

APPENDIX II NON TECHNICAL SUMMARY

ENVIRONMENTAL REPORT

OF THE

TULLAMORE TOWN AND ENVIRONS DEVELOPMENT PLAN 2010-2016

STRATEGIC ENVIRONMENTAL ASSESSMENT



For: Tullamore Town Council &

Acres Hall
Tullamore



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Section 1 Introduction and Terms of Reference

This is the Non-Technical Summary of the Environmental Report of the Tullamore Town and Environs Development Plan 2010-2016 Strategic Environmental Assessment (SEA). The purpose of the Environmental Report is to provide a clear understanding of the likely environmental consequences of decisions regarding the future accommodation of growth in certain areas of Tullamore and its Environs.

What is an SEA?

SEA is a systematic process of predicting and evaluating the likely environmental effects of implementing a proposed plan, or other strategic action, in order to ensure that these effects are appropriately addressed at the earliest appropriate stage of decision-making on a par with economic and social considerations.

Why is it needed?

The SEA was carried out in order to comply with the provisions of the SEA Regulations and in order to improve planning and environmental management within Tullamore and its Environs. This report should be read in conjunction with the Development Plan.

How does it work?

All of the main environmental issues in Tullamore and its Environs were assembled and presented to the team who prepared the new Plan. This helped them to devise a plan that protects what is sensitive in the environment. It also helped to identify wherever there are environmental problems in the Town - so that these don't get any worse - and the Plan tries to improve these.

To decide how best to make a plan that protects the environment as much as possible the planners examined alternative versions of the Plan. This helped to highlight the type of plans that would be least likely to harm the environment.

What is included in the Environmental Report which accompanies the Plan?

The Environmental Report contains the following information:

- A description of the environment and the key environmental issues;
- A description and assessment of alternatives for the Plan;
- An assessment of Plan policies and objectives; and,
- Mitigation measures which will aid compliance with important environmental protection legislation - e.g. the Water Framework Directive, the Habitats Directive - and which will avoid/reduce the environmental effects of implementing the Plan.

What happens at the end of the process?

After the adoption of the Plan a document is made public, referred to as the SEA Statement.

The SEA Statement must include information on how environmental considerations have been integrated into the Plan and why the preferred alternative was chosen for the Plan in light of the other alternatives - this introduces accountability, credibility and transparency into the Plan-making process.

Section 2 The Development Plan

2.1 Structure and Content

The Development Plan consists of the Written Statement, a number of Maps and a volume of Appendices. *The Written Statement* contains the following chapters:

Chapter 1	Introduction & Vision
Chapter 2	Tullamore – Midlands Linked Gateway
Chapter 3	Context and Challenges
Chapter 4	Overall Strategy
Chapter 5	Masterplans
Chapter 6	Employment, Economy and Enterprise
Chapter 7	Town Centre, Renewal and Retail
Chapter 8	Transport, Accessibility & Movement
Chapter 9	Tourism
Chapter 10	Infrastructure & Environment
Chapter 11	Community, Social, Cultural & Sports Development
Chapter 12	Built Heritage
Chapter 13	Natural Heritage
Chapter 14	Development Standards
Chapter 15	Zoning Matrix & Land-Use Zoning Map.

The *Maps* give a graphic representation of the proposals of the Plan, indicating land use zoning and other control standards together with various objectives of the Council.

The *Volume of Appendices* contains supporting and background data/documents that help inform and clarify the broad context of the Written Statement. The Appendices include:

- Offaly County Housing Strategy (Adopted 2008),
- Offaly County Retail Strategy (Adopted 2009),
- Tullamore Town Record of Protected Structures, and;
- SEA Environmental Report (to which this document is an Appendix).

2.2 Vision and Goals

The Overall Vision of the Plan is: *that all people in Offaly will enjoy equal opportunity and a good quality of life – that they will look forward to the future with confidence while cherishing the past.* For the Plan, this means having regard to:

- (i) How land use and planning decisions will impact on quality of life for the people of Tullamore.
- (ii) How such decisions will impact on Tullamore as a location to live and work of choice, not necessity.
- (iii) How such decisions will impact on the need to protect Tullamore's natural and built assets.

The overall Plan aim is: *to set out a framework for the physical development of the of Linked Gateway town of Tullamore and its Environs, so that growth may take place in a sensitive, co-ordinated and orderly manner, while at the same time conserving the town's character and intrinsic heritage value.*

2.3 Relationships with other Plans and Programmes

2.3.1 National Development Plan 2007-2013

The National Development Plan 2007-2013 (NDP) is designed to underpin the development of a dynamic competitive economy over the period 2007 - 2013. It envisages a total investment of €184 billion over 7

years to 'secure the further transformation of our country socially and economically within an environmentally sustainable framework'. The need for a National Spatial Strategy was formally recognised by the Government with the publication of the 2000-2006 NDP.

2.3.2 National Spatial Strategy 2000-2020

The National Spatial Strategy 2000-2020 (NSS) is a 20-year planning framework for the entire Country to guide policies, programmes and investment. It seeks to promote a better balance of social, economic and physical development between the Regions. The focus of the NSS is on fostering a closer match between where people live with where they work. The NSS established a detailed sustainable planning framework for strategic spatial planning to ensure development is targeted at the most appropriate locations. The NSS places emphasis on the creation of high quality living environments through urban design and the integration of social and community amenities. In order to promote sustainable development and allow for the public transport system to function more effectively - as promoted by the NSS - it is essential to consolidate the physical growth of Tullamore. This can be achieved through the development of greenfield lands and vacant, derelict and underutilised lands, in particular where they are in close proximity to public transport routes.

2.3.3 Sustainable Development: A Strategy for Ireland 1997

This Strategy provides a framework for the achievement of sustainable development at local level and calls on planning authorities to incorporate the principles of sustainability into Development Plans.

2.3.4 Midland Regional Planning Guidelines 2004-2016

Ireland is divided into eight regional forward planning regions, Dublin, Midlands, Mid East, Mid West, South East, South West, West and Border, each with its own regional planning authority composed of Elected Members selected by the constituent local government councils. Regional planning authorities are required, under the Planning and Development Regulations 2001 to 2009, to draw up regional planning guidelines (RPGs), long term strategic planning frameworks, for their relevant region. RPGs must have regard to the National Spatial Strategy. Tullamore and Environs is located within the Midland Regional Planning Authority area for which the Midlands Regional Planning Guidelines 2004 (MRPGs) have been prepared. These Guidelines were in the process of being reviewed during the adoption of the Development Plan.

2.3.5 Offaly County Development Plan 2009-2015

The Offaly County Development Plan 2009-2015 aims to achieve a strategic and coordinated plan-led approach to the future development of the County. Therefore, strategic planning issues relating to Tullamore are also included in the County Plan. The Councils prepared the Tullamore Town and Environs Development Plan 2010-2016 in a manner that is consistent with the Offaly County Development Plan 2009-2015 and related policy documents such as the County Housing Strategy and the County Retail Strategy. The Plan embraces Tullamore's status as part of a Linked Gateway and its position at the pinnacle of the County Settlement Hierarchy.

2.3.6 Environmental Protection Objectives

The Development Plan is subject to a number of high level national, international and regional environmental protection policies and objectives, including those which have been identified as Strategic Environmental Objectives in (see Section 3.11). Examples of Environmental Protection Objectives include the aim of the EU Habitats Directive - which is to contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora in the European territory of Member States - and the purpose of the Water Framework Directive - which is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater. The Development Plan must be consistent with these objectives and implement them at local level in Tullamore.

Section 3 Existing Environment

3.1 Introduction

The environmental baseline of Tullamore is described in this section. This baseline together with the Strategic Environmental Objectives, which are outlined in Section 4 of the Environmental Report, is used in order to identify, describe and evaluate the likely significant environmental effects of implementing the Development Plan and in order to determine appropriate monitoring measures.

The environmental baseline is described in line with the legislative requirements, encompassing the following components – biodiversity, flora and fauna, population, human health, soil, water, air and climatic factors, material assets, cultural heritage, landscape and the interrelationship between these components.

3.2 Overlay Mapping

In order to identify where most sensitivities within the Plan area occur, a number of the environmental sensitivities described above were weighted and mapped overlapping each other.

Environmental sensitivities are indicated by colours which range from acute vulnerability (black) to extreme vulnerability (red) to high vulnerability (orange) to elevated vulnerability (light orange) to moderate vulnerability (yellow) and low vulnerability (green). Where the mapping shows a concentration of environmental sensitivities there is an increased likelihood that development will conflict with these sensitivities and cause environmental deterioration. This is particularly the case where the cumulative development of small-scale projects, such as rural housing, gradually causes a slow deterioration of a resource, such as water quality.

Figure 3.1 shows the overlay of environmental sensitivities for Tullamore. These are derived from a series of environmental topics that are summarised and illustrated in the following pages.

Most of the Plan area is identified as being of Moderate Vulnerability. Some areas, especially in the south west, are identified as being of a High to Extreme Vulnerability.

Charleville Demesne is the most acutely vulnerable part of the Plan area due to the cumulative sensitivities intrinsic to the Demesne's environment. These sensitivities include: sensitive habitats; sensitive ground and surface waters; sensitive landscape areas; flood risk; and, sensitive cultural heritage.

The vulnerability of areas adjacent to the Tullamore River is heightened due to the presence of the River's flood plain.

Architectural and archaeological designations increase the vulnerability of certain parts of the Plan area particularly in the Town Centre where these designations occur in clusters.

Areas identified as being of high or extreme vulnerability include the Canal, lands at Killiskea and the Esker areas to the north of the Town.

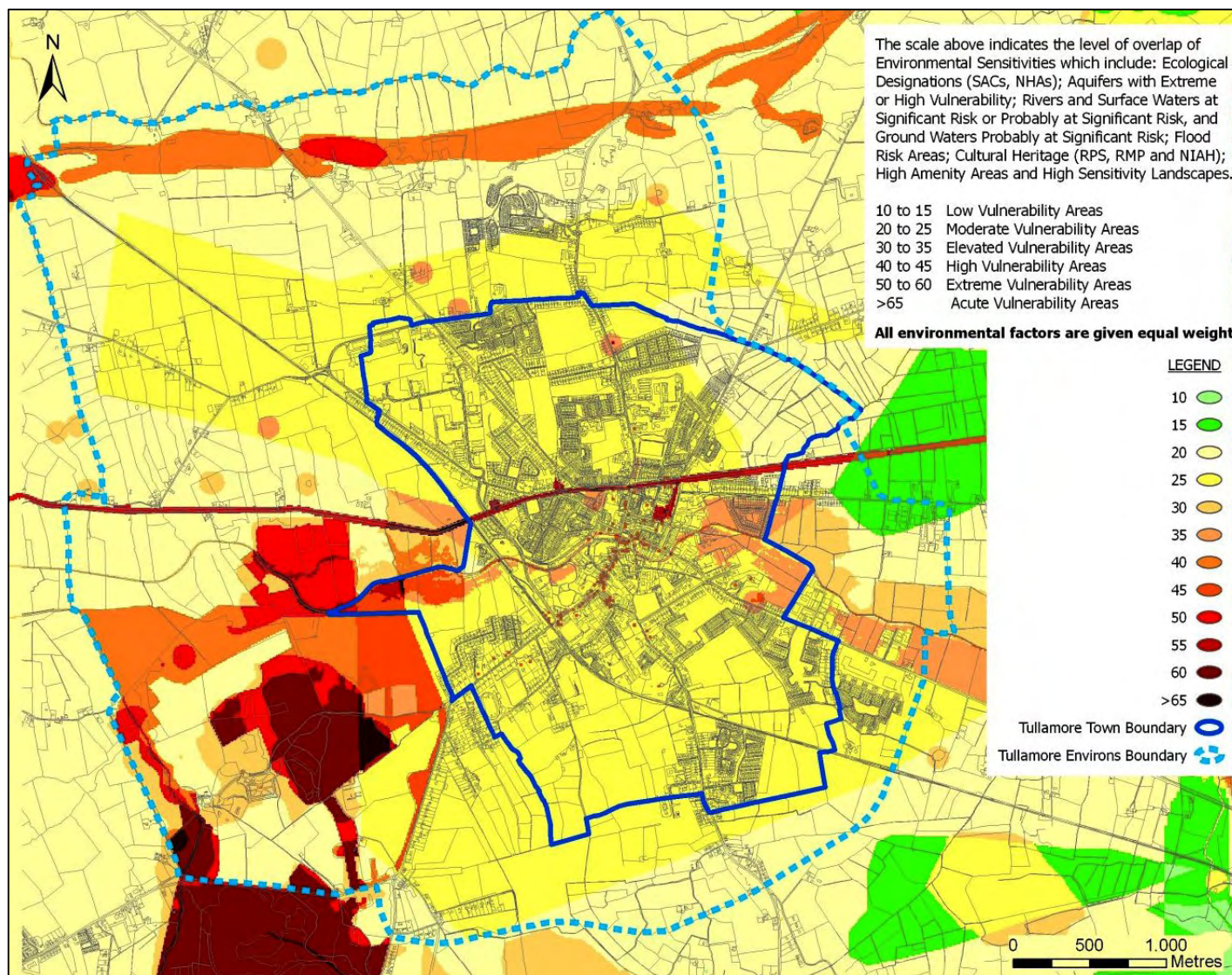


Figure 3.1 Overlay of Environmental Sensitivities

3.3 Biodiversity and Flora and Fauna

3.3.1 Overview of the Habitats

Green space, which makes up a large portion of the Plan area, particularly in the Environs, consists of a variety of habitats including corridors which provide for the movement of wildlife. Green space within Tullamore is comprised mainly of agricultural lands and woodlands and a number of open spaces within the urban areas including Charleville Demesne and Lloyd Town

The Charleville Wood proposed Natural Heritage Area (pNHA) and candidate Special Area of Conservation (cSAC) (Site Code: 000571) is one of the most ancient woods sites in Ireland. The Tullamore River, with tributaries including the Toberfin, and the Silver and Clodiagh Rivers provide habitats for various species in the Plan area.

The Grand Canal is another man-made structure and its banks, grassy verges, tow paths, locally important mature hedgerows, drainage ditches running parallel to the canal and areas of adjoining habitat of conservation interest are important in ecological terms. Coarse and pike fishing is possible on the Grand Canal.

3.3.2 Existing Problems

Generally, development in Tullamore is not significantly impacting upon designated ecological sites however Site Synopses for these sites identify certain threats to the conservation value of these sites.

Aquatic flora and fauna is vulnerable to all forms of pollution such as that which can occur as a result of agricultural run-off and industrial and municipal effluents -several water bodies within and surrounding the area are *at significant risk* with regard to meeting legislative water quality objectives under the Water Framework Directive.

3.4 Population and Human Health

3.4.1 Population

The population of the Plan area grew by 1,829 persons or 16.48%, between 2002 and 2006, at a time when the national increase was 8.2%. The increase in Tullamore and its Environs was predominantly due to a major growth in population in the Environs area which saw a growth in numbers from 858 in 2002 to 2,027 in 2006, an increase of 144.8%.

Spatial distribution of the population in the Environs is generally one-off housing, linear in parts. The majority of the population of Tullamore is located within the Town boundary.

3.4.2 Existing Problems

Certain environmental vectors within the Plan area - such as air, water or soil - have the potential to transport and deposit contaminants or pollutants, which have the potential to cause harm and adversely impact upon the health of the area's population. Potential impacts due to air and water are dealt with below

3.5 Soil

3.5.1 Features of Geological Interest

Eskers support their own unique flora and fauna and also have archaeological significance, as they formed the early highways in Ireland.

There are twenty esker systems in Offaly containing 208 segments which all form part of Esker Riada. The esker system covers over 4,000 acres in Offaly. Ballyduff Esker which runs along the northern edge of the Town's Environs is a significant part of the Esker Riada network.

3.5.2 Existing Problems relating to Soil

The development of extractive industry at certain locations in Tullamore has led to the depletion of both subsoils and topsoil, which has been removed in order to obtain the subsoil. This depletion has impacted upon the Ballyduff esker.

3.6 Water

3.6.1 Potential Pressures on Water Quality

Human activities, if not properly managed, can cause deterioration in water quality. Pressures exerted by human activities include the following:

- sewage and other effluents discharged to waters from point sources, e.g. pipes from treatment plants;
- discharges arising from diffuse or dispersed activities on land;
- abstractions from waters; and
- structural alterations to water bodies.

3.6.2 The Water Framework Directive

3.6.2.1 Introduction and Requirements

Since 2000, Water Management in the EU has been directed by the Water Framework Directive. The WFD requires that all Member States implement the necessary measures to prevent deterioration of the status of all waters with the aim of achieving good status by 2015.

3.6.2.2 WFD Risk Assessments

In order to achieve the objectives of the WFD it is necessary:

- to assess the risk that water bodies may not achieve good quality status;
- to identify the pressures from human activities causing this risk; and,
- to develop strategies and management plans to minimise the risk.

Figure 3.2 maps the current risk assessments for the Tullamore, Silver and Clodiagh Rivers. In terms of achieving the WFD's objectives by 2015, all surface waters in the Plan area are classified as being *(1a) At Significant Risk* with catchment areas to the east and south of the Town identified as *(1b) Probably at Significant Risk* of failing to achieve the WFD's objectives by 2015. The Ballycommon River is classified as *(1b) Probably at Significant Risk* up to the Environs boundary where it then changes to being *(1a) At Significant Risk*. The Silver River, Clodiagh River and Tullamore River are mainly classified as being *1a At Significant Risk*.

Groundwater underlying Tullamore Town is generally classified as being *(1b) Probably at Significant Risk*. Groundwater underlying the Environs is generally classified as being *(2b) Probably not at Significant Risk*.

3.6.2.3 WFD Registers of Protected Areas

In the Plan area, the Tullamore River has been identified on the WFD RPA for Drinking Water. All groundwater underlying the Plan area is listed on the RPA for Drinking Water.

3.6.3 Water Quality

Water quality on the Tullamore River is monitored by the EPA at Springfield Bridge to the east of the Town. Current water quality status at the bridge is Moderate Status (Q3-4). The EPA also monitors water quality approximately three kilometres to the west of Tullamore at Annamore Bridge. The most recent

water quality data¹ identifies the Tullamore River as being of Bad Status (Q2)² at this point after it flows through the Town.

3.6.4 Groundwater Vulnerability

The Geological Survey of Ireland (GSI) rates aquifers according to their vulnerability to pollution. Aquifer vulnerability refers to the ease with which pollutants of various kinds can enter underground water.

The Plan area is mainly rated as being of high vulnerability with approximately ten patches classed as extreme vulnerability. There is a large area in the north west of the Town which is classified as being of extreme vulnerability.

3.6.5 Flooding

3.6.5.1 Introduction

The flood plain of the Tullamore River is subject to flooding as shown in Figure 3.6 below³. Infrastructural development, culverting and forestry operations and all urban development in the floodplain present ongoing flooding hazards. Increased surface water runoff due to construction of new hard surfaced areas is now generally not a problem in terms of its impact on peak flows because of the implementation of Sustainable Urban Drainage Systems (SUDS).

3.6.5.2 OPW's National Flood Hazard Mapping

The locations of the most significant recent flooding events in the Plan area - accessible from the Office of Public Work's National Flood Hazard Mapping website - are identified on Figure 3.6.

3.6.5.3 Tullamore Flood Risk Assessment and Management Study⁴

The Tullamore Flood Risk and Assessment Management (FRAM) was carried out by the OPW, in conjunction with Tullamore Town Council and Offaly County Council in 2008. The study identifies areas of Tullamore that are at risk of flooding and contains a series of options to mitigate the existing flood risk in Tullamore. The OPW has divided its recommendations into how to deal with the existing risk and how to deal with the potential future risk should development take place within the floodplain of the Tullamore River. Areas identified in the report as being liable to flooding are mapped on Figure 3.6.

3.6.5.4 Flood Risk Management Guidelines

In November 2009 the DEHLG published *The Planning System and Flood Risk Management* Guidelines for Planning Authorities. These are aimed at ensuring a more consistent, rigorous and systematic approach which will fully incorporate flood risk assessment and management into the planning system. Planning authorities are required to undertake flood risk identification, assessment and management processes as appropriate when preparing or varying development plans and local area plans and in consideration of applications for planning permission.

3.6.6 Existing Problems

There are environmental problems in Tullamore with regard to water quality which have the potential for significant adverse impact upon human health, drinking water supplies and biodiversity and flora and fauna.

¹ Environmental Protection Agency (2006) *Water Quality in Ireland 2005* Wexford: Environmental Protection Agency

² The Biotic Index Values, or Q values, are assigned to rivers in accordance with biological monitoring of surface waters - low Q ratings, as low as Q1, are indicative of low biodiversity and polluted waters, and high Q ratings, as high as Q5, are indicative of high biodiversity and unpolluted waters. Good status as defined by the Water Framework Directive equates to approximately Q4 in the national scheme of biological classification of rivers as set out by the EPA.

³ This map shows a 1% Annual Exceedence Probability (AEP) flood event. Data source: OPW, 2008.

⁴ Tullamore Flood Risk and Assessment Management Study (OPW), 2008

In addition to the sensitivities indicated by these risk assessments, the Tullamore River, all underlying groundwater and waters in the SAC are included on various Registers of Protected Areas (RPAs) by virtue of how their waters are used by people and by wildlife.

Failure to provide appropriate waste water treatment infrastructure and capacity alongside development (see Section 3.7 of the Environmental Report) presents a significant problem which is likely to affect Tullamore Town Council's and Offaly County Council's abilities to meet their commitments under the WFD. Additional waste water treatment infrastructure/capacity is needed in order to serve existing and proposed development if the objectives of the WFD are to be met.

The occurrence of severe rainfall events - and changes in the occurrence and magnitude of these events as a result of climate change - have the potential to cause flooding which would be likely to result in a hazard to human health and damage and loss to built development, infrastructure and biodiversity. This is particularly true of the large areas of land which have been identified as being liable to flooding by the Tullamore Flood Risk and Assessment Management Study.

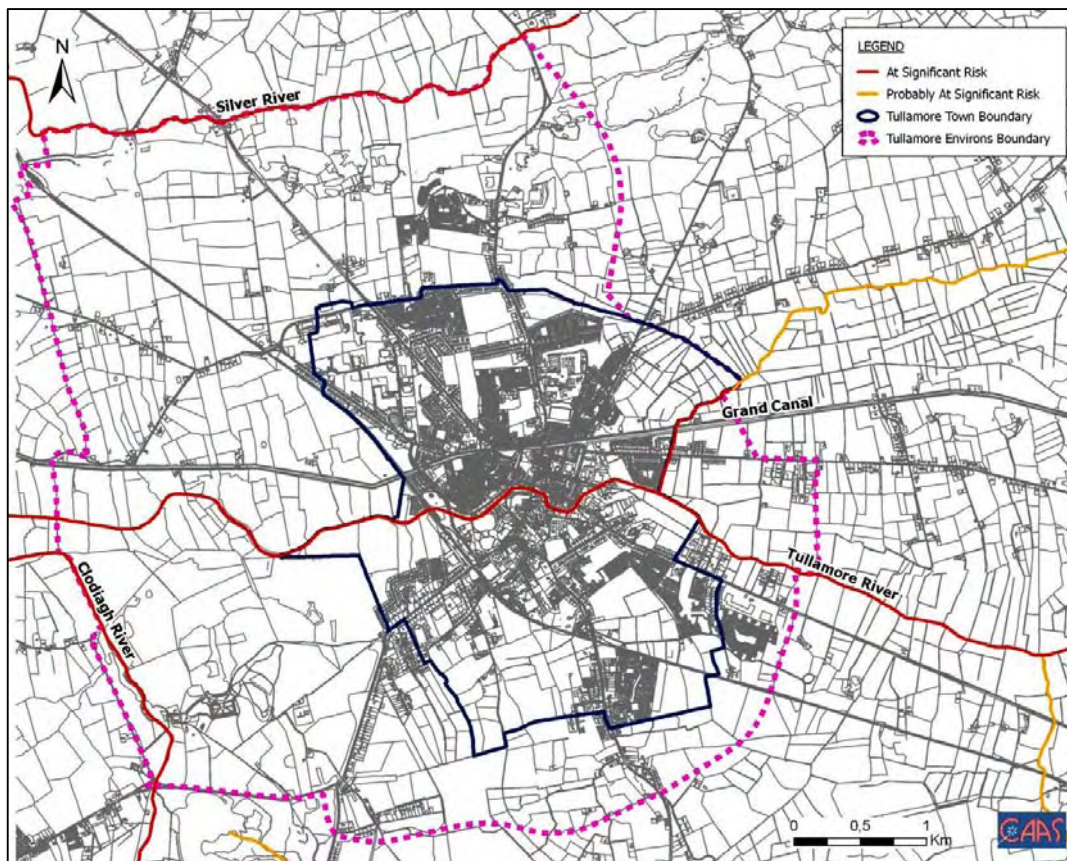


Figure 3.2 Risk Assessment of Rivers

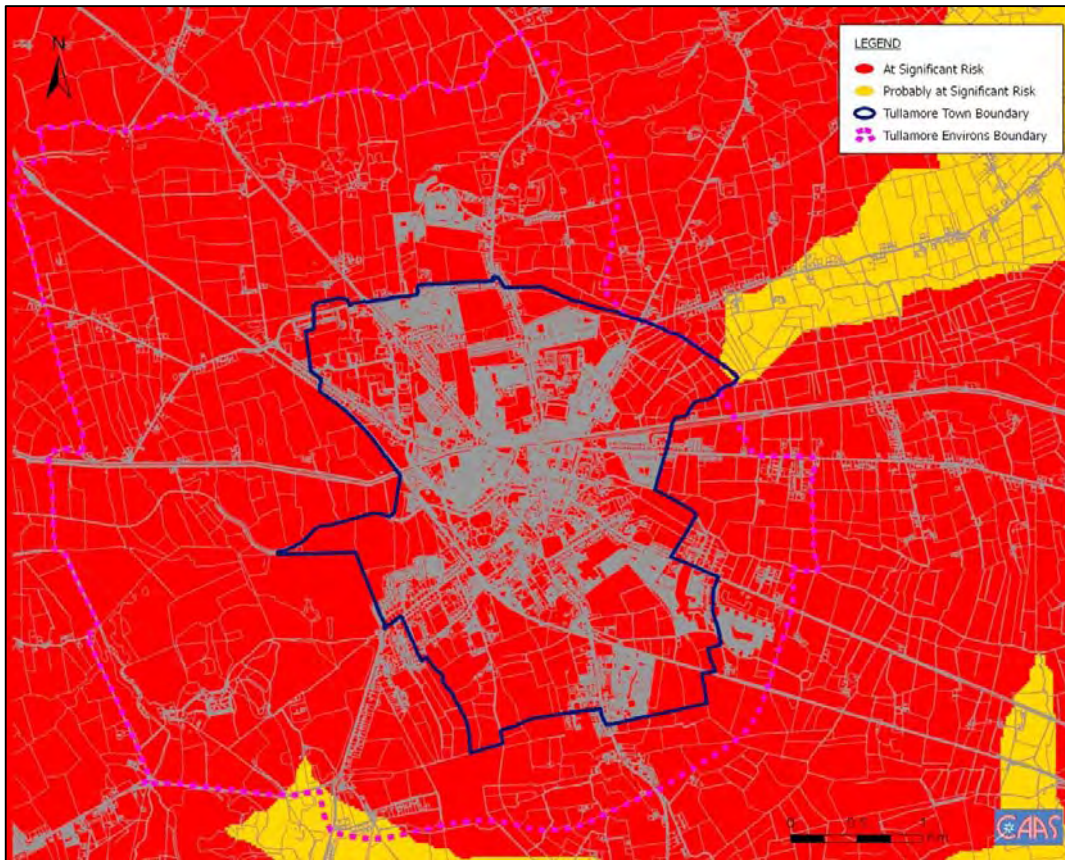


Figure 3.3 Risk Assessment Groundwater

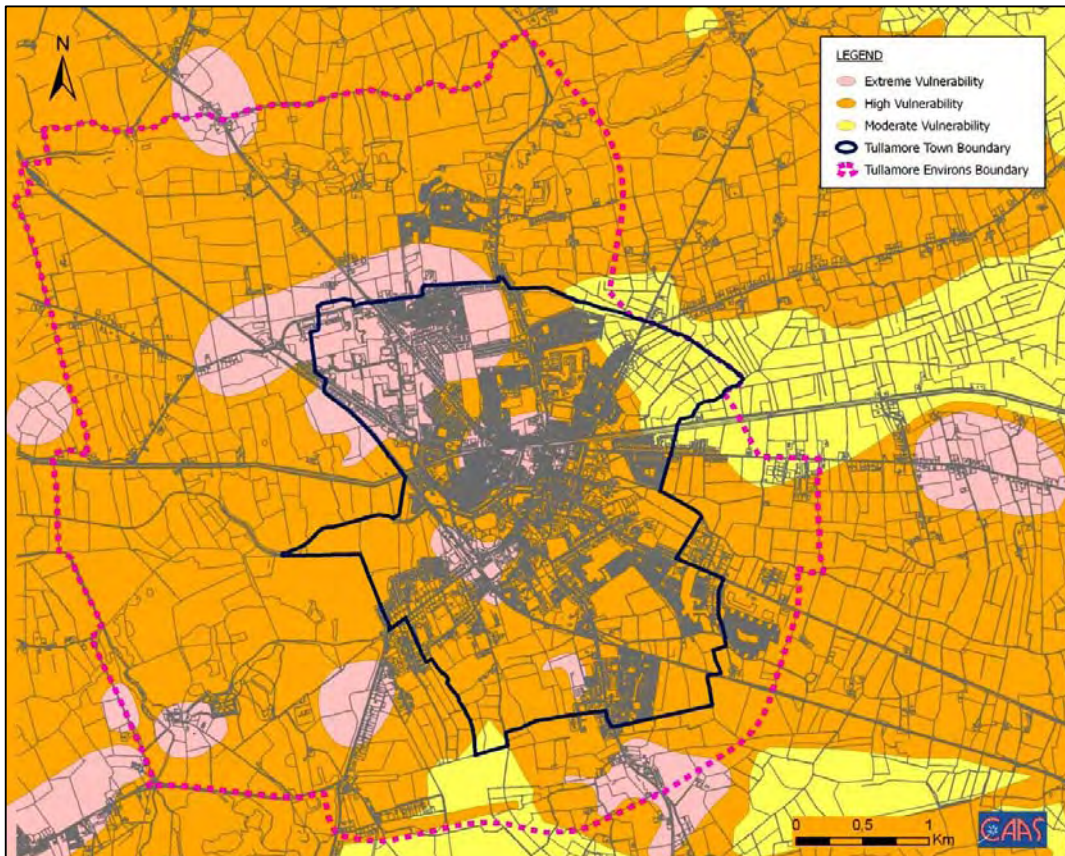


Figure 3.4 Groundwater Vulnerability

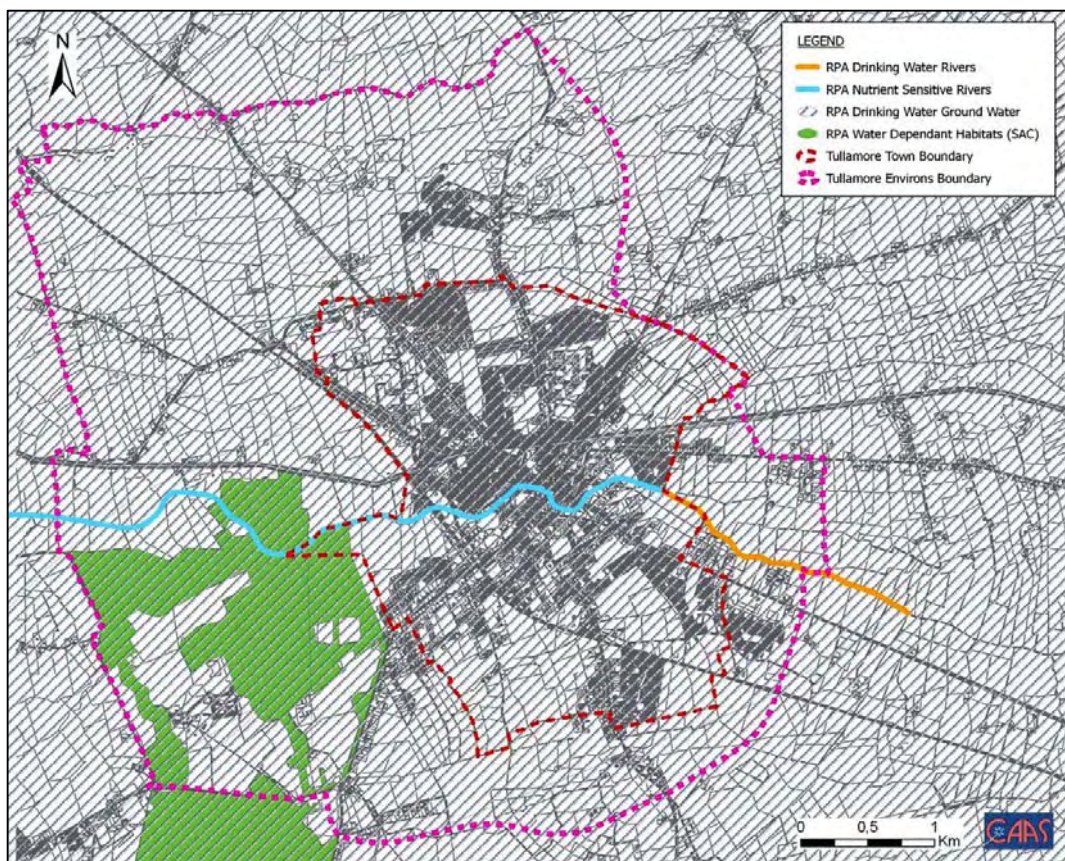


Figure 3.5 Water Framework Directive RPAs

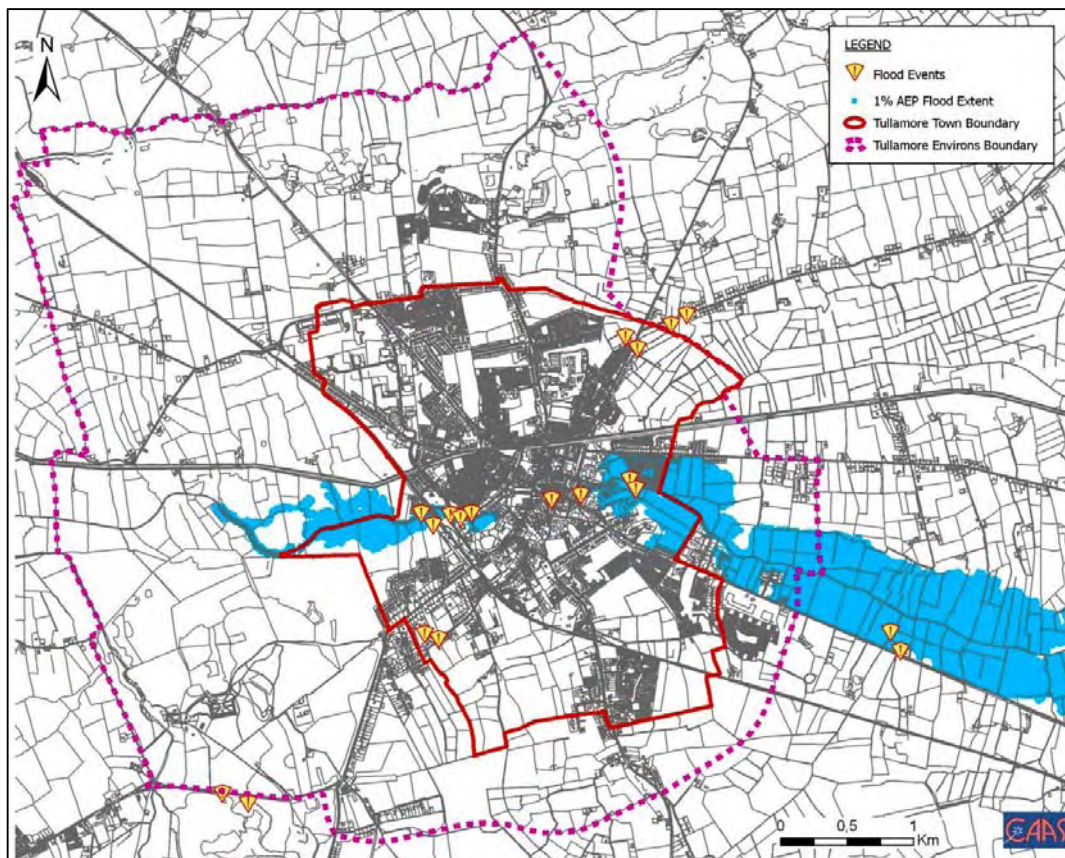


Figure 3.6 Flood Events and Areas Liable to Flooding

3.7 Air and Climatic Factors

3.7.1 Ambient Air Quality

Air Quality in Tullamore falls into zone C. Current air quality in Zone C is *good*. The index is calculated based on the latest available measurements of PM10, sulphur dioxide, nitrogen dioxide and ozone in Zone D.

3.7.2 Potential Point Sources of Emissions

3.7.2.1 IPPC Licensed Facilities

There are two IPPC licensed facilities in the Plan area. GeneMedix PLC (Registration Number: P0638-01) is located in the Srah Industrial Estate. Castle Paints (Tullamore) Limited (Registration Number: P0833-01) is located in the Cloncollig Industrial Estate.

3.7.2.2 Waste Licensed Facilities

In 1996 the EPA began licensing certain activities in the waste sector. These include landfills, transfer stations, hazardous waste disposal and other significant waste disposal and recovery activities. Relevant Licences are as follows:-

Advanced Environmental Solutions (Ireland) Ltd (Registration Number: W0104-01) is located in Cappincur and has been issued with a waste license.

KMK Metals Recycling Limited (Registration Number: W0113-01) is located in Cappincur Industrial Estate on the Daingean Road.

3.7.2.3 Seveso Sites

The control of major accident hazards involving dangerous substances Directive, also referred to as the Seveso II or COMAH Directive, aims to ensure that, at locations where dangerous substances are handled in quantities above specified thresholds.

There is one designated Seveso site in the Plan area, *Isotron* located in the Srah Industrial Estate. The company deals in the sterilisation of medical equipment.

3.7.3 Noise

Noise is unwanted sound. It can seriously harm human health and interfere with daily activities at school, at work, at home and during leisure time. The over-riding noise source in Tullamore is from traffic. Streets that have high traffic counts as well as enclosing taller buildings are likely to have higher noise levels. In addition, there are localised noise sources which include air conditioning equipment, train movements and night clubs.

3.7.4 Existing Problems

There are no significant existing problems

3.8 Material Assets

3.8.1 Waste Water

Waste water arising from the Plan area is collected by the waste water collection network and pumped to the waste water treatment plant at Kilcruttin where it undergoes primary, secondary and tertiary treatment. Treated effluent is then discharged into the Tullamore River.

The network does not cover the full Plan area. The network serves Tullamore urban district, north Collins Lane, East Barony River and Clonminch. The remaining areas are unserved and utilises septic tank treatment.

The plant was designed and built to cater for 16,000 PE⁵ but current loading at the plant is approximately 25,000 PE.

The Tullamore Waste Water Scheme is included in the Water Services Investment Program 2007-2009 for improvement/upgrade to upgrade the existing waste water treatment plant from 16,000 to 45,000PE are currently being reviewed. It is also proposed to upgrade and extend the collection network and pumping stations. The expected completion date for these works is 2011.

Offaly County Council has confirmed that the waste water treatment plant will have the capacity to treat waste water arising from the population as provided for by the Plan.

3.8.2 Drinking Water

Drinking water is sourced from the Clodiagh and Gorrage Rivers at Clonaslee. There are five boreholes at Clonaslee, two borewells at Arden and Sillogue well at Durrow.

At present a new source is being developed on the banks of the Silver River to further supplement the available supply to the scheme. A borehole has been drilled and yield tests indicated a sustainable yield of 2,000m³/day.

Tullamore Water Supply Scheme is included in the Water Services Investment Programme (WSIP) 2007-2009 for improvement/upgrade works.

Available water supply stands at 8,940m³/day during the summer and 9,760m³/day during the winter. Current demand stands at 7,800m³/day. Domestic demand stands at 2,596m³/day while non-domestic demand stands at 2,235 m³/day. Predicted future demand is expected to be 16,480m³/day. Unaccounted-for-water in Tullamore stands at 3,510m³/day.

3.8.3 Existing Problems

Tullamore has experienced relatively large growth in recent years and development has put pressure on the available waste water treatment infrastructure. Treated effluent arising at the Waste Water Treatment Plant at Kilcrutrin is discharged into the Tullamore River. As the plant is currently operating over capacity, there is a risk that discharged water may not meet standards set out under the Urban Waste Water Treatment Directive (91/271/EEC) (amended by Directive 98/15/EEC). This situation is likely to be adversely impacting upon the Tullamore and Clodiagh Rivers which are identified as being *(1a) at significant risk* in terms of achieving the WFD's objectives by 2015. By virtue of how it is used by people and by wildlife, the Tullamore River is listed on the Registers of Protected Areas under the Water Framework Directive.

Failure to provide appropriate waste water treatment infrastructure and capacity alongside development could lead to the contamination of drinking water resources. Additional waste water treatment infrastructure/capacity is needed in order to serve existing and proposed development if a sufficient, safe supply of drinking water is to be maintained.

⁵ Population equivalent (in waste-water monitoring and treatment) refers to the amount of oxygen-demanding substances whose oxygen consumption during biodegradation equals the average oxygen demand of the waste water produced by one person.

3.9 Cultural Heritage

3.9.1 Record of Monuments and Places

Figure 3.7 shows the spatial distribution of entries to the Record of Monuments and Places (RMP) in Tullamore. Entries include a Bawn, Enclosures, a Habitation Site and Castles. There is a large Zone of Archaeological Potential located in the vicinity of Srah Castle in the East of the Town. Of note are Srah Castle and Charleville Castle and Demesne.

3.9.2 Record of Protected Structures

In total, there are now 208 proposed Protected Structures within the Tullamore Town Council boundary and 18 within the Environs boundary. These are mapped in Figure 3.8.

3.9.3 Existing Environmental Problems

Encouraging and facilitating the accommodation of growth on brownfield sites will contribute to mitigating a number of the adverse impacts associated with greenfield development, however, brownfield development has the potential to significantly adversely impact upon cultural heritage - both archaeological and architectural - if not mitigated against.

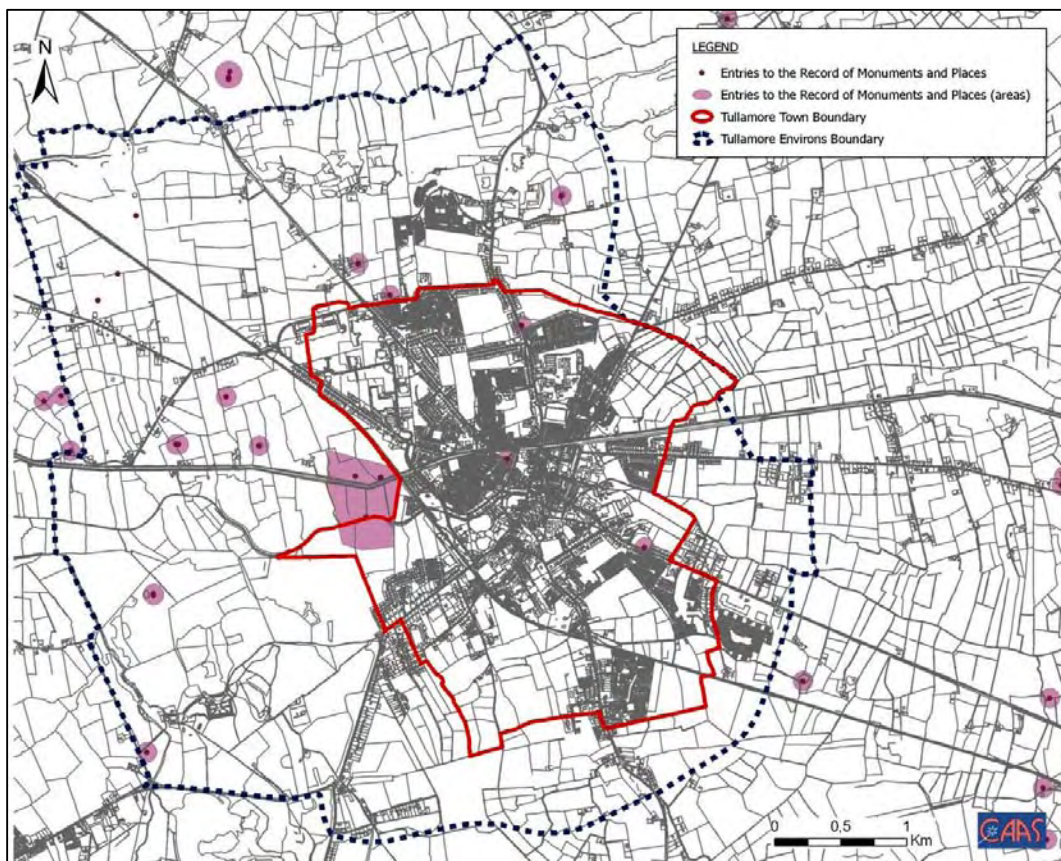


Figure 3.7 Entries to the Record of Monuments and Places

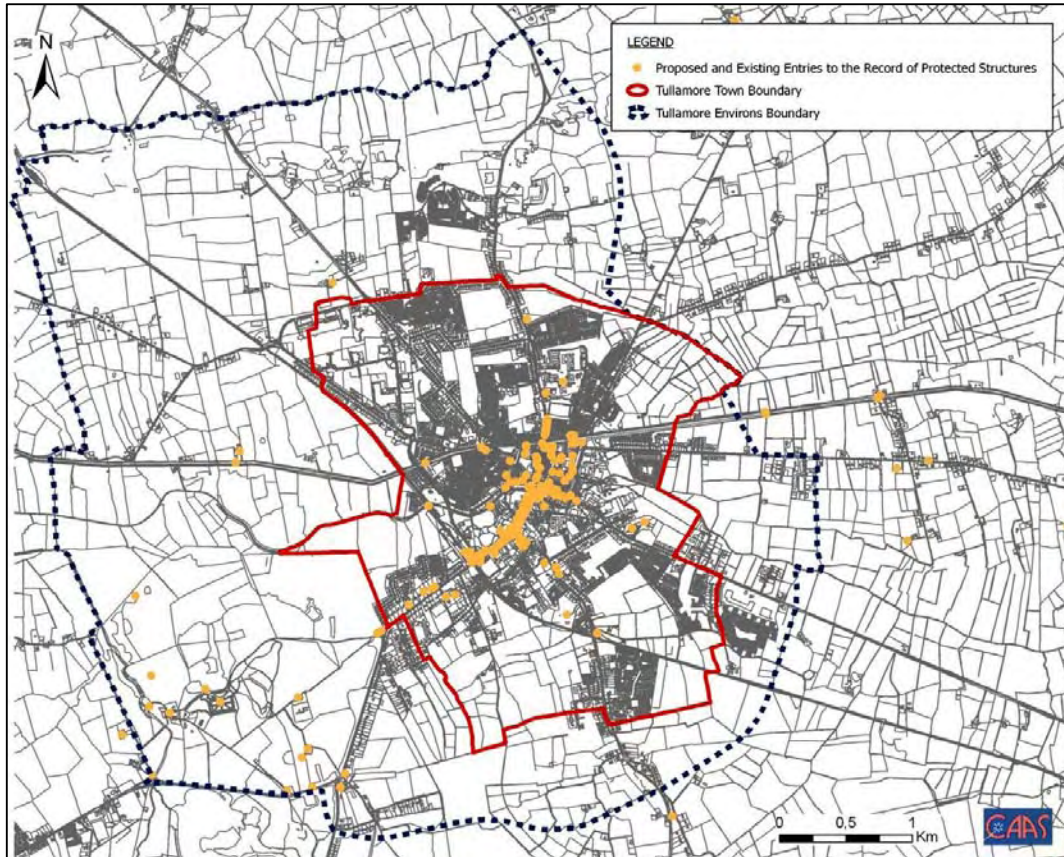


Figure 3.8 Entries to the Record of Protected Structures

3.10 Landscape

The County Landscape Classification identifies ten distinct landscape types which have similar character-contributing elements such as slope, vegetation and landuse. Each of these ten landscape types have been attributed one of three sensitivity classes; Low Sensitivity (Class 1); Moderate Sensitivity (Class 2); and High Sensitivity. The Plan area falls under the following classifications:

- Rural and Agricultural Offaly,
- Cutaway Bogs,
- The Grand Canal Corridor,
- Archaeological and Historical Landscapes; and,
- The Esker Landscape.

3.10.1 Existing Environmental Problems

In the past, the development of pits for sand and gravel extraction has impacted upon the esker landscape of the area and its various geomorphological, scientific, historical, recreational and amenity values. The development of extractive industry at certain locations in Tullamore has led to the depletion of eskers in the area, particularly, the Ballyduff esker.

A problem with regard to the environmental component of landscape is the cumulative visual impact which occurs as a result of developments such as one off houses. Such developments, which individually often do not have significant adverse impacts, have the potential to cumulatively and adversely significantly impact upon sensitive landscapes.

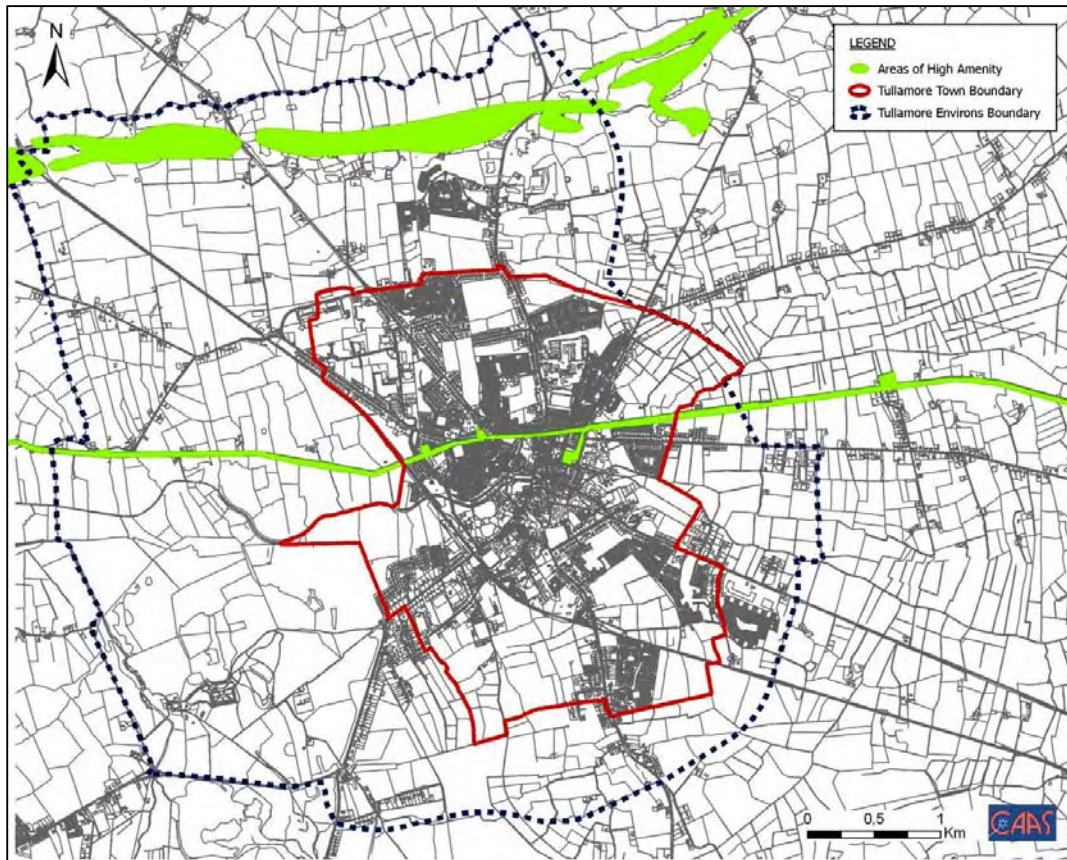


Figure 3.16 Areas of High Amenity

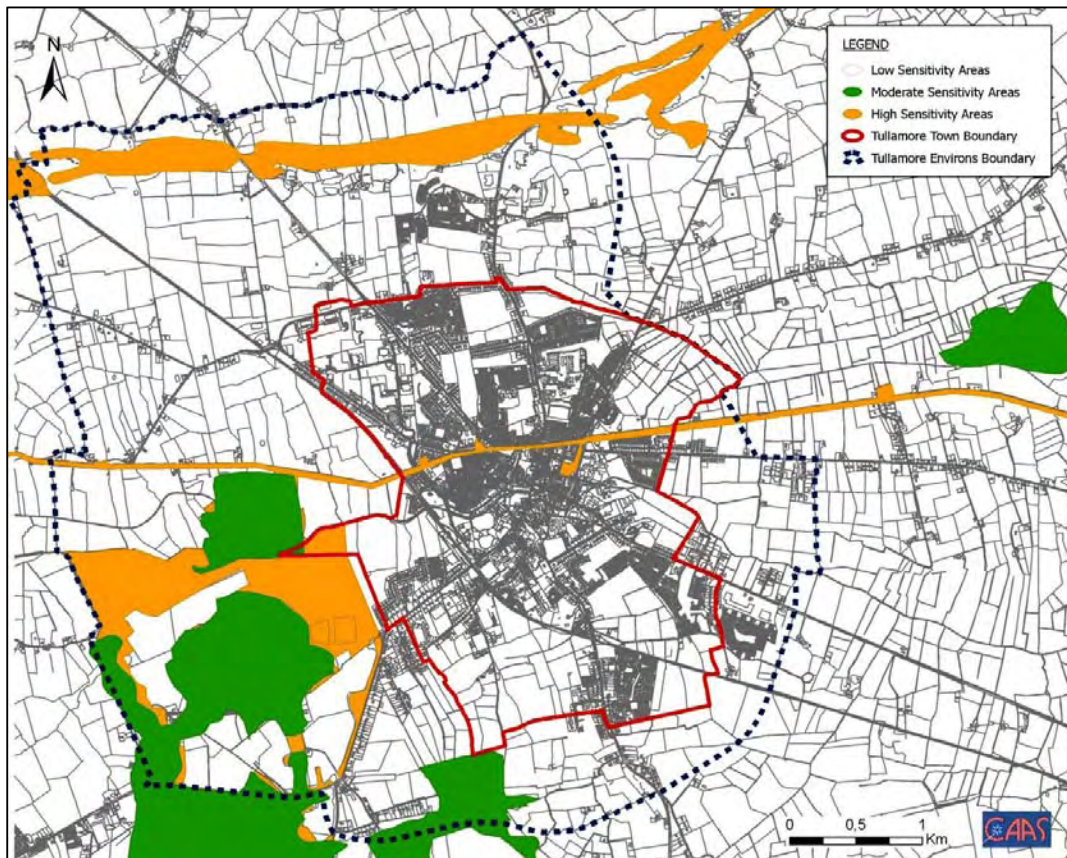


Figure 3.17 Landscape Sensitivity Areas

3.11 Strategic Environmental Objectives

Based on an understanding of the existing environment a number of Strategic Environmental Objectives (SEOs) were developed in order to facilitate the evaluation of the Plan and its alternatives and Plan provisions. SEOs are distinct from the objectives of the Plan - although they will often overlap - and are developed from international, national and regional policies which generally govern environmental protection objectives. Such policies include those of various European Directives which have been transposed into Irish law, all of which are intended to be implemented at county level in County and integrated into any plan for the County. The SEOs which were used in the assessment are identified on the table below.

SEO Topic	SEO
Biodiversity and Flora and Fauna	To avoid loss of relevant habitats, geological features, species or their sustaining resources in designated ecological sites
Biodiversity and Flora and Fauna	To avoid significant adverse impacts, including direct, cumulative and indirect impacts, to relevant habitats, geological features, species or their sustaining resources in designated ecological sites by development within or adjacent to these sites
Biodiversity and Flora and Fauna	To sustain, enhance or - where relevant - prevent the loss of ecological networks or parts thereof which provide significant connectivity between areas of local biodiversity
Spatial Distribution of Population	Maximise the sustainable re-use of brownfield lands, and maximise the use of the existing built environment rather than developing greenfield lands
Human Health	To protect human health from hazards or nuisances arising from exposure to incompatible landuses
Surface Water Status	To maintain and improve, where possible, the quality of rivers
Ground Water Status	To prevent pollution and contamination of ground water
Flood Risk	To prevent development on lands which pose - or are likely to pose in the future - a significant flood risk
Waste Water Treatment	To serve new development with appropriate waste water treatment
Drinking Water Provision	To serve development within the Plan area with drinking water that is both wholesome and clean
Transport related Emissions	To minimise increases in travel related greenhouse emissions to air
Transport Mode	To reduce car dependency within the Plan area by way of, inter alia, encouraging modal change from car to more sustainable forms of public transport and encouraging development which will not be dependent on private transport
Archaeological Heritage	To protect the archaeological heritage of Tullamore with regard to entries to the Record of Monuments and Places - including Zones of Archaeological Potential - and the context of the above within the surrounding landscape where relevant
Architectural Heritage	To preserve and protect the special interest and character of Tullamore's architectural heritage with regard to entries to the Record of Protected Structures and their context within the surrounding landscape where relevant
Landscape	To avoid significant adverse impacts on the landscape - especially with regard to landscapes which are identified as being highly sensitive

Section 4 Alternative Plan Scenarios

4.1 Introduction

One of the critical roles of the SEA was to facilitate an evaluation of the likely environmental consequences of a range of alternative strategies for accommodating future development in Tullamore Town and Environs.

These alternative strategies must be realistic, capable of implementation, and should represent a range of different approaches within statutory and operational requirements of the particular plan. In some cases the preferred strategy will combine elements from the various alternatives considered.

This section identifies and describes different plan scenarios, taking into account higher level strategic actions as well as the geographical scope of the Tullamore Town and Environs.

The alternative scenarios are evaluated in Section 4.3 resulting in the identification of potential impacts and informing the selection of a preferred alternative for the Development Plan. The policies and objectives which are required to realise the preferred alternative are evaluated in Section 8 of the Environmental Report.

Mitigation measures which attempt to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the preferred alternative are recommended for inclusion in Section 9 of the Environmental Report.

4.2 Description of Alternative Plan Scenarios

4.2.1 Excluding the 'Do-Nothing' Scenario

As the current Development Plan is required to be reviewed and replaced by a new Development Plan under legislation a 'do-nothing' alternative is not considered, nor is it required to be by the SEA Directive.

Annex I of the SEA Directive specifies that information should be provided in the environmental report on *inter alia* 'the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme'. Section 3 of the Environmental Report identifies the evolution of each component of the environment in the absence of implementing the Development Plan.

4.2.2 Identification and Description of Alternative Scenarios

4.2.2.1 Introduction

The following summarises a series of 'Scenarios' which provide alternative visions of how the future development of Tullamore Town and Environs might occur. These are neither predictions nor preferences - instead they offer a range of plausible and internally consistent narratives of the outcome of different planning and development strategies. These provide the basis for the comparative evaluation of the likely environmental effects of each plan, which in turn serves the purpose of identifying which features of plans and policies are likely to be sensitive or robust over the widest range of circumstances.

4.2.2.2 Alternative Scenario 1: *Gateway Approach*

Alternative Scenario 1: *Gateway Approach* (see Figure 4.1) represents the land use plan for the Town and Environs should the recently adopted variation no. 4 to the Tullamore Town and Environs Development Plan 2004-2010 be retained. The variation represented a measured and coherent response to the designation of Tullamore as part of the Midlands Linked Gateway Town. In land use terms, this scenario includes 4 new Masterplan Areas for the Town which would be developed in a phased manner in order to accommodate targeted sequential population growth over the period of the Plan and beyond to 2020 (in line with the Midlands Regional Planning Guidelines 2004 targets). The promotion of these 4 new areas

for growth in the Town is a key element for the focus of this scenario with consolidation and enhancement of the Town Centre. Under this scenario 4 new Masterplans would be developed to accommodate a higher level of new development and deliver the maximum quantitative efficiency of new population and associated infrastructure (hard and soft), facilities and neighbourhood communities. The Masterplan Areas identified under this scenario include Grand Canal Quarter; Tullamore Southern Environs; Tullamore Northern Environs and Tullamore North-Eastern Environs. This scenario allows for a greater degree of coordination of employment, public infrastructure, amenities, community facilities, schools, public transport etc. through a plan-led approach.

4.2.2.3 Alternative Scenario 2: *Minimalist Approach*

Alternative Scenario 2: *Minimalist Approach* (see Figure 4.2) examines the retention of the current zoning for the Town and Environs (as per Variation no. 4) but removes the final phase from each of the Masterplan Areas i.e. a reduction in the amount of land zoned. The growth of the Town, in its role as part of the linked Gateway, may be inhibited by such a scenario as it would not focus on accommodating the needs of the Linked Gateway Town, as the Masterplans intended, but rather, reduce the contribution that Tullamore would make to the Midlands Gateway and subsequently the wider county area and the region. This scenario would restrain the Masterplan Areas from attaining a sustainable mix of population, employment and neighbourhood services and the associated services required to sustain new communities.

4.2.2.4 Alternative Scenario 3: *Market-Driven Approach*

Alternative Scenario 3: *Market-Driven Approach* (see Figure 4.3) includes additional lands to be zoned which further extend the urban footprint of the Town to the extreme boundaries of the Environs. The additional lands would comprise a mix of uses including residential, business/ employment, public/ community/ educational and open space. This scenario is likely to detract from the Town Centre and existing areas of employment as increased available large scale land parcels become available for business/employment uses. The focus in this scenario would be more market driven and developer led and may lead to an unbalanced development pattern within the Town and Environs. In addition as these additional lands were not part of the overall Masterplan approach, the sequential development of the Town would be hindered as ad hoc development could be accommodated. This scenario would not support the overall vision for the Town of improving the quality of life for people living in Tullamore.

4.2.2.5 Alternative Scenario 4: *Precautionary Approach*

Alternative Scenario 4: *Precautionary Approach* (see Figure 4.4) involves retaining the current land use zoning, aside from those areas identified as being 'at risk' from flooding under the Tullamore Flood Risk Assessment and Management Study (FRAM) as undertaken by the OPW (2008). In addition, this scenario would involve 'dezoning' lands that are affected by flooding to the east (developed areas - Whitehall and Riverside - and undeveloped areas) and to the west (undeveloped area) of the Town. The Tullamore FRAM has identified mitigation measures to avoid against flooding in the case of undeveloped land and has also identified a programme of measures to be implemented to mitigate against flooding in developed areas. Should this scenario be adopted, the floodplains identified would not be developed. However this scenario would not be in a position to provide for the needs of a linked gateway town, in that dezoning lands designated for development use including business/employment use would negatively impact on the potential of accommodating employment generating uses in a linked gateway town. Dezoning lands would also impact on the Masterplan areas, in particular the Grand Canal Quarter, as the lands were initially identified as part of a strategic response to Tullamore's designation as part of the Midlands Linked Gateway. Further development of the Town would also be jeopardised in that dezoning lands in the floodplain would create a fragmented and disjointed urban footprint and would have the potential of undermining the principle of connectivity and hindering accessibility within the Town.

The FRAM addresses the issues that arise regarding development in the floodplains and provides a series of measures to be implemented, should lands be developed. Where land is already developed, the FRAM has clear recommendations to implement measures to avoid against further flooding. Whilst the floodplains would be preserved, this scenario would not lead to a successful, prosperous and networked linked gateway town. Through implementing the provisions of the FRAM, a balance can be reached which reflects a precautionary approach without having to dezone lands.

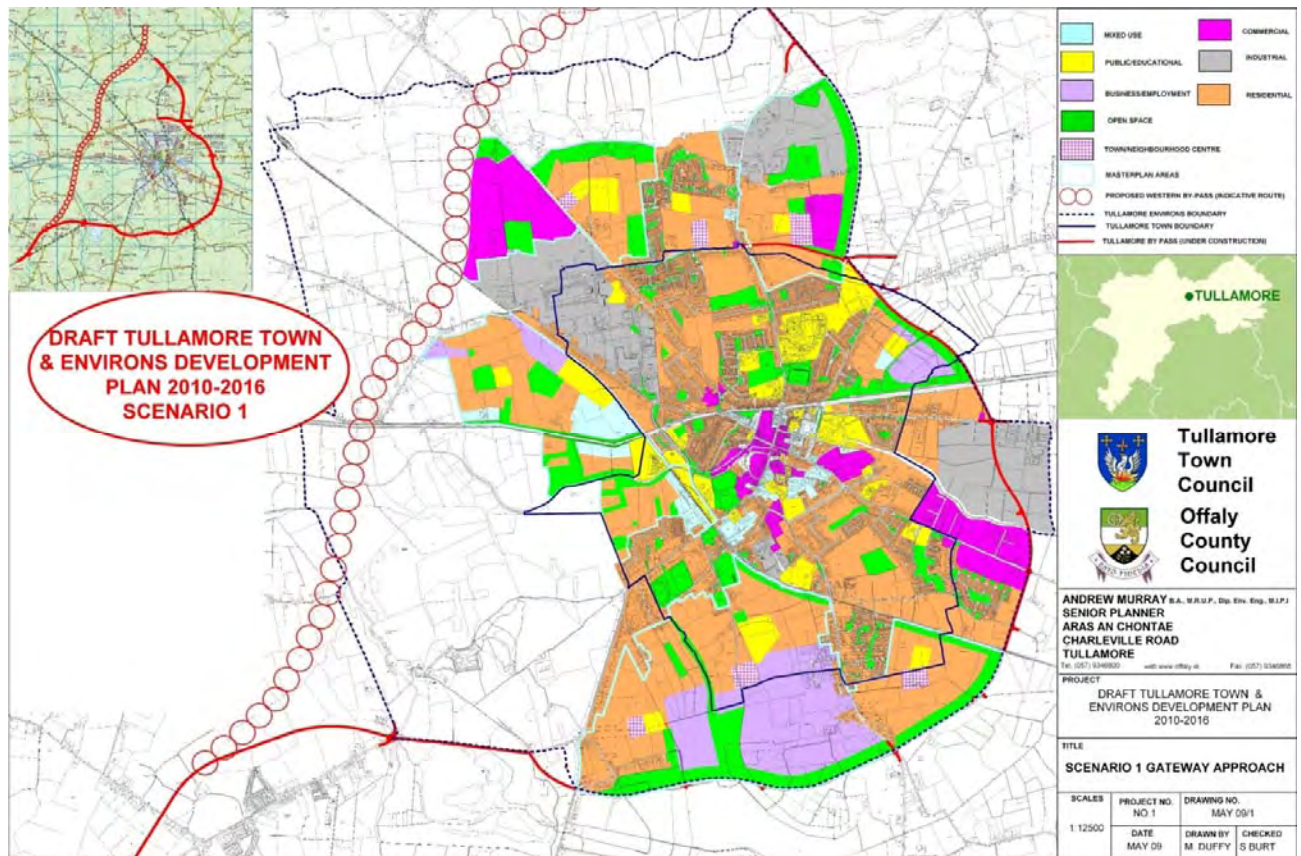


Figure 4.1 Alternative Scenario 1: *Gateway Approach*

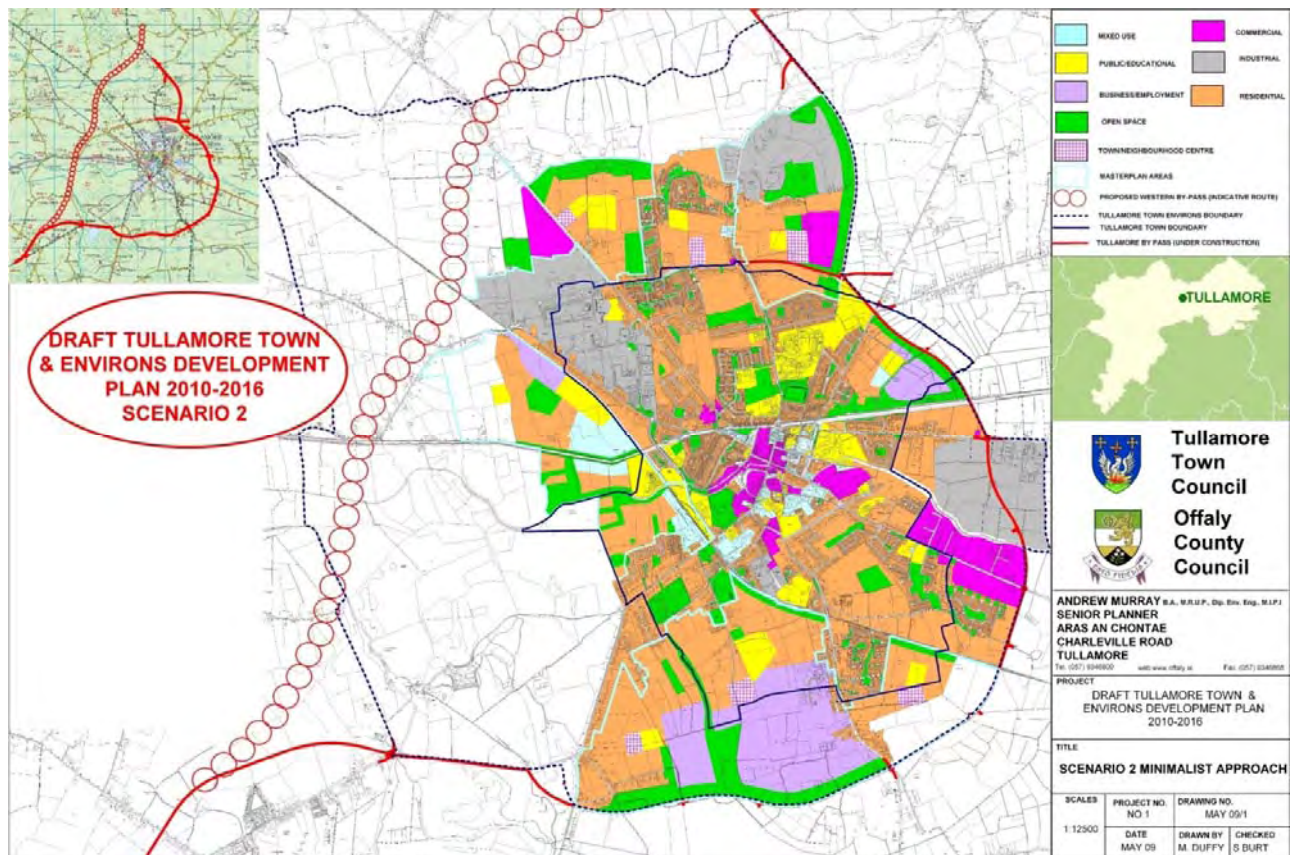


Figure 4.2 Alternative Scenario 2: *Minimalist Approach*

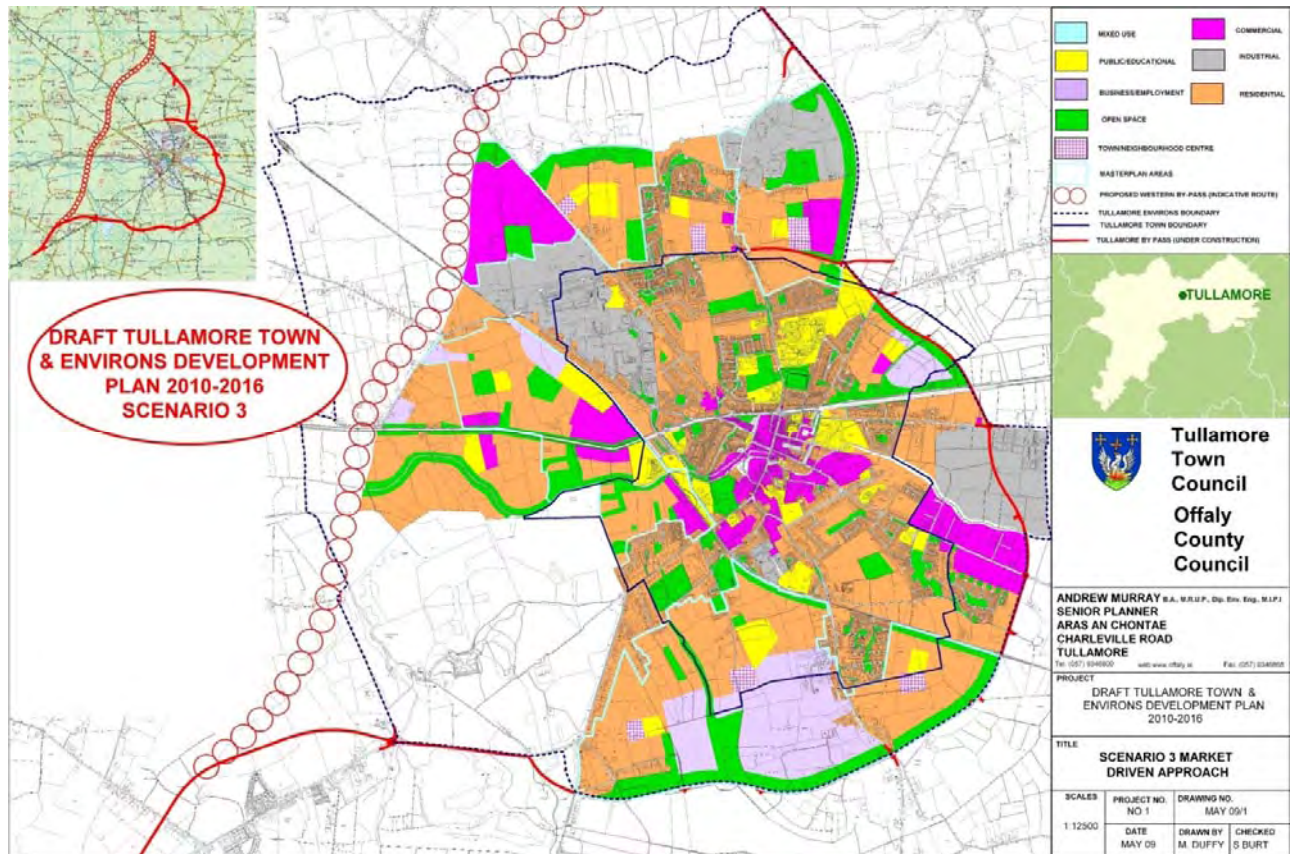


Figure 4.3 Alternative Scenario 3: *Market-Driven Approach*

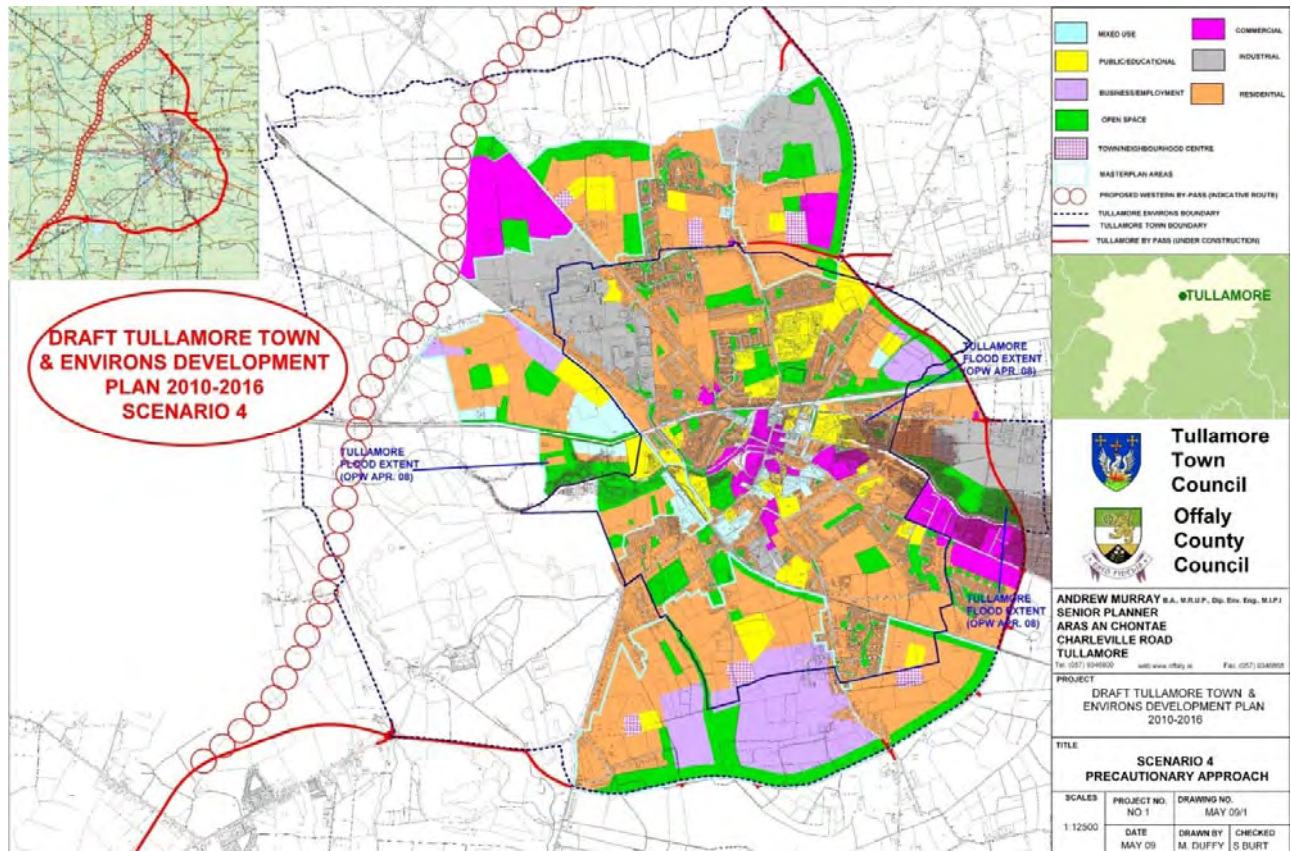


Figure 4.4 Alternative Scenario 4: *Precautionary Approach*

4.3 Evaluation of the Alternative Plan Scenarios

4.3.1 Methodology

4.3.1.1 Existing Environment and Overlay Mapping

In order to identify the extent to which environmental sensitivities are likely to be impacted upon by implementation of the 4 scenarios, use was made of the environmental baseline provided within Section 3.

Overlay mapping (see Figure 3.1) is used for this purpose.

4.3.1.2 Strategic Environmental Objectives (SEOs)

Based on an understanding of the existing and emerging environmental conditions in Tullamore a series of SEOs were identified and developed in order to assess the likely environmental effects which would be caused by implementation of each of the 4 alternative scenarios described in Section 4.2. The alternatives are evaluated using compatibility criteria (see Table 4.1) in order to determine how they are likely to affect the status of these SEOs.

Table 4.2 brings together all the SEOs which have been developed from international, national and regional policies which generally govern environmental protection objectives.

The SEOs and the alternative scenarios are arrayed against each other to identify which interactions - if any - would cause impacts on specific components of the environment.

Where the appraisal identifies a likely conflict with the status of an SEO the relevant SEO code is entered into the conflict column - e.g. B1 which stands for SEO likely to be affected - in this instance 'to avoid loss of relevant habitats, geological features, species or their sustaining resources in designated ecological sites'.

Likely to Improve status of SEOs	Probable Conflict with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	Uncertain interaction with status of SEOs	Neutral Interaction with status of SEOs	No Likely interaction with status of SEOs
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Table 4.1 Criteria for appraising the effect of Plan provisions on Strategic Environmental Objectives

SEO Code	SEO
B1	To avoid loss of relevant habitats, geological features, species or their sustaining resources in designated ecological sites
B2	To avoid significant adverse impacts, including direct, cumulative and indirect impacts, to relevant habitats, geological features, species or their sustaining resources in designated ecological sites by development within or adjacent to these sites
B3	To sustain, enhance or - where relevant - prevent the loss of ecological networks or parts thereof which provide significant connectivity between areas of local biodiversity
HH1	To protect human health from hazards or nuisances arising from exposure to incompatible landuses
S1	Maximise the sustainable re-use of brownfield lands, and maximise the use of the existing built environment rather than developing greenfield lands
W1	To maintain and improve, where possible, the quality of rivers
W2	To prevent pollution and contamination of ground water
W3	To prevent development on lands which pose - or are likely to pose in the future - a significant flood risk
W4	To serve new development with appropriate waste water treatment
W5	To serve development within the Plan area with drinking water that is both wholesome and clean
C1	To minimise increases in travel related greenhouse emissions to air
C2	To reduce car dependency within the Plan area by way of, inter alia, encouraging modal change from car to more sustainable forms of public transport and encouraging development which will not be dependent on private transport
CH1	To protect the archaeological heritage of Tullamore with regard to entries to the Record of Monuments and Places - including Zones of Archaeological Potential - and the context of the above within the surrounding landscape where relevant
CH2	To preserve and protect the special interest and character of Tullamore's architectural heritage with regard to entries to the Record of Protected Structures and their context within the surrounding landscape where relevant
L1	To avoid significant adverse impacts on the landscape - especially with regard to landscapes which are identified as being highly sensitive

Table 4.2 Strategic Environmental Objectives (SEOs)⁶

⁶ Strategic Environmental Objectives (SEOs) are methodological measures which are developed from international and national policies which generally govern environmental protection objectives and against which the environmental effects of the Plan were tested. The SEOs are used as standards against which the provisions of the Plan were evaluated in order to help identify areas in which significant adverse impacts are likely to occur, if unmitigated against.

4.3.2 Evaluation against Overlay Mapping

Significant Effects [i.e. High, Extreme and Acute] are highlighted below.

Vulnerability Area	Area (km ²) affected	% of Vulnerability Areas most likely to experience development pressure
Low	0.15	1.23
Moderate	11.42	90.37
Elevated	0.9	7.19
High	0.13	1.04
Extreme	0.02	0.16
Acute	<0.01	0.01
Total	12.62	100

Table 4.3 Quantification of Environmentally Vulnerable Areas most likely to be significantly affected by Scenario 1: *Gateway Approach* [i.e. 0.16 km² or 1.21% of areas of vulnerability]

Vulnerability Area	Area (km ²) affected	% of Vulnerability Areas most likely to experience development pressure
Low	0.16	1.31
Moderate	10.66	89.94
Elevated	0.88	7.46
High	0.13	1.11
Extreme	0.02	0.17
Acute	<0.01	0.01
Total	11.85	100

Table 4.4 Quantification of Environmentally Vulnerable Areas most likely to be significantly affected by Scenario 2: *Minimalist Approach* [i.e. 0.16 km² or 1.29% of areas of vulnerability]

Vulnerability Area	Area (km ²) affected	% of Vulnerability Areas most likely to experience development pressure
Low	0.15	1.14
Moderate	12.04	88.24
Elevated	0.99	7.24
High	0.16	1.16
Extreme	0.30	2.21
Acute	<0.01	0.01
Total	13.64	100

Table 4.5 Quantification of Environmentally Vulnerable Areas most likely to be significantly affected by Scenario 3: *Market Driven Approach* [i.e. 0.47 km² or 3.38% of areas of vulnerability]

Vulnerability Area	Area (km ²) affected	% of Vulnerability Areas most likely to experience development pressure
Low	0.16	1.26
Moderate	11.38	92.08
Elevated	0.71	5.72
High	0.09	0.77
Extreme	0.02	0.16
Acute	<0.01	0.01
Total	12.36	100

Table 4.6 Quantification of Environmentally Vulnerable Areas most likely to be significantly affected by Scenario 4: *Precautionary Approach* [i.e. 0.12 km² or .94% of areas of vulnerability]

Tables 4.3 to 4.6 quantify the vulnerability areas which are likely to be impacted upon by the areas of Scenarios 1 to 4 which are most likely to come under development pressure. These areas were mapped (see Figures 4.5 to 4.9) and calculated using GIS software.

The measurements indicate that:

- Scenario 3 would be likely to have a greater impact upon each of the more of the higher vulnerability classes (0.47 km² or 3.38%) i.e. *High Vulnerability, Extreme Vulnerability and Acute Vulnerability* to a greater extent than all the other scenarios (0.16km² or 1.14%, 0.16 km² or 1.21%, 0.12 km² or 1.00%);
- Scenario 3 would be likely to result in significantly more adverse environmental impacts than the other scenarios; and,
- Scenarios 1 and 2 cover similar extents of higher vulnerability areas as each other (0.16km²) with Scenario 4 covering the smallest extent of higher vulnerability areas (0.12km²).

4.3.3 Evaluation against SEOs

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs - would be mitigated	Uncertain interaction with status of SEOs	Neutral Interaction with status of SEOs	No Likely interaction with status of SEOs
Scenario 1: Gateway Approach	CH1 CH2		B1 B2 B3 S1 W1 W2 W3 C1 C2 W4 W5 CH1 CH2	L1		
Scenario 2: Minimalist Approach	CH1 CH2		B1 B2 B3 S1 W1 W2 W3 C1 C2 W4 W5 CH1 CH2	L1		
Scenario 3: Market-Driven Approach	CH1 CH2	B1 B2	B3 S1 W1 W2 W3 C1 C2 W4 W5 CH1 CH2	L1		
Scenario 4: Precautionary Approach	CH1 CH2		B1 B2 B3 S1 W1 W2 W3 C1 C2 W4 W5 CH1 CH2	L1		

Table 4.7 Evaluation of Alternative Scenarios against SEOs

Table 4.7 provides the evaluation of Alternative Scenarios 1, 2, 3 and 4 against the Strategic Environmental Objectives (SEOs).

Note that with regard to Scenarios 1, 2 and 3, conflicts between new development and SEO W3 (which relates to avoiding flood risk) could be mitigated by complying with measures outlined in the Tullamore Flood Risk and Assessment Management Study (Office of Public Works, 2008) and with the Flood Risk Management approach set out in the DEHLG's Planning Guidelines on the Planning System and Flood Risk Management.

4.4 Summary; the Alternative Scenario for the Draft Development Plan

The Alternatives that were examined were produced and evaluated at an earlier - more embryonic - stage to facilitate the evaluation and selection of a plan - having regard, *inter alia* to environmental consequences.

The Draft Development Plan that emerged from the Plan preparation process was Scenario 1 – this is one of the Scenarios with the least impact on the environment and one of the highest conformances with relevant national and regional planning objectives. The assessment showed that a market-led approach – Scenario 3 - had the potential to give rise to environmental effects on nearly 3 times more vulnerable lands than this scenario and was regarded as the least environmentally compatible version.

Note that all scenarios [including Scenario 4] examined appear to have lands prone to flooding that are zoned for development.

4.5 The Adopted Development Plan

A number of relatively minor changes were made to the land use zoning map for Scenario 1 – the Draft Development Plan – before the Plan was adopted.

The evaluation for the adopted Development Plan against the SEOs is the same as the evaluation for Scenario 1 – the Draft Development Plan – against the SEOs.

The evaluation for the adopted Development Plan against the Overlay Mapping is slightly different to the evaluation for Scenario 1 – the Draft Development Plan – against this Mapping. A comparison of both of these evaluations can be made by examining the tables overleaf.

Both the Draft Development Plan and the adopted Development Plan would be likely to have conflicts to the same extent with the higher (i.e. *High Vulnerability, Extreme Vulnerability and Acute Vulnerability*) vulnerability classes (0.16km²). The adopted Development Plan would be likely to conflict with marginally less areas of vulnerability (12.48km²) than the Draft Development Plan (12.62km²).

Vulnerability Area	Area (km ²) affected	% of Vulnerability Areas most likely to experience development pressure
Low	0.15	1.23
Moderate	11.42	90.37
Elevated	0.9	7.19
High	0.13	1.04
Extreme	0.02	0.16
Acute	<0.01	0.01
Total	12.62	100

Table 4.8 Quantification of Environmentally Vulnerable Areas most likely to be significantly affected by Scenario 1: *Gateway Approach* [i.e. 0.16 km² or 1.21% of areas of vulnerability]

Vulnerability Area	Area (km ²) affected	% of Vulnerability Areas most likely to experience development pressure
Low	0.13	1.08
Moderate	11.33	90.76
Elevated	0.87	6.94
High	0.13	1.05
Extreme	0.02	0.16
Acute	<0.01	0.01
Total	12.48	100

Table 4.9 Quantification of Environmentally Vulnerable Areas most likely to be significantly affected by Scenario 1: *Gateway Approach* [i.e. 0.16 km² or 1.22% of areas of vulnerability]

With the integration of appropriate mitigation measures (including those identified in Section 9 of the Environmental Report) potential adverse environmental effects which could arise as a result of implementing this scenario would be likely to be avoided, reduced or offset.

Scenario 1 was chosen to be developed for the Development Plan by the plan-making team and put on public display and adopted – with amendments – by the Elected Members having regard to both:

1. The environmental effects which were identified by the Strategic Environmental Assessment; and,
2. Planning - including social and economic - effects.

The land use zoning map from the adopted Development Plan can be seen at Figure 4.9.

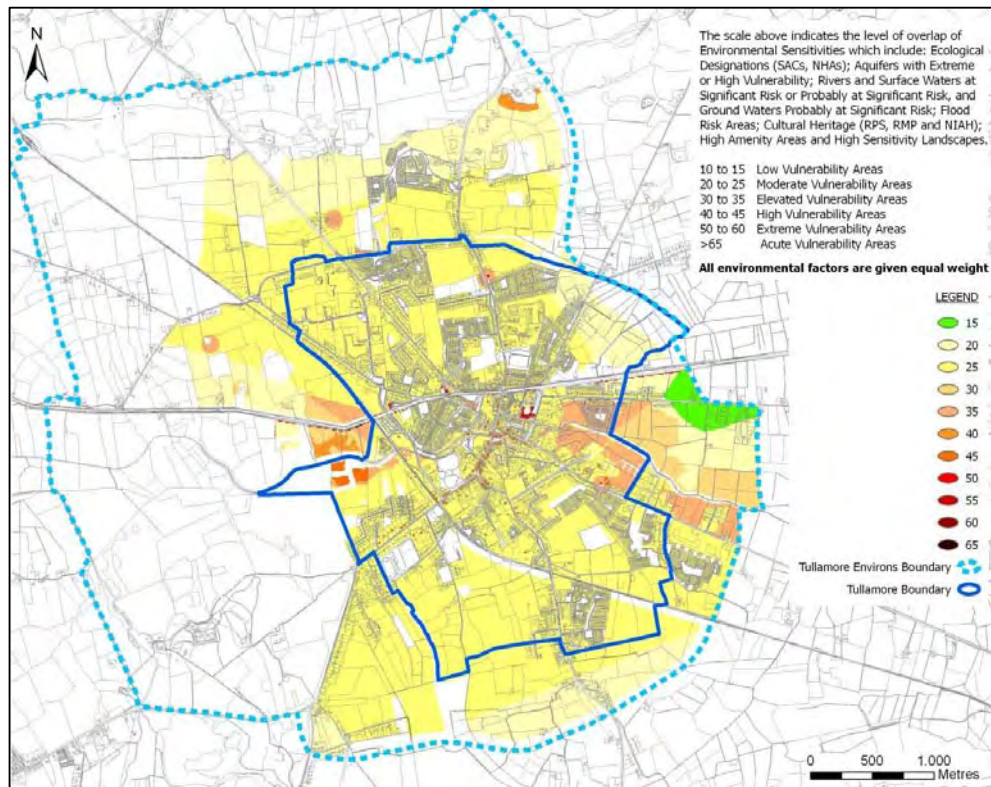


Figure 4.5 Overlay of Environmental Sensitivity Areas most likely to experience development pressure under Scenario 1: *Gateway Approach*

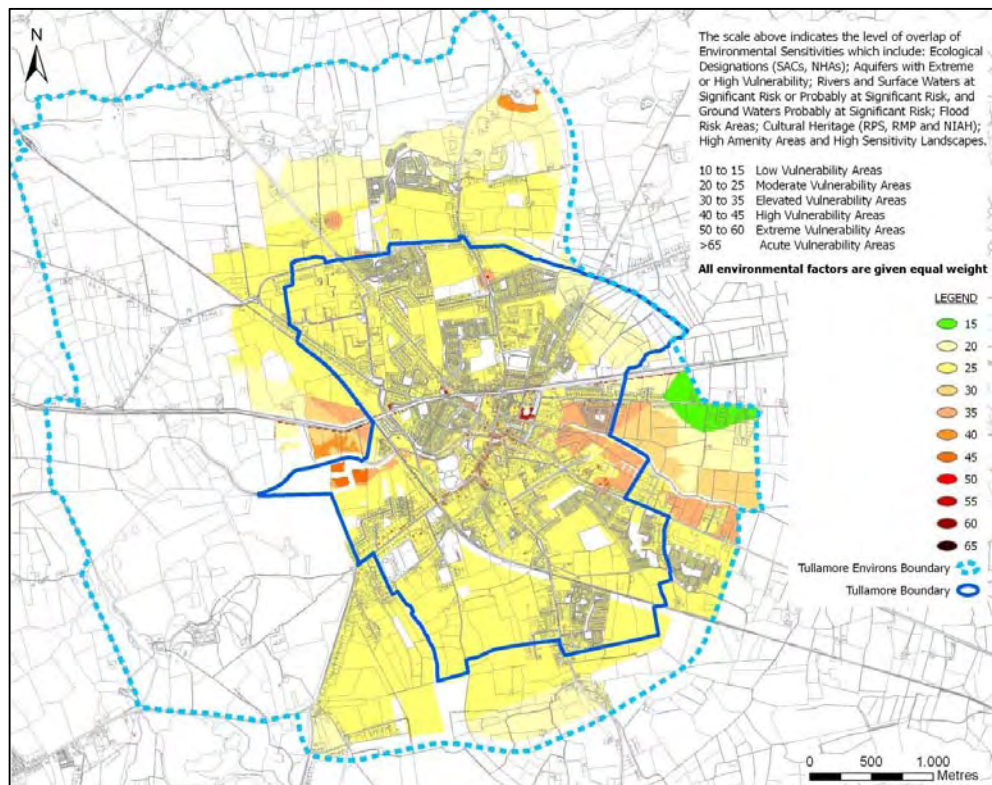


Figure 4.6 Overlay of Environmental Sensitivity Areas most likely to experience development pressure under Scenario 2: *Minimalist Approach*

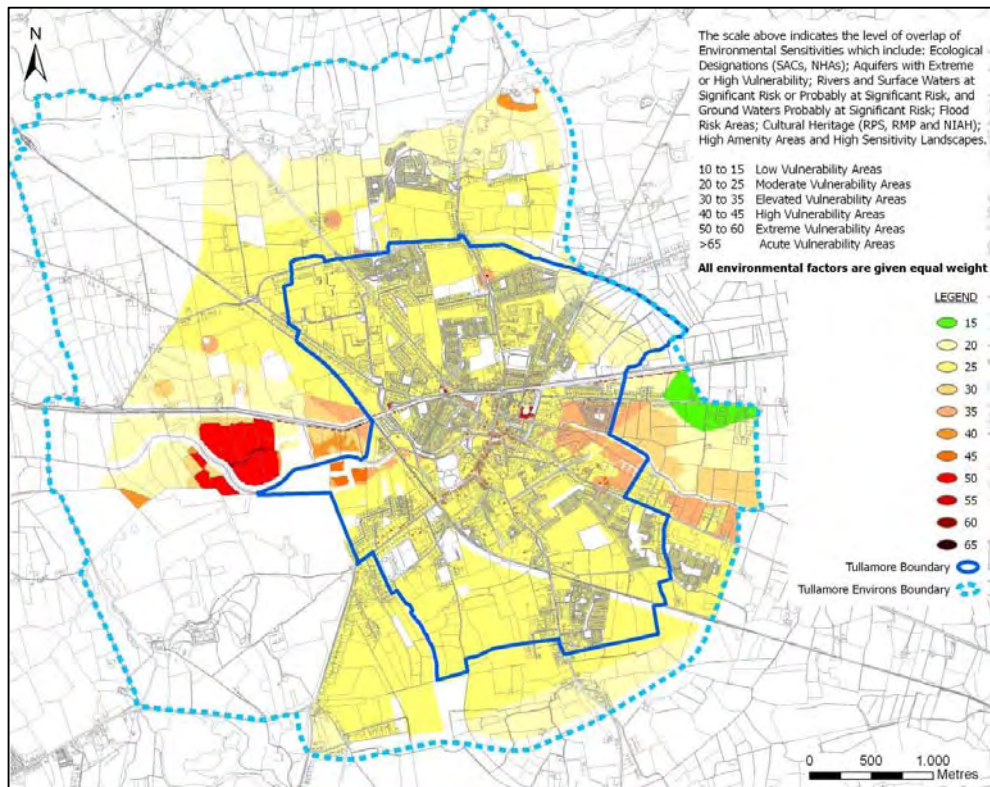


Figure 4.7 Overlay of Environmental Sensitivity Areas most likely to experience development pressure under Scenario 3: *Market-Driven Approach*

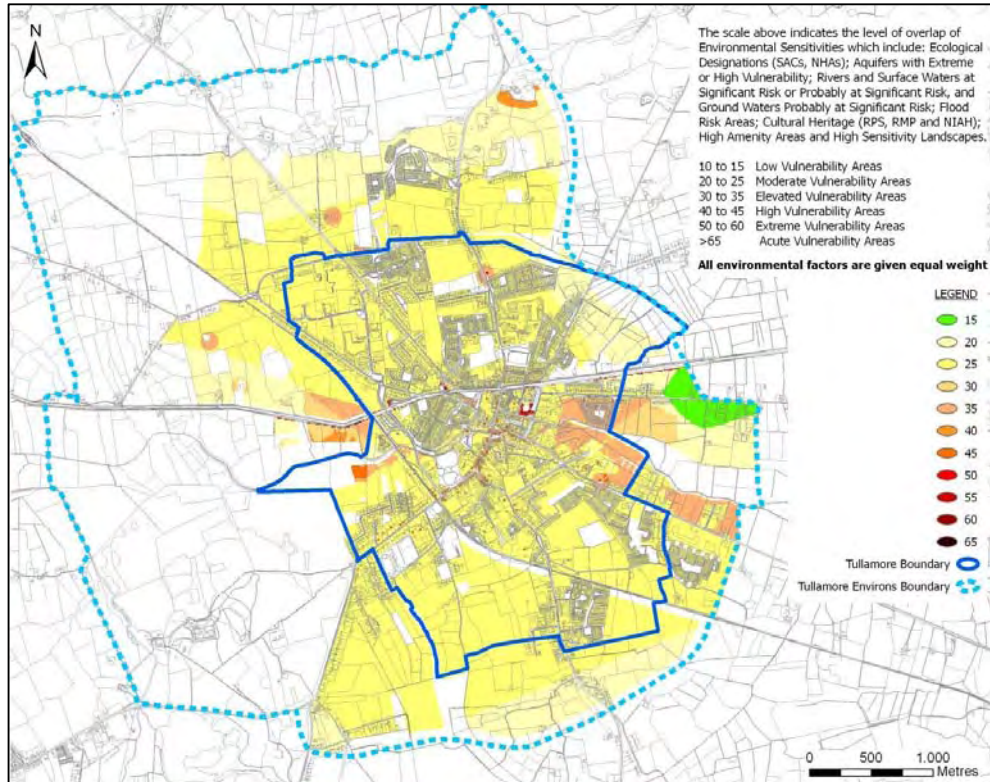


Figure 4.8 Overlay of Environmental Sensitivity Areas most likely to experience development pressure under Scenario 4: *Precautionary Approach*

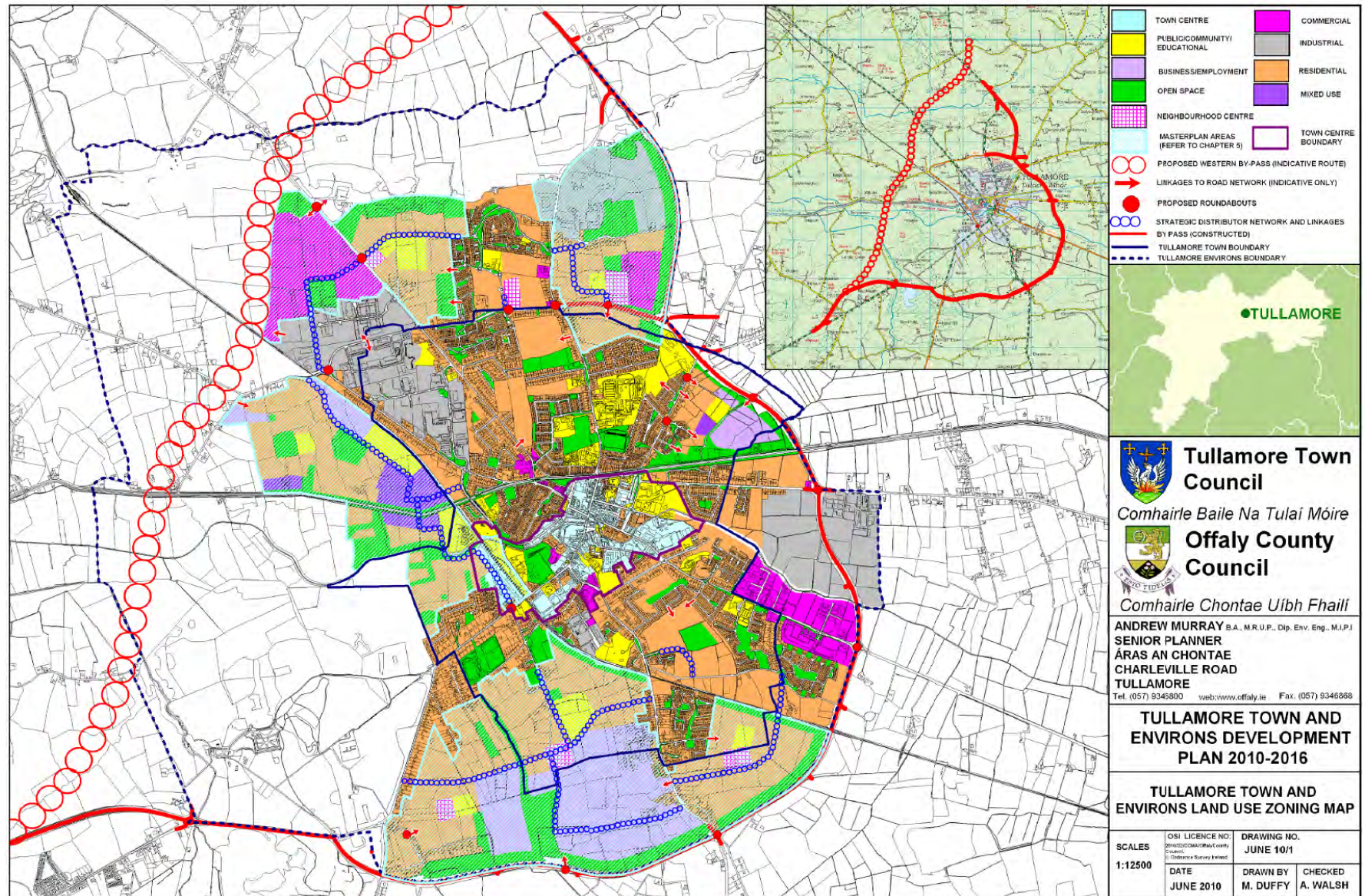


Figure 4.9 Land Use Zoning Map from the adopted Plan

Section 5 Mitigation and Monitoring Measures

5.1 Mitigation

Mitigation measures are measures envisaged to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing the Development Plan. Mitigation involves ameliorating significant negative effects. Where there are significant negative effects, consideration is given in the first instance to preventing such effects or, where this is not possible for stated reasons, to lessening or offsetting those effects. Mitigation measures can be roughly divided into those that: *avoid* effects; *reduce* the magnitude or extent, probability and/or severity of effects; *repair* effects after they have occurred, and; *compensate* for effects, balancing out negative impacts with other positive ones.

The likely significant environmental effects of implementing the Plan have been mitigated through:

- The early consideration of environmental sensitivities during the preparation of the Draft Plan;
- The consideration of alternative scenarios and the selection of the alternative scenario for the Plan;
- The integration of policies and objectives into the Plan; and,
- The augmentation of certain policies and objectives in the Plan.

Mitigating policies and objectives which have been integrated into the Plan include those for the following topics:

- Biodiversity and Flora and Fauna - Natura 2000 Sites
- Biodiversity and Flora and Fauna - Ecological Connectivity
- Human Health
- Sustainable Development of Brownfield Lands
- Water Quality
- Flooding
- Waste Water Treatment
- Drinking Water Supply and Quality
- Travel Related Greenhouse Gas Emissions
- Archaeological Heritage
- Architectural Heritage
- Landscape

5.2 Monitoring

The SEA Directive requires that the significant environmental effects of the implementation of plans and programmes are monitored. The Environmental Report puts forward proposals for monitoring the likely significant environmental effects of implementing the Plan. Monitoring enables, at an early stage, the identification of unforeseen adverse effects and the undertaking of appropriate remedial action. In addition to this, monitoring can also play an important role in assessing whether the Plan is achieving its environmental objectives and targets - measures which the Plan can help work towards - whether these need to be re-examined and whether the proposed mitigation measures are being implemented.

The Environmental Report identifies indicators - which allow quantitative measures of trends and progress in the environment over time. Measurements for indicators should come from existing monitoring sources and no new monitoring should be required to take place. A preliminary monitoring evaluation report on the effects of implementing the Plan will be prepared within two years of the making of the Plan. The Councils are responsible for collating existing relevant monitored data, the preparation of a monitoring report, the publication of this report and, if necessary, the carrying out of corrective action.