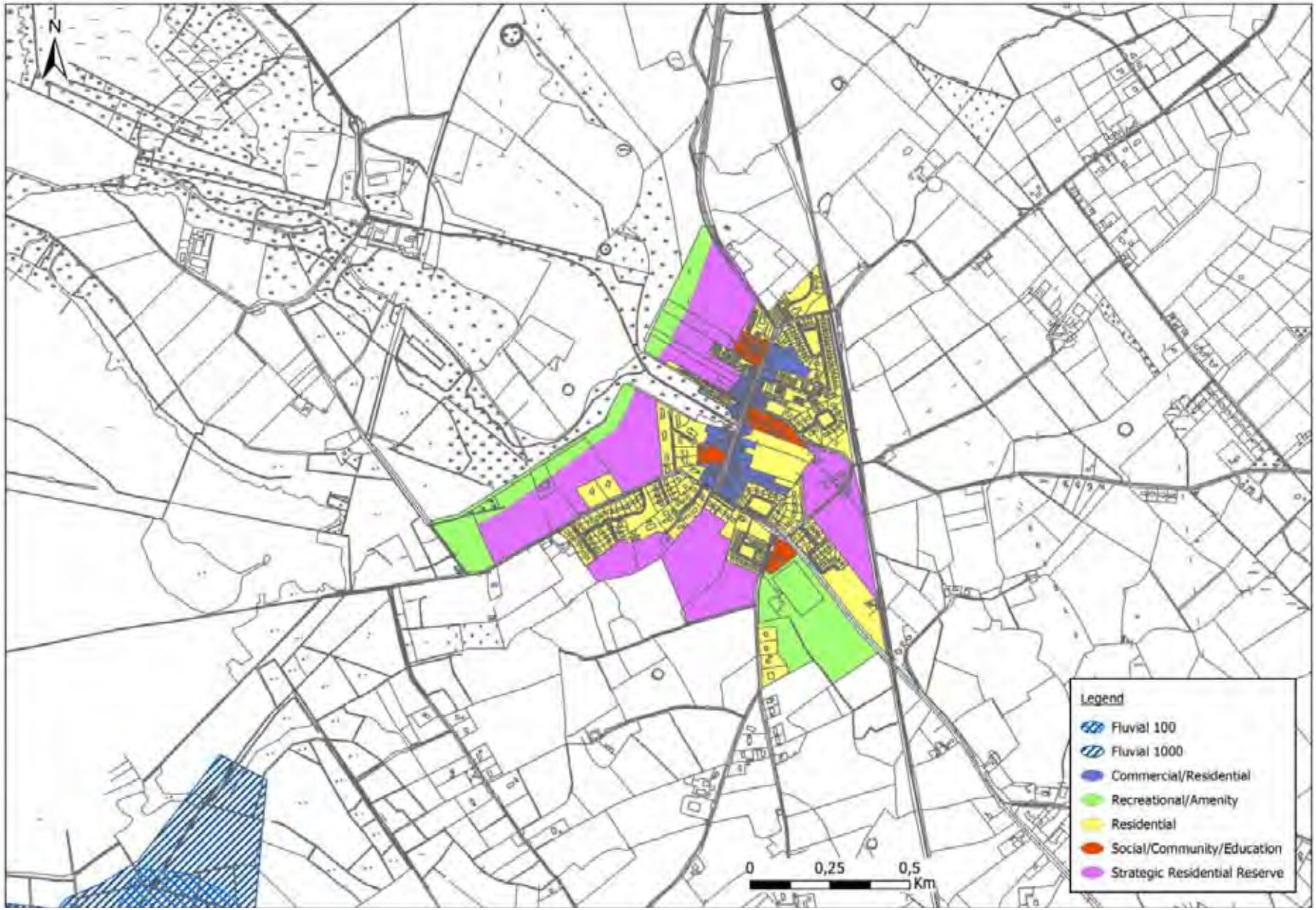


Figure AI.47 Newtownforbes PFRA Fluvial Area Indicators (overlain on older version of the Draft Land Use Zoning)

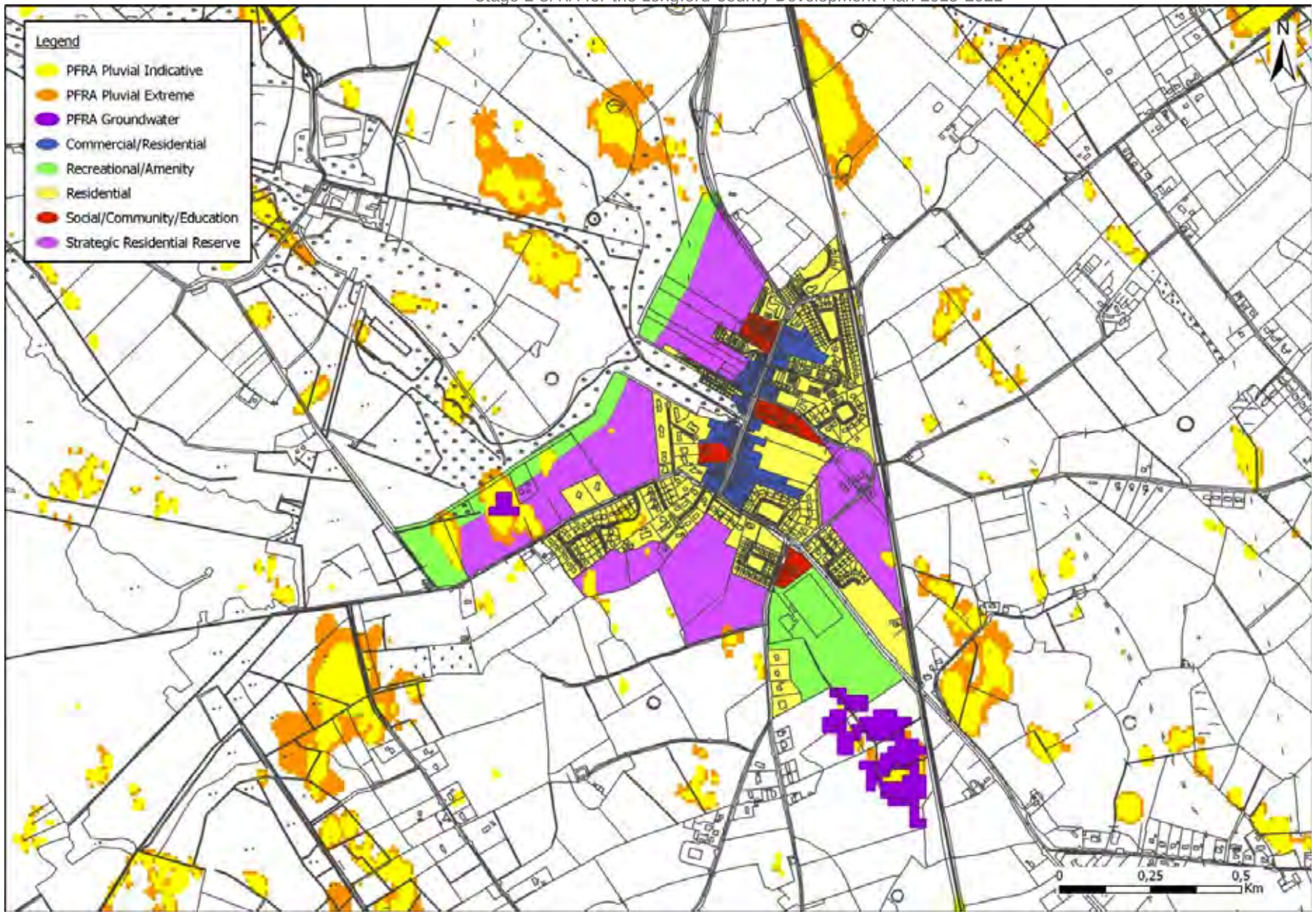


Figure AI.48 Newtownforbes PFRA Pluvial and Groundwater Area Indicators (overlain on older version of the Draft Land Use Zoning)

Appendix II: Stage 2 SFRA Site Walkover Findings for Specific Locations

The specific groundtruthing locations detailed in this Appendix are mapped on the various historic flood indicator maps contained in Appendix I.

Zoned Area	Specific Location Map Reference and Description	Finding	Recommendation for the SFRA	Integration into the Plan	Comments
1. Abbeyshrule	Not applicable	Much of the zoned area is at risk of flooding. Informed by, inter alia, local topography, flow path and direction, vegetation indicative of flood risk and associated frequency of inundation and flood risk indicators, Flood Risk Zones were delineated.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	Abbeyshrule is identified as an Area for Further Assessment (AFA); new information on flood risk from the OPW will be taken into account when available in the future. The OPW's Flood Risk Review identifies, inter alia, that: - The River Inny is a significant watercourse and its extensive natural floodplain in the area is indicative of the extent of any likely major flood extents; and - The developments in the low lying areas of Abbeyshrule are at risk of flooding, which could be extensive in a major flood event. There are sufficient critical receptors, including the regional water supply intake, at risk of flooding to warrant designation as an APSR (Area of Potential Significant Risk).
2. Ardagh	1. Along local road L1092	Area is at risk of flooding. Informed by, inter alia, local topography, flow path and direction and flood risk indicators, Flood Risk Zones were delineated.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	None.
3. Aughnacliffe	1. Centre of the town around Ballinalee to Aughnacliffe Road	Significant sized river. Informed by local knowledge including of past flood events (Council Engineer), local topography, flow path and direction and flood risk indicators, Flood Risk Zones were delineated. The PFRA mapping generally reflects what was observed on the ground however there is an additional area identified as being at risk of flooding - this area roughly corresponds to parts of the Alluvial Soils mapping.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	None.

4. Ballinalee	1. Adjacent to Cois na hAbhann housing estate	Camlin River broke its banks at this location previously and water levels went up to the waste water treatment plant. Informed by, inter alia, local knowledge including of past flood events (Council Engineer) and local topography, flow path and direction and flood risk indicators, Flood Risk Zones were delineated. The PFRA mapping generally reflects what was observed on the ground however there is an additional area identified as being at risk of flooding - much of this area is identified within Drainage District boundaries.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	None.
	2. Area adjacent to Shantobar estate	This area was identified by the Council Engineer as potentially having local drainage issue and being affected by pluvial flooding.	One of a number of local drainage issues that the Council are aware of. The Council are taking measures to improve drainage issues in the County in general. As per recommendations contained in Section 4 of this document, site-specific flood risk assessments should be undertaken and submitted with planning applications as relevant and appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
5. Ballinamuck	1. Clós Naomh Paidric	Area is at risk of flooding. Informed by, inter alia, local knowledge including of past flood events (Council Engineer), local topography and flow path and direction of the Black River Flood Risk Zones were delineated. The PFRA mapping generally reflects what was observed on the ground however there is an additional area identified at this location as being at risk of flooding - this area lies between the river and the road.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	None

	2. To south of Shanmullagh Cúirt	Area is at risk of flooding. Informed by, inter alia, local knowledge including of past flood events (Council Engineer), local topography and flow path and direction of the Black River Flood Risk Zones were delineated. The PFRA mapping generally reflects what was observed on the ground however there is an additional area identified at this location as being at risk of flooding.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
6. Ballymahon	1. North west of the town close to Drinan	The Local Engineer identified that houses flooded at this location in 2009 and that the problem has been addressed by way of local engineering solution.	Not applicable - the understanding is that the issue has been addressed by way of local engineering solution.	Not applicable - the understanding is that the issue has been addressed by way of local engineering solution.	Ballymahon is identified as an AFA; new information on flood risk from the OPW will be taken into account when available in the future. The OPW's Flood Risk Review identifies, inter alia, that there is: - A history of flooding recorded in the town; - Significant risk of flooding to critical receptors including the WWTW and nursing home which is confirmed by the PFRA; - The Inny is an extremely large river with the upstream catchment area capable of generating very large flood flows through Ballymahon; and - None of the eastern Shannon catchments experienced significant flows in Nov 2009; The Inny is one such river. Therefore, because it didn't flood in Nov. 2009 is not an accurate indication that Ballymahon does not have a significant flood risk.
	2. Thormand Hall Retirement Village	It appears that the river has been deepened (spoil heaps) and that some of the lands have been filled. Area is at risk of flooding. Informed by, inter alia, local topography, flow path and direction and flood risk indicators, Flood Risk Zones were delineated.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
	3. To the south of Thormand Hall Road	Much of these lands are flood prone and there is complex topography. Informed by, inter alia, local topography, flow path and direction and flood risk indicators, Flood Risk Zones were delineated.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
	4. Along N55 to the west of the town	Area is flood prone. Informed by, inter alia, local topography, flow path and direction and flood risk indicators, Flood Risk Zones were delineated.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
7. Carrickglass	Not applicable	Much of the area currently zoned as Flood Plain/Protected Trees is at risk of flooding. Informed by, inter alia, local topography, flow path and direction and flood risk indicators, Flood Risk Zones were delineated.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	None.

8. Clondra	1. In south east of Clondra after N5 exit	The Local Engineer identified that there are drainage issues on these lands.	One of a number of local drainage issues that the Council are aware of. The Council are taking measures to improve drainage issues in the County in general. As per recommendations contained in Section 4 of this document, site-specific flood risk assessments should be undertaken and submitted with planning applications as relevant and appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	Clondra is identified as an AFA; new information on flood risk from the OPW will be taken into account when available in the future. Flood Zones A and B were identified on the basis of the SFRA findings. Flood Zone A largely comprises the 1% Annual Exceedance Probability Modelled Flood for Clondra from the River Camlin Flood Study Integrated Report (Nicholas O'Dwyer on behalf of Longford County Council). Flood Risk Zone B largely comprises the OPW's Flood Extent layer. The OPW's Flood Risk Review identifies, inter alia, that: - It is noted that Cloondara did not flood during the November 2009 event. However there is significant flood risk from both the Shannon and Camlin Rivers, in particular to the recent development and WWTW downstream of the main road bridge through the village. - Cloondara has a history of flooding; - The Local Authority and OPW have evidence that a recently constructed development is at risk of flooding; and - There are sufficient critical receptors at significant risk of fluvial flooding.
	2. Clondra Bridge	The Local Engineer identified that water was up to the top of this bridge. This is consistent with flood risk indicator information.	Not applicable.	Not applicable.	
	3. Water treatment plant area	This area has been filled. Taking into account this topography, Zone C appears to be appropriate for this area.	This area is identified as Zone C.	Not applicable.	
	4. Sewage Treatment Plant	Informed by, inter alia, local topography, flow path and direction and flood risk indicators Flood Risk Zones were delineated.	Informed by, inter alia, local topography, flow path and direction and flood risk indicators Flood Risk Zones were delineated.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
	5. Lands zoned in the 2009-2015 Plan, as amended, as 'Tourism/Mixed Use with Provision of Marina'	Area is flood prone. Informed by, inter alia, local topography, vegetation indicative of flood risk and associated frequency of inundation, flow path and direction and flood risk indicators Flood Risk Zones were delineated.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
9. Drumlish	1. South western end of town, to north of Glasheen Road	Area is flood prone. Informed by, inter alia, local topography, flow path and direction and vegetation indicative of flood risk and associated frequency of inundation, Flood Risk Zones were delineated. The PFRA mapping generally reflects what was observed on the ground however there is an additional area identified at this location as being at risk of flooding.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	None.

	2. South western end of town, to north of Glasheen Road	This area was identified as potentially being affected by pluvial flooding and having a local drainage issue.	One of a number of local drainage issues that the Council are aware of. The Council are taking measures to improve drainage issues in the County in general. As per recommendations contained in Section 4 of this document, site-specific flood risk assessments should be undertaken and submitted with planning applications as relevant and appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	None.
	3. North eastern end of town, to the north and south of Mill Road	Area is flood prone. Informed by, inter alia, local topography, vegetation indicative of flood risk and associated frequency of inundation, flow path and direction and flood risk indicators Flood Risk Zones were delineated. The houses in Mill Oaks are located in Zone C.	The zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	None.
10. Edgeworthstown	1. Substation and surrounding area	Low lying area with local drainage issue and having a local drainage issue.	One of a number of local drainage issues that the Council are aware of. The Council are taking measures to improve drainage issues in the County in general. As per recommendations contained in Section 4 of this document, site-specific flood risk assessments should be undertaken and submitted with planning applications as relevant and appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	Edgeworthstown is identified as an AFA; new information on flood risk from the OPW will be taken into account when available in the future. The PFRA mapping generally reflects what was observed on the ground however there are additional contiguous areas that were identified as being at risk of flooding. The OPW's Flood Risk Review identifies, inter alia, that there are sufficient critical receptors at significant risk of flooding within Edgeworthstown to warrant its designation as an APSR (Area of Potential Significant Risk).
	2. Opel Garage, Longford Road	This location where the Black River crosses the road at the Opel Garage is flood prone and informed by, inter alia, local topography, flow path and direction and flood risk indicators, Flood Risk Zones were delineated.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
	3. Edge of Abhainn Glas housing estate	Low-lying lands adjacent to the river. Area is flood prone and informed by, inter alia, local topography, flow path and direction and flood risk indicators, Flood Risk Zones were delineated.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	

	4. Abhainn Glas housing estate	Local surface drainage issue. Drainage was backing up.	One of a number of local drainage issues that the Council are aware of. The Council are taking measures to improve drainage issues in the County in general. As per recommendations contained in Section 4 of this document, site-specific flood risk assessments should be undertaken and submitted with planning applications as relevant and appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
	5. Lands to the west of Pairc na hAbhainn	This is a flood plain. Informed by, inter alia, local topography, flow path and direction and flood risk indicators, Flood Risk Zones were delineated.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
	6. Lands to the south west of Mostrim Oaks	This is a flood plain. Informed by, inter alia, local topography, flow path and direction and flood risk indicators, Flood Risk Zones were delineated.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
	7. Lands to the south of the Longford Road	This area is at risk of flooding from Black River. Informed by, inter alia, local topography, flow path and direction, vegetation indicative of flood risk and associated frequency of inundation and flood risk indicators, Flood Risk Zones were delineated.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
11. Granard	1. Durkins on Main Street and Water Street	This is a low point on Main Street where a culvert crosses the road, at Water Street (possible path where stream may have run previously). The capacity of the culvert has been exceeded during past rainfall events as a result of upstream development.	One of a number of local drainage issues that the Council are aware of. The Council are taking measures to improve drainage issues in the County in general. As per recommendations contained in Section 4 of this document, site-specific flood risk assessments should be undertaken and submitted with planning applications as relevant and appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	The town is situated on a shelf along which a series of drainage channels run from. New roads could alter drainage and cause blockages.

	2. Food Industry and New Housing Estate	New housing estate and food industry means that infiltration and drainage capacity has been significantly reduced. A pipe draining an area upstream of food industry flows beneath the food industry where it reduces in size - water is carried towards Water Lane. Aerial photography shows flooding in some undeveloped areas upstream of the food industry. Note that the natural flooding in this area is masked by the drainage issue. If the drainage issue was fixed then Flood Risk Zones could be re-evaluated in the future.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
	3. East of Parnell Row	Informed by, inter alia, local topography, flow path and direction, vegetation indicative of flood risk and associated frequency of inundation and aerial photography, Flood Risk Zones were delineated. Note that cottages to the west of Parnell Row have previously flooded however the Council has provided for the culverting of such flows.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
12. Keenagh	1. Recreation and Amenity lands in the west of the town	Engineers identified a potential local drainage issue at lands zoned for Recreation and Amenity.	One of a number of local drainage issues that the Council are aware of. The Council are taking measures to improve drainage issues in the County in general. As per recommendations contained in Section 4 of this document, site-specific flood risk assessments should be undertaken and submitted with planning applications as relevant and appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	None.
	Pluvial areas throughout town (specific location not identified on map)	There are areas identified by the PFRA as being at risk from pluvial flooding and having a local drainage issue.	The Council are taking measures to improve drainage issues in the County in general. As per recommendations contained in Section 4 of this document, site-specific flood risk assessments should be undertaken and submitted with planning applications as relevant and appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	

13. Lanesborough	1. Lanesborough Power Station	Area is developed and issues are localised. Power station is c. 2m above water level. See comments in last column.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	Lanesborough Power Station is identified as an AFA; new information on flood risk from the OPW will be taken into account when available in the future. Flood Zones A and B were identified on the basis of the SFRA findings. Flood Zone A largely comprises groundtruthed PFRA mapping and ground truthed aerial photography while Flood Risk Zone B largely comprises groundtruthed OPW Flood Extent mapping and groundtruthed PFRA mapping. The OPW's Flood Risk Review identifies, inter alia, that: - The River Shannon in this locality has a long history of flooding. The PFRA mapping predicts a significant flood risk to Lanesborough Power Station and the surrounding road / infrastructure network. Lanesborough Power Station is confirmed as having sufficiently significant flood risk to warrant designation as an IRR (Individual Risk Receptors) following the Flood Risk Review desk based assessment.
	2. Lands to north east of Lanesborough N53 Bridge	Informed by, inter alia, local topography, flow path and direction, vegetation indicative of flood risk and associated frequency of inundation and aerial photography, Flood Risk Zones were delineated. The ground is raised in this area.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
	3. Cnoc na Gaoithe Housing Estate	Local drainage issue.	One of a number of local drainage issues that the Council are aware of. The Council are taking measures to improve drainage issues in the County in general. As per recommendations contained in Section 4 of this document, site-specific flood risk assessments should be undertaken and submitted with planning applications as relevant and appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
	4. Lands in the south of the zoned area.	Aerial photography shows that these lands flooded in the 2009 event.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	
14. Legan	1. Adjacent to Foxhall Crescent	Informed by, inter alia, local topography, flow path and direction, vegetation indicative of flood risk and associated frequency of inundation and flood risk indicators, Flood Risk Zones were delineated.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	None.
	2. Lands to east of Legan Bridge	Informed by, inter alia, local topography, flow path and direction, vegetation indicative of flood risk and associated frequency of inundation and flood risk indicators, Flood Risk Zones were delineated.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	

15. Longford Environs	Various locations in each of the environs areas (specific location not identified on map)	Much of the zoned area is at risk of flooding. Informed by, inter alia, local topography, flow path and direction, vegetation indicative of flood risk and associated frequency of inundation and flood risk indicators, Flood Risk Zones were delineated.	As per recommendations contained in Section 4 of this document, the zoning of any undeveloped lands should be made compatible with Flood Zones A and B as appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	Longford Town is identified as an AFA; new information on flood risk (relevant to the environs areas) from the OPW will be taken into account when available in the future. Flood Zones A and B were identified on the basis of the SFRA findings. Flood Zone A largely comprises groundtruthed 1% Annual Exceedance Probability Modelled Flood for Longford from the *River Camlin Flood Study Integrated Report* (Nicholas O'Dwyer on behalf of Longford County Council) and groundtruthed PFRA mapping. Flood Risk Zone B largely comprises the OPW's Flood Extent layer, the 2009 Flood Extent included in the *River Camlin Flood Study Integrated Report* (this extent takes into account available photography) and groundtruthed PFRA mapping. The OPW's Flood Risk Review identifies, inter alia, that: Longford has a history of flooding. The PFRA mapping predicts an ongoing significant flood risk with this conclusion being supported by both the Local Authority and the OPW. Longford was confirmed as an APSR (Area of Potential Significant Risk) following a desk based assessment, with no on-site verification required.
16. Newtownforbes	Pluvial/Groundwater areas throughout town (specific location not identified on map)	Engineers identified pluvial flooding at Castle Glen estate and at the N4 at Lisbrack to the north of the town. There are other areas identified by the PFRA as being at risk from pluvial flooding and one area identified as being at risk from groundwater flooding.	The Council are taking measures to improve drainage issues in the County in general. As per recommendations contained in Section 4 of this document, site-specific flood risk assessments should be undertaken and submitted with planning applications as relevant and appropriate.	Recommendations integrated into the Plan. There are no undeveloped lands within Flood Risk Zones A or B which are zoned for inappropriate land uses by the Plan.	None.

Appendix III: Summary of Related Provisions contained in the DEHLG Flood Guidelines for Indicative Flood Zones A and B

- The Sequential Approach, including the Justification test -

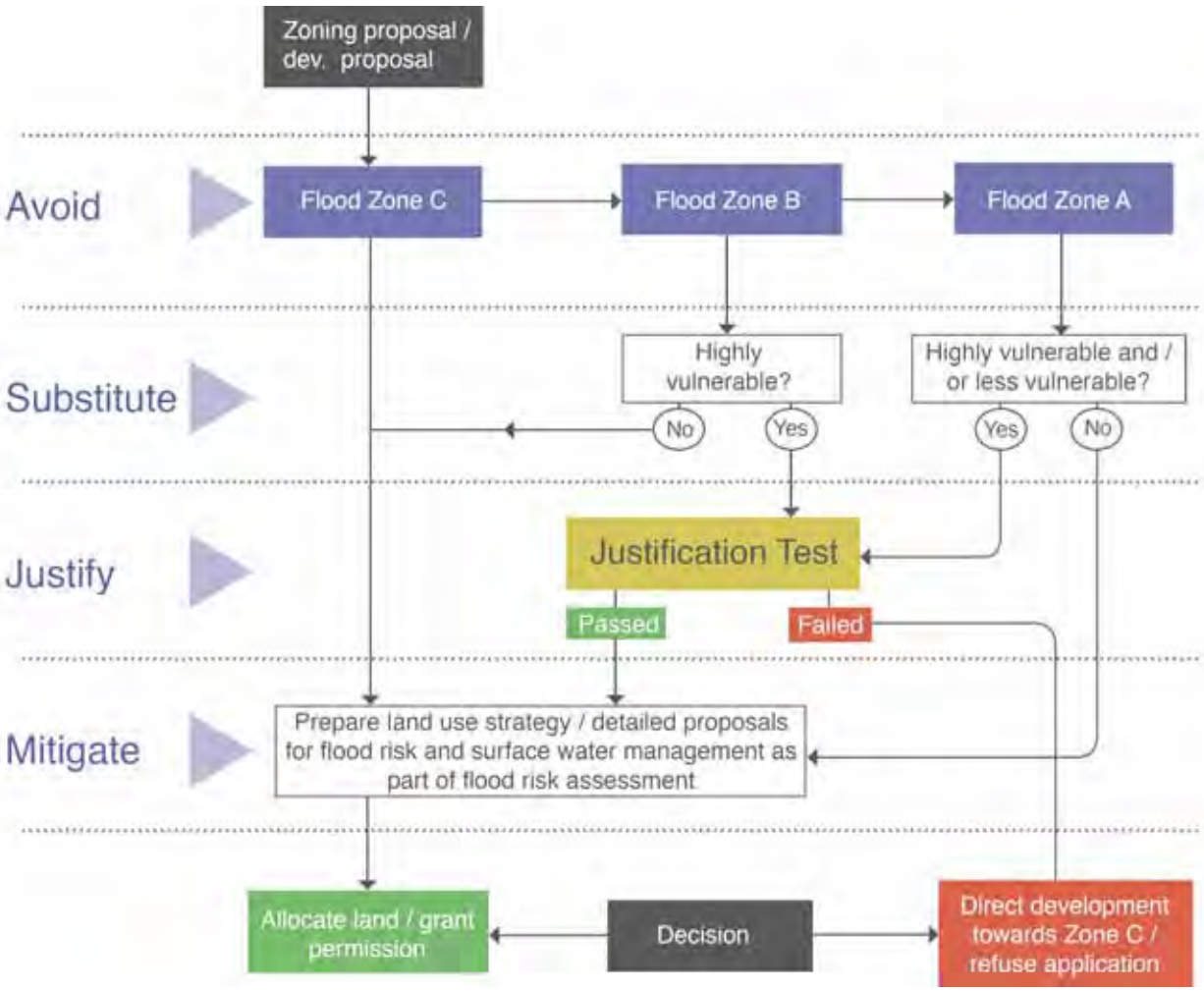
The key principles of the risk-based sequential approach (see the diagram overleaf) to managing flood risk in the preparation of plans are set out in Chapter 3 of the DEHLG Flood Guidelines and Departmental Circular PL2/2014 and should be adhered to. These principles are:

- Avoid development in areas at risk of flooding. If this is not possible, consider substituting a land use that is less vulnerable to flooding. Only when both avoidance and substitution cannot take place should consideration be given to mitigation and management of risks.

- Inappropriate types of development that would create unacceptable risks from flooding should not be planned for or permitted.

- Exceptions to the restriction of development due to potential flood risks are provided for through the use of a Justification Test, where the planning need and the sustainable management of flood risk to an acceptable level must be demonstrated.

Sequential Approach Process[2]



In summary, the **planning implications** for each of the flood zones are:

Zone A - High probability of flooding. Most types of development would be considered inappropriate in this zone. Development in this zone should be avoided and/or only considered in exceptional circumstances, such as in city and town centres, or in the case of essential infrastructure that cannot be located elsewhere, and where the Justification Test has been applied. Only water-compatible development, such as docks and marinas, dockside activities that require a waterside location, amenity open space, outdoor sports and recreation, would be considered appropriate in this zone.

Zone B - Moderate probability of flooding. Highly vulnerable development, such as hospitals, residential care homes, Garda, fire and ambulance stations, dwelling houses and primary strategic transport and utilities infrastructure, would generally be considered inappropriate in this zone, unless the requirements of the Justification Test can be met. Less vulnerable development, such as retail, commercial and industrial uses, sites used for short-let for caravans and camping and secondary strategic transport and utilities infrastructure, and water-compatible development might be considered appropriate in this zone. In general however, less vulnerable development should only be considered in this zone if adequate lands or sites are not available in Zone C and subject to a flood risk assessment to the appropriate level of detail to demonstrate that flood risk to and from the development can or will adequately be managed.

[2] Flood Zone C covers all areas outside of Zones A and B

Zone C - Low probability of flooding. Development in this zone is appropriate from a flood risk perspective (subject to assessment of flood hazard from sources other than rivers and the coast) but would need to meet the normal range of other proper planning and sustainable development considerations.

The first table overleaf classifies the vulnerability of different types of development while the second table identifies the appropriateness of development belonging to each vulnerability class within each of the flood zones as well as identifying what instances in which the Justification Test should be undertaken. Inappropriate development that does not meet the criteria of the Justification Test should not be considered at the plan-making stage or approved within the development management process.

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).

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

Classification of vulnerability of different types of development

	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

Vulnerability Classes and Flood Zones

The **Justification Test** which is referred to as part of the Sequential Approach is an assessment of whether a development proposal within an area at risk of flooding meets specific criteria for proper planning and sustainable development and demonstrates that it will not be subject to unacceptable risk nor increase flood risk elsewhere.

The justification test should be applied only where development is within flood risk areas that would be defined as inappropriate under the screening test of the sequential risk based approach outlined above. This Justification Test is shown below.

Justification Test[3]

Where, as part of the preparation and adoption or variation and amendment of a development/local area plan[1], a planning authority is considering the future development of areas in an urban settlement that are at moderate or high risk of flooding, for uses or development vulnerable to flooding that would generally be inappropriate as set out in Table 3.2, all of the following criteria must be satisfied:

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.

2 The zoning or designation of the lands for the particular use or development type is required to achieve the proper planning and sustainable development of the urban settlement and, in particular:

- (i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement[2];
- (ii) Comprises significant previously developed and/or under-utilised lands;
- (iii) Is within or adjoining the core[3] of an established or designated urban settlement;
- (iv) Will be essential in achieving compact and sustainable urban growth; and
- (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.[4]

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.

N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment.

[3] Footnotes: [1] Including Strategic Development Zones and Section 25 Schemes in the area of the Dublin Docklands Development Authority [2]In the case of Gateway planning authorities, where a number of strategic growth centres have been identified within the overall area of the authority, the Justification Test may be applied for vulnerable development within each centre. [3] See definition of the core of an urban settlement in Glossary of Terms. [4] This criterion may be set aside where section 4.27b applies.