

Loughmacask Masterplan SEA Environmental Report

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**Brady Shipman
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Strategic Assessment **Built Environment**

Client:

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Glossary

Appropriate Assessment

The obligation to undertake Appropriate Assessment derives from Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC. AA is a focused and detailed impact assessment of the implications of a strategic action or project, alone and in combination with other strategic actions and projects, on the integrity of a Natura 2000 site in view of its conservation objectives.

Biodiversity and Flora and Fauna

Biodiversity is the variability among living organisms from all sources including inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems' (United Nations Convention on Biological Diversity 1992).

Flora is all of the plants found in a given area.

Fauna is all of the animals found in a given area.

Environmental Problems

Annex I of Directive 2001/42/EC of the European Parliament and of the Council of Ministers, of 27th June 2001, on the assessment of the effects of certain Plans and programmes on the environment (the Strategic Environmental Assessment Directive) requires that information is provided on 'any existing environmental problems which are relevant to the plan or programme', thus, helping to ensure that the proposed strategic action does not make existing environmental problems worse.

Environmental problems arise where there is a conflict between current environmental conditions and ideal targets. If environmental problems are identified at the outset they can help focus attention on important issues and geographical areas where environmental effects of the plan or programme may be likely.

Environmental Vectors

Environmental vectors are environmental components, such as air, water or soil, through which contaminants or pollutants, which have the potential to cause harm, can be transported so that they come into contact with human beings.

Mitigation Measures

Mitigation measures are measures envisaged to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing a human action, be it a plan, programme or project. Mitigation involves ameliorating significant negative effects. Where there are significant negative effects, consideration should be given in the first instance to preventing such effects or, where this is not possible, to lessening or offsetting those effects.

Protected Structure

Protected Structure is the term used in the Planning and Development Act and Regulations (as amended) to define a structure included by a planning authority in its Record of Protected Structures. Such a structure shall not be altered or demolished in whole or part without obtaining planning permission or confirmation from the planning authority that the part of the structure to be altered is not protected.

Recorded Monument

A monument included in the list and marked on the map which comprises the Record of Monuments and Places that is set out County by County under Section 12 of the National Monuments (Amendment) Act,

1994 by the Archaeological Survey of Ireland. The definition includes Zones of Archaeological Potential in towns and all other monuments of archaeological interest which have so far been identified. Any works at or in relation to a recorded monument requires two months' notice to the former Department of the Environment, Heritage and Local Government (now Department of Arts, Heritage and the Gaeltacht) under Section 12 of the National Monuments (Amendment) Act, 1994.

SEA (Strategic Environmental Assessment)

Strategic Environmental Assessment (SEA) is the formal, systematic evaluation of the likely significant environmental effects of implementing a plan or programme before a decision is made to adopt it.

SEA Scoping

Scoping is the process of determining what issues are to be addressed, and setting out a methodology in which to address them in a structured manner appropriate to the plan or programme. SEA coping is carried out in consultation with appropriate environmental authorities.

Strategic Actions

Strategic actions include: Policies / Strategies, which may be considered as inspiration and guidance for action and which set the framework for Plans and programmes; Plans, sets of coordinated and timed objectives for the implementation of the policy; and Programmes, sets of projects in a particular area.

Strategic Environmental Objective (SEO)

Strategic Environmental Objectives (SEOs) are methodological measures developed from policies which generally govern environmental protection objectives established at international, Community or Member State level and are used as standards against which the provisions of the Masterplan and the alternatives can be evaluated in order to help identify which provisions would be likely to result in significant environmental effects and where such effects would be likely to occur, if - in the case of adverse effects - unmitigated.

1 Introduction

This is the Environmental Report of the Strategic Environmental Assessment (SEA) for the Masterplan for the Loughmacask development lands in Kilkenny City (as identified in the *Kilkenny City & County Development Plan 2021 – 2027*).

The terms ‘Masterplan area’ and ‘development lands’ are used interchangeably in this report to refer to the lands which have been identified in the *Kilkenny City & County Development Plan 2021 – 2027* as the subject of the non-statutory Loughmacask Masterplan.

The *Kilkenny City and County Development Plan 2021-2027* already provides for land use, zoning and objectives for the Loughmacask area. The development plan also includes a specific objective (Z8 – City Zoning Objectives) to prepare a masterplan for the Loughmacask area. It is noted that during its preparation the *Kilkenny City and County Development Plan 2021-2027*, including the Loughmacask area, was subject to full SEA, Appropriate Assessment (AA) and Strategic Flood Risk Assessment (SFRA)¹.

The following report has been prepared to comply with the provisions of Article 12 of S.I. 435 of 2004 – European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations – as amended by S.I. 200 of 2011 – European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011.

The Report has had due regard to the SEA Guidelines², in particular: -

- The current knowledge and methods of assessment;
- The contents and level of detail in the Plan;
- The stage of the Plan in the decision-making process;
- The extent to which certain matters are more appropriately assessed at different levels in the decision-making process in order to avoid duplication of the environmental assessment; and
- Consultation with the SEA Environmental Authorities.

This report should be read in conjunction with the Loughmacask Masterplan and the SEA Statement and the Natura Impact Report (Appropriate Assessment).

¹ <https://www.kilkennycoco.ie/eng/services/planning/development-plans/city-and-county-development-plan/adopted-city-and-county-development-plan.html>

² <https://www.gov.ie/en/publication/95b66-strategic-environmental-assessment-sea-guidelines/>

2 Strategic Environmental Assessment

2.1 Introduction

Directive 2001/42/EC³ ('SEA Directive') of the European Parliament and of the Council on the assessment of the effects of certain plans and programmes on the environment requires Member States of the EU to assess the 'likely significant environmental effects' of plans and programmes prior to their adoption. This provides for the assessment of strategic environmental considerations at an early stage in the decision-making process.

Article 1 of the SEA Directive states that:

"The objective of this directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that, in accordance with this directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment."

The SEA Directive was transposed into Irish law through:

- Statutory Instrument (S.I.) No. 435 of 2004 The European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, as amended by S.I. No. 200 of 2011 European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011; and
- S.I. No. 436 of 2004 Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2004, as amended by S.I. No. 201 of 2011 Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2011.

The former regulations, (S.I. No. 435 of 2004 as amended by S.I. No. 200 of 2011), relate to SEA as it applies to plans or programmes prepared for "agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism and town and country planning or land use"⁴.

The latter regulations (S.I. No. 436 of 2004 as amended by S.I. No. 201 of 2011) relate to SEA as it applies to plans or programmes where the context requires, "a development plan, a variation of a development plan, a local area plan (or an amendment thereto), regional planning guidelines or a planning scheme"⁵.

As a non-statutory land use plan the Loughmacask Masterplan has been assessed for SEA under the requirements of former S.I. No. 435 of 2004 as amended by S.I. No. 200 of 2011.

The SEA process is designed to ensure that significant environmental effects arising from plans are:

- Properly identified and assessed;
- Subject to public participation;
- Taken into account by decision makers; and
- Regularly monitored.

SEA is an important instrument to help to achieve sustainable development in public planning and policy making as it:

- Support sustainable development;
- Improve the evidence base for strategic decisions;

³ SEA Directive: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32001L0042&from=EN>

⁴ See Section 9(1)(a)

⁵ Section 5(c)

- Facilitate and respond to consultation with stakeholders; and
- Streamline other processes such as Environmental Impact Assessments of individual development projects.

The SEA Directive and SEA Regulations require that competent authorities determine whether the implementation of plans or programmes, or modifications thereof, will be likely to have significant effects on the environment. This determination process is referred to as an Environmental Assessment and defined as:

“...the preparation of an environmental report, the carrying out of consultations, the taking into account of the environmental report and the results of the consultations in decision-making and the provision of information on the decision...”⁶

2.2 SEA Screening and Requirement for SEA

As per the SEA Guidelines, “*screening*” is the process for deciding whether a particular plan, other than those for which SEA is mandatory, is likely to have significant environmental effects, and thus requires formal SEA to be undertaken. It precedes the commencement of the SEA process itself where SEA is deemed to be required.

SEA is a mandatory requirement for plans:

- a) Which are prepared for certain specified sectors (including land use planning), and which set the framework for future development consent of projects listed in Annex I or Annex II of the Environmental Impact Assessment (EIA) Directive; or
- b) Which, in view of the likely effect on European sites, have been determined to require an assessment under the Habitats Directive.

A pre-screening check was carried out in respect of the Draft Loughmacask Masterplan and, having regard to the steps set out in S.I. 435 of 2004, as amended (refer to Figure 3.1 in the SEA Guidelines), it was determined that SEA is a mandatory requirement for the plan.

2.3 Appropriate Assessment

The EU Habitats Directive (92/43/EEC) requires an Appropriate Assessment (AA) to be carried out where a plan or project is *likely to have a significant impact* on a Natura 2000 site. Natura 2000 sites include Special Areas of Conservation (SAC) and Special Protection Areas (SPA).

Stage 1 is to establish whether AA is required for the particular plan or project. This stage is referred to as ‘screening for the requirement for AA’, and its purpose is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project, alone or in combination with other plans or projects, could have significant effects on a Natura 2000 site, in view of the site’s conservation objectives.

As set out in Department Circular Letter SEA 1/08 & NPWS 1/08⁷ (15 February 2008), Screening for AA is of relevance to SEA screening in that *“where following screening, it is found that the draft plan or amendment may have an impact on the conservation status of a Natura 2000 site or that such an impact cannot be ruled out, adopting the precautionary approach:*

- *An AA of the plan must be carried out, and*
- *In any case where SEA would not otherwise be required, it must also be carried out.”*

⁶ Article 2b of Directive 2001/42/EC, European Union, Article 2 c of EC (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 S.I No. 435 of 2004

⁷ NPWS SEA letter: <https://www.npws.ie/sites/default/files/general/circular-sea-01-08.pdf>

Hence, where a plan requires AA, it shall also require SEA.

A Stage 2 Appropriate Assessment (AA) and the preparation of a Natura Impact Report (NIR) has been undertaken alongside the preparation of the Masterplan and the SEA Environmental Report.

The AA has concluded that the Masterplan will not affect the integrity of the Natura 2000 network.

2.4 Site Specific Flood Risk Assessment

A Site Specific Flood Risk Assessment (SSFRA) has been prepared in accordance with the OPW guidelines, *the Planning System and Flood Risk Management – Guidelines for Planning Authorities* (2009) in respect of the Loughmacask Masterplan by AWN Consulting (refer to standalone report). Potential changes to the risk of flooding within the Masterplan area as a result of climate change have also been assessed in line with national guidance in the *Climate Change Sectoral Adaptation Plan*.

The conclusions of the SSFRA may be summarised as follows:

- All of the lands earmarked for residential development within the Masterplan area under the Development Plan are situated in Flood Zone C, where there is a low probability of flooding, and where development of this nature is regarded as ‘appropriate’, as per the OPW guidelines.
- Nevertheless, for development units located in Flood Zone C but adjoining or proximate to Flood Zones A or B (i.e. River Breagagh Park), there is a potential future risk of flooding due to climate change.
- Additionally, groundwater flood mapping from the Geological Survey of Ireland (GSI) indicates that there is localised groundwater flooding at Lough Macask. While the medium probability flood zone is contained within lands earmarked for open space / amenity, the low probability (0.1% AEP) flood zone traverses Lousybush Lane and partially enters areas earmarked for residential and community (school) use.
- Development in the Masterplan area will incorporate sustainable drainage systems (SuDS) measures to mitigate flood risk and mitigation-by-design (e.g. finished floor levels above the 1-in-100 year fluvial flood level, and step-ups from road levels) to prevent ingress.

2.5 Consultation with Environmental Authorities (Scoping of Environmental Report)

The pre-screening exercise in respect of the Draft Loughmacask Masterplan concluded that it should be subject to SEA and therefore, in accordance with sub-article 11(2)(a) of S.I. 435/2004 as amended by S.I. 200/2011, the competent authority, Kilkenny County Council, must prepare an environmental report of the likely significant effects on the environment of implementing the plan.

The requirement to prepare an Environmental Report for the Loughmacask Masterplan was subject to consultation and scoping with the following SEA Environmental Authorities in accordance sub-articles 9(5) and 11(2) of S.I. 435/2004 as amended by S.I. 200/2011:

- Environmental Protection Agency (EPA);
- The Minister for Housing, Local Government and Heritage;
- The Minister for the Environment, Climate and Communications; and
- The Minister for Agriculture, Food and the Marine.

Submissions / observations on the scoping of the Environmental Report were received from the following authorities and comments have been incorporated into the Environmental Report as set out.

Table 2.1: SEA Scoping Submissions / Observations from Environmental Authorities

Environmental Authority	Outline of Nature of Submission	Response to consideration of nature of submission
EPA	Ensure that the Plan aligns with key relevant higher-level plans and programmes and is consistent with the relevant objectives and policy commitments of the National Planning Framework and the Regional Spatial and Economic Strategy for the Southern Region.	The Loughmacask Masterplan has been set within the context of the relevant higher level plans, including the objectives and policy of the NPDP and RSES for the Southern Region (refer to Section 3 of this report).
	Provides links to current guidance / good practice in relation to SEA.	The preparation of the Environmental Report has had regard to current guidance and good practice.
Minister for Environment, Climate and Communications (Inland Fisheries Ireland)	The submission notes that the main river channel impacted by the Loughmacask Masterplan is the Bregagh River, which flows to the Nore River, a nationally important salmonid fishery. The Nore River is part of the River Barrow and River Nore Special Area of Conservation (SAC).	This is acknowledged in the SEA Environmental Report and the AA Natura Impact Report.
	The lower Bregagh (Kilkenny) O30, currently has an Ecological Status of <i>Poor</i> and is <i>At Risk</i> of not reaching Good Status by 2027.	Status of the river is noted in the Environmental Report.
	In addition to Agriculture, the significant pressures for the Breagagh are Industry and Hydromorphology (Channelisation and Embankments).	Pressures are noted in the Environmental Report.
	<p>Biodiversity</p> <p>Identification and protection of significant habitats should pay particular attention to aquatic habitats, particularly channels which have been degraded by poor planning and design.</p> <p>Impacts from construction of new water crossings or upgrade of existing crossings should be considered.</p> <p>IFI should be consulted at the design stage for any works which have the potential to impact the aquatic habitat.</p>	<p>Reflected in the Masterplan and in the Environmental Report.</p> <p>Considered in the Masterplan and in the Environmental Report.</p> <p>Noted in the Masterplan.</p>
	<p>Population and Human Health</p> <p>Consideration should be given to the positive impact of access to healthy aquatic and riparian habitats for wellbeing and mental health.</p> <p>The protection of the river as an angling resource, as well as being important for the</p>	<p>Reflected in the Masterplan and Environmental Report.</p> <p>Noted in the Masterplan and Environmental Report.</p>

Environmental Authority	Outline of Nature of Submission	Response to consideration of nature of submission
	<p>water environment, is also of significance for its recreational, cultural and landscape value.</p>	
	<p>Soil</p> <p>Run-off from hard surfaces and roads should be managed to protect water courses. The incorporation of sustainable drainage systems (SuDS) can attenuate pollution from transport infrastructure, including suspended solids. When adequately designed and constructed, these can also add amenity and recreational value.</p> <p>Reference should be made to the Inland Fisheries Ireland document <i>Planning for Watercourses in the Urban Environment</i> for further information.</p>	<p>Noted in the Masterplan and Environmental Report.</p> <p>Noted in the Masterplan and Environmental Report.</p>
	<p>Water</p> <p>IFI advocates the application of the precautionary principle when considering the fisheries resource in the screening and planning process.</p> <p>Regarding the current baseline environmental conditions IFI’s WFD Fish surveys should be taken into consideration.</p> <p>Article 5 of the Surface Water Regulations (SI 272 of 2009) requires that a public authority shall not knowingly cause or allow deterioration in the chemical or ecological status of a body of surface water. Article 28(2) states that a surface water body whose status is determined to be less than good shall be restored to at least good status.</p> <p>The Masterplan should permit and contribute to the restoration of the Breagagh River to Good ecological status within the third cycle of the River Basin management Plan. This should include specific provisions to address the significant pressures on the sub-catchment identified in the EPA’s catchment assessment and referred to above.</p> <p>Particular attention should be given to the removal of poorly sited and poorly designed water crossings which act as barriers to fish migration. Engineering works on or in watercourses should not negatively impact their hydromorphological or ecological status.</p> <p>Reference should be made to Inland Fisheries Ireland’s <i>Guidelines on Protection of Fisheries during construction works in and adjacent to</i></p>	<p>Noted in the Masterplan and Environmental Report.</p> <p>Noted in Environmental Report.</p> <p>Noted in Environmental Report.</p> <p>Noted in the Masterplan and Environmental Report.</p> <p>Noted in the Masterplan and Environmental Report.</p> <p>Noted in the Masterplan and Environmental Report.</p>

Environmental Authority	Outline of Nature of Submission	Response to consideration of nature of submission
	<p><i>Waters</i> when construction works are being planned or carried out.</p> <p>Where there is potential for the removal or replacement of barriers to fish passage, for example weirs, poorly designed and/or undersized bridges and culverts, these should be considered in the design phase. Consultation should be carried out with Inland Fisheries Ireland before such proposals are submitted for planning approval.</p> <p>Pollution from diffuse urban sources such as storm water overflows, combined sewer and storm water overflows and run-off from hard impermeable surfaces such as roads should also be considered. Road run-off can contain suspended solids, toxic metals, hazardous chemicals and microplastics. These pollutant levels must be reduced to an acceptable level before being allowed to discharge into surface waters.</p> <p>Sustainable drainage systems (as a component of water sensitive urban design) or similar passive treatment systems should be mandatory in new urban or road developments. Retrofitting of SuDS in urban areas should be considered where possible.</p> <p>The hydraulic and organic capacity of the available wastewater treatment infrastructure should be considered before planning is provided for new development. This should be included as a prerequisite of any application for planning.</p>	<p>Noted in the Masterplan and Environmental Report.</p> <p>Noted in the Masterplan and Environmental Report.</p> <p>Noted in the Masterplan and Environmental Report.</p> <p>Noted in the Masterplan and Environmental Report.</p>
	<p>Climate Change</p> <p>The co-benefits of climate resilience measures with water quality, biodiversity and flood mitigation should be maximised. These can also improve human wellbeing and quality of life.</p> <p>Appropriate riparian planting can improve the climate resilience of watercourses. Maintaining and restoring channel sinuosity also enhances climate resilience and flood mitigation.</p>	<p>Noted in the Masterplan and Environmental Report.</p> <p>Noted in the Masterplan and Environmental Report.</p>
	<p>Material Assets</p> <p>This should include an assessment of roads and bridges and their interconnectedness with the measures identified above, especially</p>	<p>Noted in the Masterplan and Environmental Report.</p>

Environmental Authority	Outline of Nature of Submission	Response to consideration of nature of submission
	hydromorphology, urban run-off and climate resilience through flood / drought mitigation.	
<p>Minister for the Environment, Climate and Communications (Geological Survey of Ireland)</p>	<p>Geology, Hydrogeology & Soils</p> <p>The Geological Survey of Ireland (GSI) encourages the use of and reference to their publicly available datasets and studies – which are listed in the submission.</p> <p>It is noted that there are several aquifers classed as ‘Regionally Important Aquifer - Karstified (diffuse)’, a ‘Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones’, and a ‘Regionally important gravel aquifer’ underlying the area that is subject to the Draft Loughmacask Masterplan. It is, therefore, recommended that the GSI’s Groundwater Viewer be used to identify areas of High to Extreme Vulnerability in the assessment, as any groundwater-surface water interactions that might occur would be greater in these areas.</p> <p>It is also recommended that the GSI’s Aggregate Potential Mapping viewer be used to identify areas of High to Very High source aggregate potential within the area.</p>	<p>Regard has been had to the relevant GSI datasets and studies in the preparation of the Environmental Report.</p>

2.6 SEA Statement

Following approval of the Masterplan, an SEA Statement has been prepared and includes information on:

- How environmental considerations have been integrated into the Masterplan, highlighting the main changes to the Masterplan which resulted from the SEA process;
- How the SEA Environmental Report and consultations have been taken into account, summarising the key issues raised in consultations and in the Environmental Report indicating what action was taken in response;
- The reasons for choosing the Masterplan in the light of the other alternatives, identifying the other alternatives considered, commenting on their potential effects and explaining why the Masterplan, as adopted, was selected; and
- The measures decided upon to monitor the significant environmental effects of implementing of the Masterplan.

3 Relationship with Plans and Programmes (Planning Context)

The Masterplan sits within a hierarchy of statutory documents setting out public policy for, amongst other things, land use planning, infrastructure, sustainable development, tourism, environmental protection and environmental management. In its making, the Masterplan sits at the lower level of the hierarchy and must comply with relevant higher-level strategic actions / plans. These documents include plans and programmes, which have also been subject to their own environmental assessment processes, as relevant, are detailed below and referenced in the relevant sections: see **Section 5** “Current state of the environment” and **Section 6** “Strategic Environmental Objectives”.

Key amongst these is the *Kilkenny City and County Development Plan 2021-2027*, which sets out the land use and sustainable development policies and objectives for the city and county. It is an objective in the development plan (Objective Z8) to prepare a Masterplan for the Loughmacask area in Kilkenny City to replace the previous Local Area Plan (LAP). The Masterplan has been prepared in compliance with this objective.

3.1 EU Directives and Policy

The Loughmacask Masterplan and SEA Environmental Report and associated documentation has been prepared with regard to the relevant EU / International Directives and Policies. The main areas covered by European environmental law and relevant to the Plan are Nature and Biodiversity; Integrated Pollution Control; Waste Management; Air Pollution; Water Pollution; Noise Pollution; and Environmental Impact Assessment.

The following lists some of the key EU directives and policy documentation relevant to the Masterplan:

- EU Directive 91/271/EC (Urban Waste Water Treatment Directive);
- EU Directive 91/676/EC (Nitrates Directive);
- EU Directive 92/43/EEC (Habitats Directive);
- EU Directive 96/61/EC (Integrated Pollution Prevention and Control Directive);
- EU Directive 98/83/EC (Drinking Water Directive);
- EU Directive 2000/60/EC (Water Framework Directive);
- EU Directive 2001/42/EC (SEA Directive);
- EU Directive 2002/49/EC (Noise Directive);
- EU Directive 2006/118/EC (Groundwater Directive);
- EU Directive 2007/60/EC (Floods Directive);
- EU Directive 2008/1/EC (Integrated Pollution Prevention Control Directive);
- EU Directive 2008/50/EC (Air Quality Directive);
- EU Directive 2008/99/EC (Protection of the Environment);
- EU Directive 2009/28/EC (Renewables Directive);
- EU Directive 2009/147/EC (Birds Directive);
- EU Directive 2011/92/EU, as amended by Directive 2014/52/EU (EIA Directive);
- EU Directive 2012/18/EU (Energy Efficiency Directive);
- EU Directive 2012/27/EU (Seveso Directive);
- EU Common Agricultural Policy;
- EU Green Infrastructure Strategy;
- EU Stockholm Convention;
- EU (2020) Climate and Energy Package;
- EU (2020) Clean Air Policy Package;
- EU (2000) Landscape Convention;

- EU (1992) Convention on the Protection of the Archaeological Heritage;
- EU (1995) Convention on the Protection of the Architectural Heritage;
- Ramsar Convention;
- UN (1992) Convention on Biological Diversity;
- UN (1992) Framework Convention on Climate Change;
- UNESCO (1972) The Convention for the Protection of the World Cultural and Natural Heritage.

3.2 National Plans and Programmes

Likewise the Loughmacask Masterplan and SEA Environmental Report and associated documentation has been prepared with regard to relevant National legislation, policy and objectives. The main areas covered by National environmental law and relevant to the Plan are National Strategy; Habitats and Biodiversity; Climate Change; Energy Efficiency and Renewable Energy; Noise Pollution; Air Pollution; Water Pollution and Abstraction; Waste Management and Circular Economy, Heritage, including Cultural Heritage; Environmental Permits, Environmental Impact Assessment; Integrated Pollution Control; and Environmental Liability and Enforcement.

The following lists some of the key National legislation, policy and objective documentation relevant to the Masterplan:

- Air Pollution Act 1987
- Environmental Protection Agency Act 1996, as amended;
- Inland Fisheries Act 2010, as amended;
- Local Government (Water Pollution) Act 1997, as amended;
- Planning and Development Act 2000, as amended;
- Planning and Development Regulations 2001, as amended;
- Protection of the Environment Act 2003;
- Waste Management Act 1996, as amended;
- Water Services Act 2007, as amended;
- Wildlife Act 1976 as amended;
- All Ireland Pollinator Plan 2021-2025;
- Climate Action and Low Carbon Development Act 2015, as amended;
- Climate Action Plan 2021;
- Climate and Energy Framework 2030;
- Ireland 2040 - Our Plan, the National Planning Framework and the National Development Plan (2018-2027);
- National Adaptation Framework 2018;
- National Broadband Plan, 2012;
- National Clean Air Strategy [in preparation];
- National Landscape Strategy for Ireland 2015-2025;
- National Water Resources Plan – Framework Plan, 2021;
- Planning, Land Use and Transport Outlook 2040 [in preparation];
- River Basin Management Plan 2018-2021;
- River Basin Management Plan for Ireland 2022-2027 [in preparation]; and
- Strategy for Renewable Energy 2012-2020.

Some of the key Plans / Programmes, which were subject to SEA and AA, are discussed further in the following sections.

3.2.1.1 Project Ireland 2040 – National Planning Framework

Project Ireland 2040 is the Government’s overarching planning and development policy for the country to 2040. It constitutes a “*strategy to make Ireland a better country for all of its people*” by setting public investment policy at a high level. It comprises two documents: the *National Planning Framework* (NPF), which details the strategy for development to 2040; and the *National Development Plan* (NDP), which outlines the public expenditure required to implement this strategy and identifies priority future projects.

The NPF is the Government’s high-level strategic plan for shaping the future growth and development of Ireland to 2040. It is a framework to guide public and private investment to create and promote opportunities, and to protect and enhance the environment. At its core are ten National Strategic Outcomes (NSOs), “*a shared set of goals for every community across the country*” (p. 10), which the plan aims to deliver:

- Compact Growth
- Enhanced Regional Accessibility
- Strengthened Rural Economies and Communities
- Sustainable Mobility
- A Strong Economy, supported by Enterprise, Innovation and Skills
- High-quality International Connectivity
- Enhanced Amenity and Heritage
- Transition to a Low Carbon and Climate Resilient Society
- Sustainable Management of Water and other Environmental Resources
- Access to Quality Childcare, Education and Health Services

With a view to achieving these NSOs, the NPF identifies a suite of National Policy Objectives (NPOs).

The NPF identifies that, by 2040, it is expected that an additional one million people will live in Ireland. The Government predicts that there will be a need for at least half a million additional homes by 2040. In order to accommodate this growth and address the ongoing urban housing crisis in a sustainable and economical manner, the NPF establishes a policy of ‘compact growth’:

“A major new policy emphasis on renewing and developing existing settlements will be required, rather than continual expansion and sprawl of cities and towns out into the countryside, at the expense of town centres and smaller villages. The target is for at least 40% of all new housing to be delivered within the existing built-up areas of cities, towns and villages on infill and / or brownfield sites.” (p. 11)

Proximity to services and sustainable mobility options is a key consideration in terms of housing quality. The NPF requires homes to be located in places that can support sustainable development; i.e. places that are accessible to a range of local services; and which can encourage the use of public transport, walking and cycling, in order to promote more efficient and low-carbon development.

A list of ‘national core principles’ for the delivery of future housing in Ireland is set out in the NPF, and includes the following (p. 91):

- *“Ensure a high standard quality of life to future residents as well as environmentally and socially sustainable housing and place-making through integrated planning and consistently excellent design.”*
- *“Allow for choice in housing location, type, tenure and accommodation in responding to need.”*
- *“Prioritise the location of new housing provision in existing settlements as a means to maximising a better quality of life for people through accessing services, ensuring a more efficient use of land and allowing for greater integration with existing infrastructure.”*
- *“Tailor the scale and nature of future housing provision to the size and type of settlement where it is planned to be located.”*

3.2.1.2 Southern Regional Spatial and Economic Strategy

There are three administrative Regions in Ireland: the Northern and Western Region, the Southern Region, and the Eastern and Midland Region. Under national policy, Regional Assemblies are tasked with drafting Regional Spatial and Economic Strategies (RSESs), which effectively set the agenda for implementing the national level development policy – the NPF – at the Regional level. The Masterplan area is situated in the Southern Region and, therefore, falls under the remit of the Southern RSES.

In the RSES, the Growth Framework is underpinned by ‘Placemaking’ as a priority, ensuring synergy between investments and planning for strategic interventions that maximise returns for ‘People and Place’. In accordance with the NPF and RSES Kilkenny City has a targeted housing growth in housing demand of 1,627 housing units to 2027.

The RSES Vision is to make the Southern Region one of Europe’s most creative, innovative, greenest and liveable regions, with planned growth and development in suitable locations that nurtures places to realise their full potential, protects and enhances the environment, and delivers quality of life and economic growth.

3.2.1.3 Kilkenny City & County Development Plan 2021 – 2027

The *Kilkenny City & County Development Plan 2021 – 2027* (‘the Development Plan’ hereafter) was adopted on the 3 September 2021, and came into effect on the 15 October 2021. It sets out the Council’s policies and objectives for the proper planning and sustainable development of Kilkenny City and County to 2027. It has been prepared with regard to the relevant national and regional plans and policies. It is presented in two volumes, the first of which provides the overarching strategies for the City and County (e.g. the Core Strategy and Housing Strategy), and the second of which relates specifically to Kilkenny City.

The Core Strategy of the Development Plan provides an evidence-based rationale for the settlement hierarchy for Kilkenny City and County. Its strategic aim is *“To implement the provisions of the National Planning Framework (NPF) and the Regional Spatial and Economic Strategy (RSES) and to promote the compact growth of Kilkenny City [...] [and] the other settlements in the hierarchy and to strengthen rural economies and communities through growth and development of rural areas.”* (Volume 1, p. 29)

Objective 4B is to *“ensure growth is achieved in a compact form, with 40% of the projected growth of the County to be delivered in Kilkenny City and the towns and villages within the county”* (Volume 1, p.32). Kilkenny City is at the top of the settlement hierarchy for the County, being designated as the only ‘Significant Key Town’. Under the Government’s NPF and the Southern Regional Assembly’s RSES, a population growth target of 30% to 2040 is set out for Kilkenny City. The Development Plan has formalised this target through **Objective 4G**, *“To achieve a growth of more than 30% in population for Kilkenny City from 2016 to 2040 to 34,500, subject to capacity analysis and sustainable criteria under Section 3.3 of the RSES.”* (Volume 1, p. 35)

From 2021 – 2027, the Development Plan has allocated a growth target of 4,144 additional residents in Kilkenny City, with a corresponding housing demand of 1,627 units and a land requirement of 46.48 hectares. The Core Strategy aims to deliver 30% of this new housing within the existing built-up footprint (*i.e.* within the CSO city boundary), with the remainder to be accommodated on the periphery, in the Breaghagh Valley and Loughmacask areas, both of which have been subject to Local Area Plans in the past.

In relation to housing, the strategic aim of the Development Plan is *“To develop and support vibrant sustainable communities in an attractive living and working environment where people can live, work and enjoy a high quality of life, with access to a wide range of community facilities and amenities, while ensuring coordinated investment in infrastructure that will support economic competitiveness”* (Volume 1, p. 74). This is reflected in **Objective 6A**, *“To ensure the creation of attractive, liveable, well designed, high quality urban*

places that are home to diverse and integrated communities that enjoy a high quality of life and well-being” (Volume 1, p. 75).

The stated ambition for Kilkenny City is *“to grow the City to achieve the targets set out under the RSES through:*

- *a compact form of development*
- *the 4 neighbourhood model and City centre*
- *the 10-minute city concept”* (Volume 2, p. 2)

The 10-minute city concept refers to the idea that residents should be able to access local services such as shops, schools and parks within a 10-minute walk or cycle from their homes. The Development Plan notes that, given its modest scale, Kilkenny City is ideal for the adoption of this concept as a guiding principle for development. This is reflected in numerous objectives throughout the Development Plan, which seek to promote active travel and compact urban form. **Objective 12B**, for instance, is *“To plan for a transition towards sustainable and low carbon transport modes, through the promotion of alternative modes of transport, and ‘walkable communities’ together with promotion of compact urban forms close to public transport corridors to encourage more sustainable patterns of movement in all settlements”* (Volume 1, p. 236).

The ‘four neighbourhoods’ referred to above are identified in the Development Plan as:

1. Loughboy / Archerstreet;
2. Newpark Upper / Eastern Environs;
3. Poulgour / Wetlands / Western Environs (now known as Breaghagh Valley); and
4. **Loughmacask.**

It is stated that, of these, Loughboy / Archerstreet and Newpark Upper / Eastern Environs have been substantially built out, leaving the Breaghagh Valley and Loughmacask areas as the focal points for greenfield development during the lifetime of the Development Plan.

Section 2.2.4 of Volume 2 of the Development Plan sets out the Council’s policies and objectives specifically in relation to the 24.37 hectare Loughmacask development lands. It notes that a Local Area Plan was prepared for the lands in 2008 and subsequently extended until 2018.

The Masterplan that is the subject of this Environmental Report is referred to:

“A new masterplan is being prepared for the Loughmacask area to replace the LAP. A public consultation exercise was held in Jan-Feb 2020 as part of the preparation of the Masterplan, with the publication of an Issues paper and a public meeting. Following a pause due to the impact of Covid-19, work on the preparation of the Masterplan has recommenced.” (Volume 2, p. 17)

In this regard, the Development Plan notes that:

“Some significant changes have occurred to the parameters of the area since the adoption of the original LAP such as:

- *The proposed relocation of the CBS secondary school to a site within the plan area*
- *A significant proposed redevelopment of St. Canice’s primary school⁸*
- *A desire to further enhance the connectivity of the new neighbourhood back to the existing built up area.*

⁸ On the Granges Road

- *A desire to integrate the existing and new road structures to maximise the integration of land use and transportation given the extent of contiguous boundary with the existing built up area” (Volume 2, p. 17)*

In relation to the relocated CBS secondary school, the Development Plan states that “A site on the Dunningstown Road has been rezoned to Community Facilities, in order to accommodate the relocation of the CBS school from James’ Street during the plan period with an appropriate access solution to be delivered in the event of any planning application” (Volume 2, p.17). **Objective C6J** has been adopted to ensure the delivery of this school (Volume 2, p. 93):

“To secure the relocation of the CBS secondary school from James Street to a new site in the Loughmacask masterplan area.”

Volume 2 of the Development Plan provides the land use zoning for Kilkenny City, including the Loughmacask development lands, as shown in **Figure 3.1**, below. The Masterplan area contains the following zoning objectives:

- **Existing residential:** To protect, provide and improve residential amenities.
- **Amenity / green links / biodiversity conservation / open space / recreation:** To allow for green links and biodiversity conservation and to preserve, provide and improve recreational open space.
- **Strategic reserve:** To conserve and protect Strategic Reserve land from interference from non-agricultural uses. To prevent premature development of agricultural land adjacent to development areas.
- **Community facilities:** To protect, provide and improve community facilities.
- **New residential:** To protect, provide and improve residential amenities.
- **Neighbourhood centre:** To provide for local shopping, non-retail services, community and social needs.
- **Industrial / warehousing:** To provide for industrial employment and related uses.

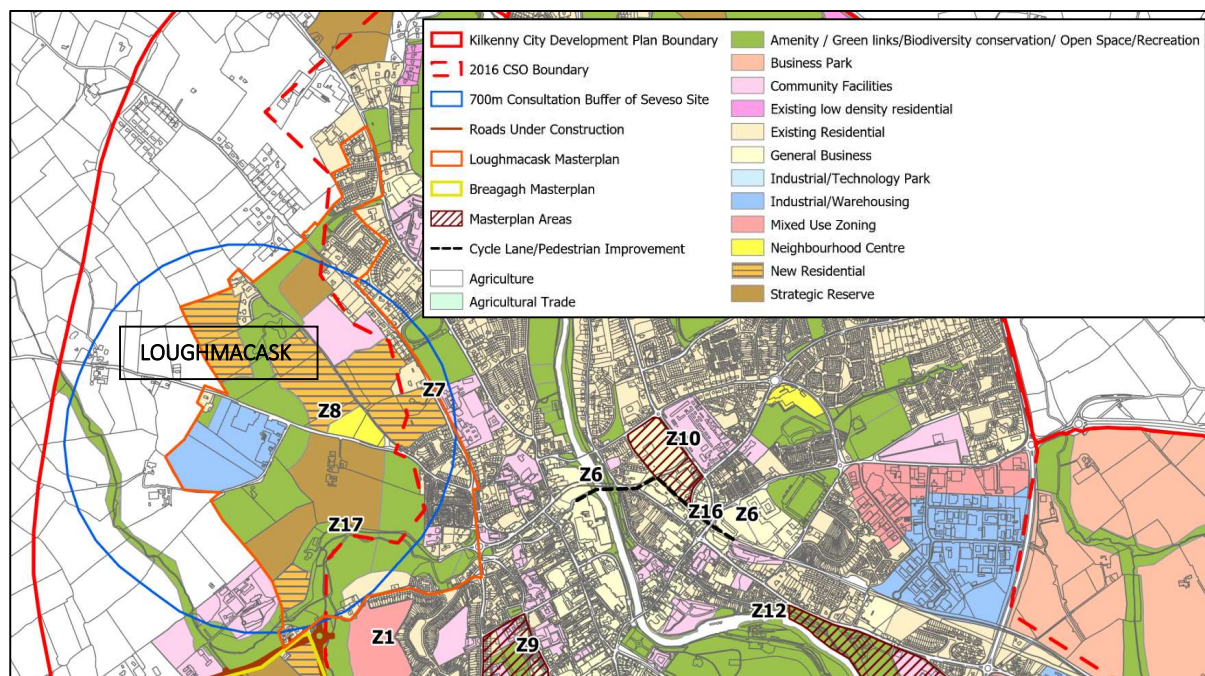
Figure 3.1 shows that the area is predominantly comprised of a combination of residential and open / green space zonings. The site of an existing industrial (SEVESO III) facility is indicated in blue (‘industrial/warehousing’), with the corresponding SEVESO III 700 m consultation distance indicated as a dark blue buffer, which takes in most of the Masterplan area. An area in the north-eastern portion of the landbank is zoned for ‘community facilities’ (pale pink), while an area towards the centre of the site has been earmarked as a ‘neighbourhood centre’ (yellow). Areas of ‘strategic reserve’, as indicated in brown, will provide for the expansion of the city beyond the period of the Development Plan (i.e. post-2027). In this regard, the Development Plan further states that “Following substantial progress being made in the development of the Breagagh and Loughmacask neighbourhoods, appropriate planning framework documents will be prepared for some of the area of Strategic Reserve as required in the longer term” (Volume 2, p. 25).

Three specific development objectives are indicated on the Loughmacask lands as follows:

- **Z7 Granges Road and the future Loughmacask village centre:** Provide pedestrian and cycle access through the lands around the former Ayrfield House between the Granges Road and the future Loughmacask village centre. The pedestrian and cycle route should be located within an open space area equivalent to a minimum of 10% of the total residential development area. The open space shall be designed in accordance with principles set out in the Urban Design Manual and the Development Plan.
- **Z8 Loughmacask:** To complete the masterplan for the Loughmacask area which will replace the former Local Area Plan.

Wastewater and access are the key infrastructural / phasing constraints for the Loughmacask development lands. The Development Plan notes that, while planning permission exists for approx. 300 houses on the lands, no significant development has taken place due to a lack of wastewater infrastructure and accessibility issues.

Figure 3.1: Land Use Zoning at the Loughmacask Masterplan Area (Z8) (Kilkenny County Council, 2021)



In relation to transport infrastructure, **Objective 12AG** seeks the completion of the Central Access Scheme, comprising “internal roads in Kilkenny City to serve the Western Environs\Breaghagh valley and Loughmacask” (Volume 1, p. 251). It is stated that “As part of the Loughmacask masterplan process, the line of the Central Access scheme within the masterplan area is under review” (p. 81).

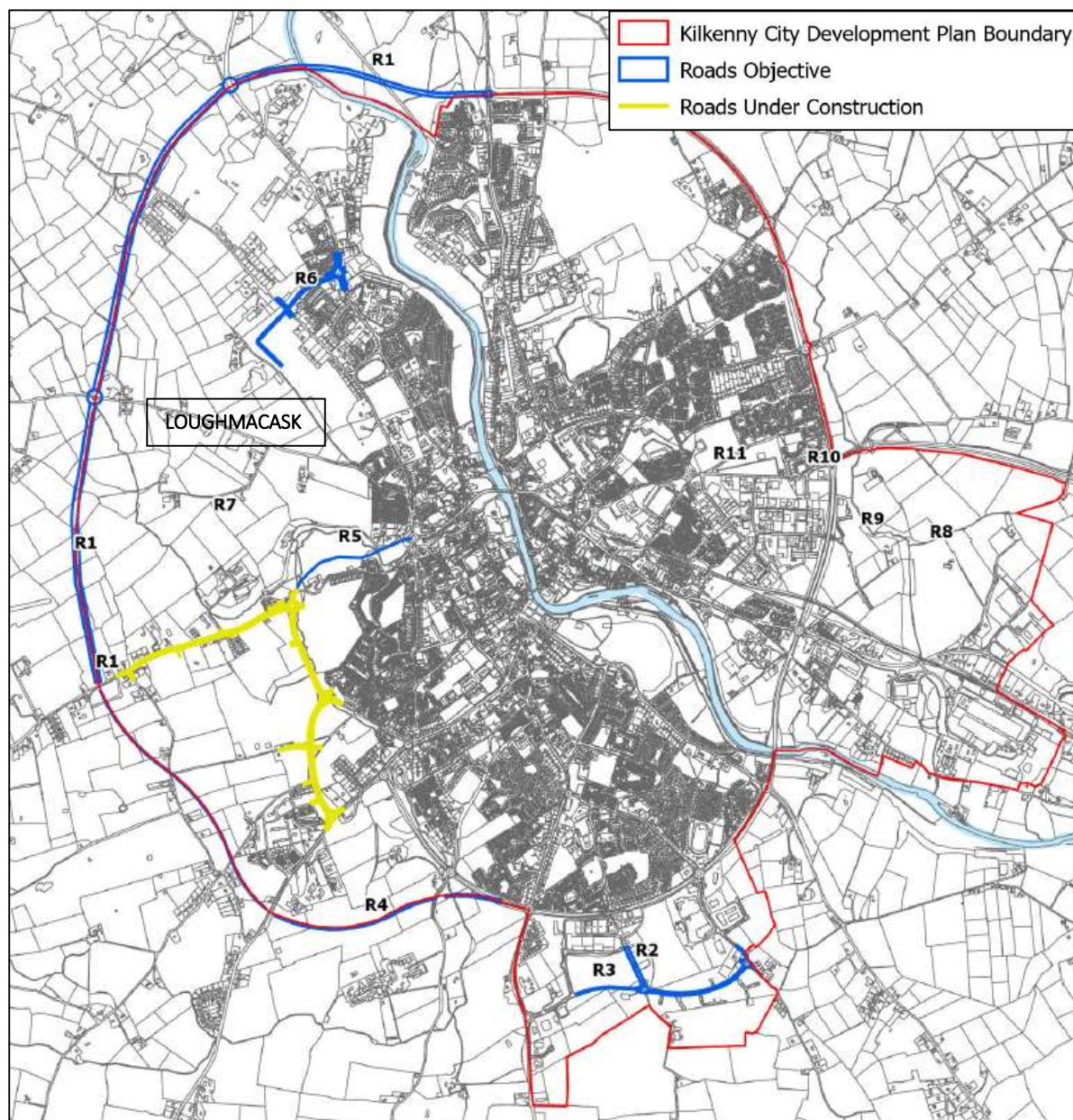
The Development Plan also refers to the planned Western Bypass scheme, which would complete the ring road surrounding Kilkenny City, ultimately linking the N78 / N76 roundabout with the Waterford Road roundabout. This road will ultimately pass outside the western margin of the development lands. The precise proposed route is not known at this stage and will be subject to a separate feasibility, route selection, design, assessment and consenting process.

Road development objectives of potential pertinence to the Masterplan lands include the following (Volume 2, p. 82):

- **Objective R1:** “Reserve the proposed line of the western by-pass for the city from the Castlecomer Road to the Waterford Road free from development, including for a river crossing and seek approval from An Bord Pleanála for Phase 1 of the Western By-pass, the Kilkenny Northern Ring Road Extension.”
- **Objective R5:** “Reserve the line of Phase 2 of the Central Access Scheme from the Waterbarrack roundabout to the roundabout on the Kilcreene Road.”
- **Objective R6:** “Provide for a road connection from the Freshford Road to the site reserved for a proposed secondary school within the Loughmacask masterplan area.”

These are mapped on **Figure 3.2**.

Figure 3.2: Kilkenny City Road Development Objectives (Kilkenny County Council, 2021)



It is estimated that the Loughmacask development lands have the potential to deliver 904 residential units. The Development Plan requires (under **Objective C6B**) that 10% of land zoned for residential use, or for mixed residential and other uses, be made available for the provision of social housing. It is also required that all new private residential developments on lands zoned in excess of 20 units provide for a minimum of 10% units that can be converted to universal design standards.

The Development Plan points out that the provision of recreational facilities is a requirement of the phased development of the Loughmacask lands:

“Provision has been made in both of these areas [Loughmacask and Breagh Valley] for open space networks, neighbourhood parks and smaller pocket parks as part of the Local Area Plans previously prepared in 2004 and 2008...” (Volume 1, p. 111)

Key areas and hedgerows / treelines of green infrastructure in Kilkenny City have been identified in the Development Plan. These are illustrated in **Figure 5.3**, below. Two major elements of this green infrastructure network overlap with the Loughmacask Masterplan area:

1. The green infrastructure corridor associated with the Breagagh River, running along the southern margin of the Masterplan area; and
2. The semi-natural area associated with Loughmacask, which is also a proposed Natural Heritage Area (pNHA).

In relation to the Breagagh River corridor, the Development Plan states that (Volume 2, pp. 98 – 99):

“The Breagagh River corridor, from the Water Barrack (westwards and southwards) is designated open space for most of its course and has the potential to be developed as a regional open space providing links from the Western Environs to the City.”

“The Council will promote the natural amenity potential of the River Nore, River Breagagh and Pockocke River in order to facilitate the development of amenity, recreational, biodiversity and tourism benefits for the city, and will work with agencies and communities to improve access and facilities along the rivers in appropriate locations subject to the availability of resources.”

In relation to the general protection of open space, the Development Plan states the following (Volume 2, p. 100):

“The Council will not normally permit development which is not compatible with or would result in the loss of green infrastructure or land zoned for recreational or open space purposes. An exception may be considered where one or more of the following requirements are demonstrably met:

- *The proposed development can clearly demonstrate that it can contribute to the making of quality space and will enhance and benefit place making in the area.*
- *There is a clear excess of playing fields or open space provision within the area. This should consider the long-term needs of the community, the type, recreational, amenity value and accessibility of such provision.*
- *Alternative compensatory provision is made which is both accessible to and of equal or greater quality and benefit to the community served by the existing open space.*
- *The continued use, proper maintenance and enhancement of the amenity/facility can best be achieved by the redevelopment of a portion of the site that will not adversely affect its overall sporting, recreational, amenity or place making value of the facility.*
- *The site is indicated for an alternative use in this Development Plan.”*

The Development Plan has defined a number of Architectural Conservation Areas (ACAs), two of which adjoin the Masterplan area: Talbot’s Inch ACA and St. Canice’s ACA; and one of which partially overlaps with the southern end of the area: St. Mary’s ACA. These are mapped in relation to the Masterplan lands in **Figure 5.5**, below.

In relation to St. Mary’s ACA, the Development Plan notes that the green belt to the south of the River Breagagh (which falls within both the ACA and the Masterplan areas) *“is an important civic area, which should to be retained development free, this area originally had a well and a mill race running through it”* (Volume 2, p. 63). A suite of development management requirements are set out in relation to St. Mary’s ACA, including the following of pertinence to the Masterplan lands (Volume 2, p. 63):

- **SMACA 2:** *“To protect the residential character, setting and appearance of the dwellings on Parnell Street, James’s Green, Kickham Street, Dominic Street, Stephens Street, Rothe Terrace and the Kennyswell Road ...”*

- **SMACA 3:** *“To protect Kenny’s Well and its setting and adjacent open space along the River Breagagh.”*
- **SMACA 5:** *“To protect the visual amenity of the Breagagh River and ensure any future developments adjacent to it address its riverside location.”*

Several views / prospects for protection have also been identified in the Development Plan. Those of pertinence to the Masterplan lands are mapped in **Figure 5.5**, below. They are as follows:

- **No. 2:** View of St. Canice’s and St. Mary’s Cathedrals from Tullaroan Road
- **No. 6:** View of St. Mary’s Cathedral from Kenny’s Well Road
- **No. 14:** View of City from Dunningstown Road

A number of development management requirements are set out in relation to protected views and prospects, including the following of pertinence to the Masterplan (Volume 2, p. 66):

“To encourage street layouts in newly developed areas which create new vistas to existing and new landmarks, in particular within brownfield sites, the Breagagh Valley and the Loughmacask lands.”

The Development Plan has been subject to SEA, AA and SFRA. These are discussed, where relevant, below.

3.3 Other Plans and Programmes

As well as EU and National Plans and Programmes, the Loughmacask Masterplan and SEA Environmental Report and associated documentation has had regard to a series of local and other plans and programmes including:

- *Kilkenny County Council Pollinator Programme 2019;*
- *Kilkenny Local Economic and Community Plan;*
- *Kilkenny Noise Action Plan 2019 – 2023;* and
- *Loughmacask Local Area Plan 2008.*

4 Outline Description of the Loughmacask Masterplan

This section provides an overview of the content of the Loughmacask Masterplan (BSM, 2023). Refer to Loughmacask Masterplan for full content.

4.1 Vision

The stated vision for Loughmacask is as follows:

- Loughmacask will be an exemplar and plan-led new residential quarter of Kilkenny City, characterised by sustainable mobility connecting people to high quality housing, local facilities and amenities and the city centre and set within a distinctive landscape and historic city context.
- Distinctive and vibrant neighbourhood, building on the existing locality and communities and providing an excellent quality of life with urban and rural amenities.
- A walkable urban quarter with day-to-day facilities and amenities within a 10 minute walk or cycle of homes - reducing private transport dependency and strengthening local communities.
- A new urban quarter that expands on and is integrated with the historic city centre as well as the natural landscape of the Nore and Breaghagh river corridors.
- Excellent provision of open space, green networks and local facilities that cater for local need, foster community growth and support health and well-being.
- Responds to climate change, through sustainable transport, energy efficient building technologies, and a strong green infrastructure network including sustainable drainage (SuDS) utilising soakaways, swales, infiltration trenches, ponds and wetlands where feasible, to assist with flood management.

4.2 Key Principles

In order to achieve the above-stated vision for Loughmacask, the Masterplan has set out the following key principles, which have been informed by national and local planning policy:

- **Compact Growth and Integration:** Loughmacask will establish a new urban quarter at Kilkenny City that is fully integrated with the City.
- **10-minute City Quarter:** Residents should be able to access local services such as shops, schools and parks within a 10-minute walk or cycle from their homes.
- **Ease of Access and Movement:** A significant difference between the Loughmacask LAP 2008 and this Masterplan is the removal of through traffic from the area by the reconfiguration of the road objectives for the area and the re-routing of through traffic. The primary vehicular access will be from the east or the west into but not through Loughmacask.
- **Sustainable Land Use:** New residential development will be the primary land use and a new secondary school will be provided at Lousybush Lane. The local centre will include an appropriate sized local supermarket, in accordance with the Development Plan Retail Strategy, and a number of smaller retail and commercial units that cater for the day-to-day need of the local community.

4.3 Key Considerations

On the basis of a review of the Masterplan, it is evident that the following factors have been taken into consideration in its preparation:

- The policies and objectives of the NPF, Southern RSES and the Development Plan;
- Planned, proposed and permitted infrastructural projects, including the Central Access and Western Bypass road projects, and the planned relocation of the CBS school and associated access road;
- The guiding principle of the 10-minute city;
- The landscape character, particularly the urban-rural interface;

- The presence of the industrial facility (Grassland Fertilisers), which is subject to the provisions of the SEVESO III Directive;
- Archaeological and architectural heritage constraints;
- Flood risk; and
- The protection of ecological features, particularly the Breagagh Valley, Lough Macask and field boundaries.

4.4 Nature and Extent of Planned Development

The land use strategy set out in the Masterplan provides for predominantly residential use, in a matrix of green space / links, and with smaller areas reserved for a local centre, existing industrial use, community use and the relocated CBS, discussed in **Section 3**, above.

In terms of residential density, the Masterplan states that higher densities will be concentrated around the local centre, *“so as to underpin the establishment of a vibrant local community and local centre and to ensure a core population in proximity to the newly planned secondary school”*, with lower densities proposed for the western margin of the lands, *“to provide appropriate interfaces”* with the rural hinterland (p. 33).

The Masterplan has defined distinct character areas, including residential established and future areas, as follows:

1. The Butts, between Loughmacask village and Kilkenny City Centre will be designated as a ‘Special Regeneration Area’;
2. Local Centre (Neighbourhood centre), a focal point at the centre of Loughmacask will contain a diverse, mixed use development, containing the main retail and commercial uses to serve the community of Loughmacask and surrounding areas.
3. Loughmacask Village, immediately south and north-west of the local centre, will be a primarily medium to high density residential area located to the north-west and to the south of proposed local centre;
4. Ayrfield, including established residential areas, will be a medium density residential area located to the north-east of Lousybush Lane which will also accommodate planned secondary school;
5. Lousybush, to the west of Lough Macask will be a lower density residential area to provide appropriate interface with agricultural context to the west;
6. Kilcreene, located to the north of River Breagagh will be a medium to low density housing area with direct frontage to River Breagagh Valley and Dicksboro GAA lands;
7. Kilcreene Woods, between Kilcreen and the Breagagh corridor, will be a low density residential area within the curtilage of a Kilcreene Lodge.
8. Crokers Hill, immediately south of the Central Access Scheme and Breagagh corridor, will be a medium/high density housing development overlooking River Breagagh Park; and
9. the existing Grasslands factory will be separated from residential use by the green spine.

It highlights the potential for the regeneration of ‘the Butts’, a 20th century residential development and early example of Local Authority housing, situated in the south-eastern portion of the Masterplan area, at its interface with the city centre.

As per the land use zoning in the Development Plan, the Masterplan has earmarked lands at the intersection of the Tullaroan Road and Lousybush Lane (i.e. the centre of the Masterplan lands) for a local centre, to include an appropriately sized local supermarket and several smaller retail and commercial units. Lousybush Lane will provide car-free access to the eastern side of the local centre, while the Tullaroan Road will facilitate local vehicular access.

In accordance with the Development Plan objectives, lands have been reserved between Lousybush Lane and the Dunningstown Road for the relocation of the CBS School. Lousybush Lane is intended as the primary access to the school, and will provide for pedestrian and cyclist access; while vehicular access will be provided via the Dunningstown Road.

A north-south green spine (which will also serve as a walking and cycling connection) is proposed, linking the Nore Valley (outside of the Masterplan lands), Lough Macask, the Dicksboro GAA ground, the Breaghagh corridor and existing green infrastructure to the south of the Masterplan lands. This will form part of a wider green network across the Masterplan lands, linking passive and active open spaces and amenity areas, which are expected to “*substantially eliminate the need for local car journeys*” (p. 20) and will also have the effect of buffering future residential development from the existing industrial facility.

In relation to the Grasslands Facility, it is stated that “*The existing Grasslands factory will be separated from residential use by the green spine. Should the Grasslands factory ever be relocated, the masterplan can accommodate additional residential development or alternative employment uses on its lands as appropriate.*” (p. 25).

The Masterplan states that a park, the River Breaghagh Park, will be developed in the existing green area between the Breaghagh River and the Central Access Scheme to the south, with pedestrian and cycle links provided to connect the residential areas of Loughmacask with the park. It is not clear whether any crossings of the River Breaghagh will be required in this regard.

There are proposed changes between the Loughmacask Masterplan strategy (**Figure 4.1**) and the land use zoning in the Development Plan, as follows:

- The Butts neighbourhood area to be designated as a ‘Special Regeneration Area’.
- Lands designated as ‘Open Space’ immediately west of the Butts in the Development Plan have been partially changed to ‘Residential’ to provide for the integration of the well-established Butts community into the planned Loughmacask development, rather than physically separating it from this planned new neighbourhood.
- Lands designated as ‘Strategic Reserve’ to the north-east of the Dicksboro GAA in the Development Plan have been partially changed to ‘Open Space / Recreation’ to provide additional recreational amenities that could operate in tandem with existing GAA grounds.
- Lands designated as ‘Open Space’ and ‘Strategic Reserve’ to the south-west of the Dicksboro GAA grounds in the Development Plan have been changed to ‘Residential’ to facilitate future primary vehicular access to Loughmacask from the west which in turn will create a new gateway at this location.
- Under the Masterplan, ‘Open Space’ has been extended more widely throughout the development lands (e.g. through the retention of hedgerows, inclusion of pocket parks or unlocking River Breaghagh Park), to provide for greater connectivity between green spaces, providing for ecological corridors and for ease of movement by pedestrians and cyclists throughout the area.

In terms of access and movement, the Masterplan envisions “*a high quality, walkable and connected new residential quarter*” that will be “*notably different from many residential developments with highly visible walking and cycling facilities throughout and with local access points for vehicular traffic quickly transforming to homezone style shared streets*” (p. 27). The envisaged access network features the following characteristics:

- A route selection process will be undertaken to determine the most appropriate route for a new road to connect the R693 Freshford Road to the R695 Kilmanagh Road. (Objective R7 Vol 2 Chapter 5 of the City & County Development Plan). The optimal route would run to the west of the Loughmacask area, thereby facilitating the primary vehicular access to Loughmacask from the west, rather than from the

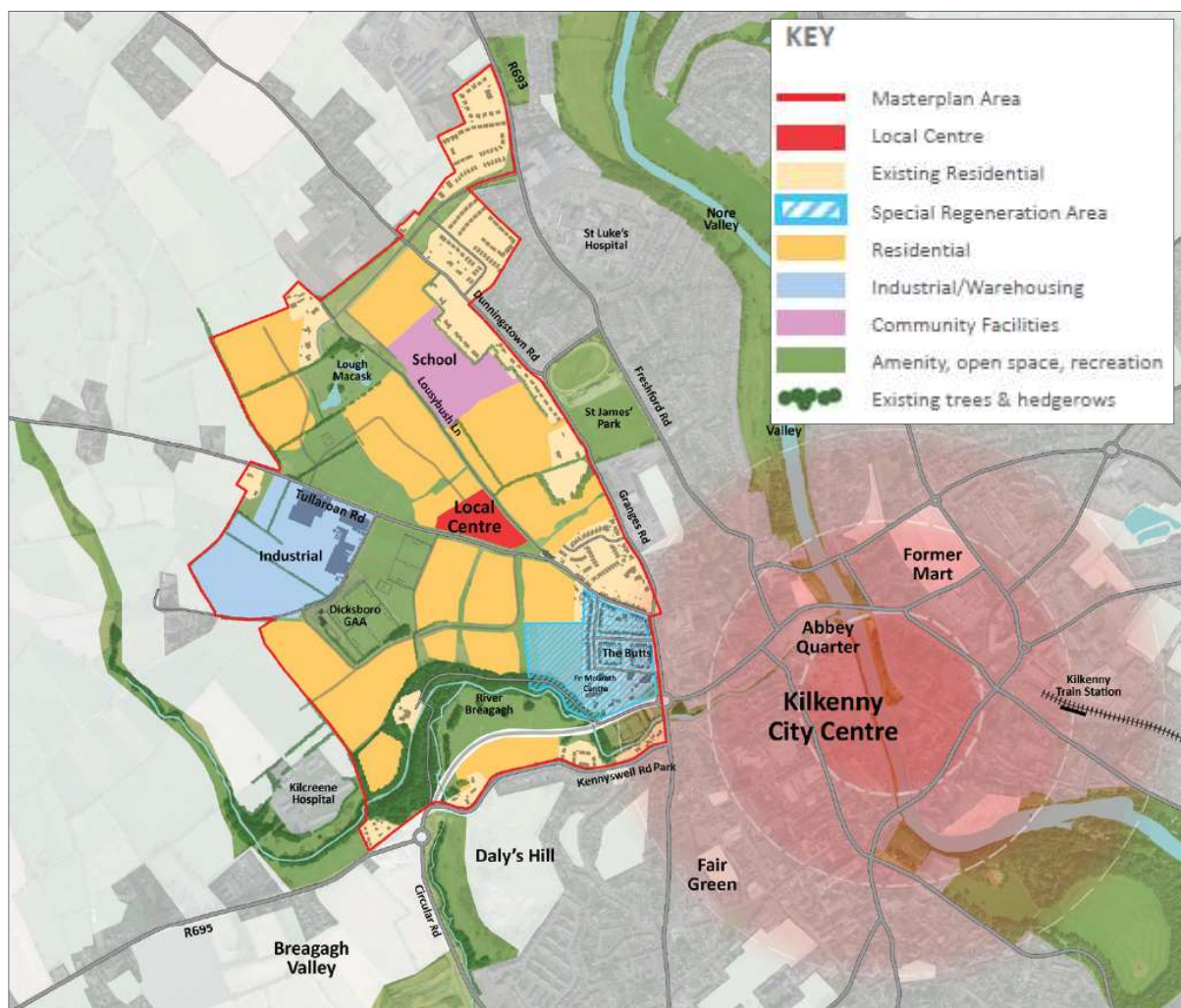
city centre. In the interim primary vehicular access will continue to be provided along the existing street network with access points from these developed so as to ensure high quality, attractive and safe pedestrian and cycle mobility within and between Loughmacask neighbourhood and the wider City.

- Loughmacask will be a high quality, walkable and connected new residential quarter. It will be notably different from many residential developments with highly visible walking and cycling facilities throughout and with local access points for vehicular traffic quickly transforming to homezone style shared streets.
- Lousybush Lane will be a primary green link that is free of vehicles and providing a convenient and attractive route for local journeys from homes to the local centre, schools, community facilities and amenity spaces.

In this regard, the Masterplan states that “A significant difference between the Loughmacask LAP 2008 and this Masterplan is the removal of through traffic from the area by the reconfiguration of the road objectives for the area and the re routing of through traffic” (p. 21).

The Masterplan include a high-level sustainable urban drainage system (SuDS) strategy. In accordance with the OPW guidelines, *The Planning System and Flood Risk Management: Guidelines for Planning Authorities* (2009), SuDS will be a requirement of future development in the Masterplan lands. It is stated that “SuDS features will aim to replicate the natural characteristics of rainfall runoff by providing control of run-off at source” (p. 40). An indicative network of bio-retention swales is illustrated.

Figure 4.1: Loughmacask Masterplan – Land Use (extract from Figure 6.1 of Masterplan)



5 Current State of the Receiving Environment (Environmental Baseline)

5.1 Introduction

The SEA Directive requires that the information on the baseline environment is focused upon the relevant aspects of the environmental characteristics of areas likely to be significantly affected and the likely evolution of the current environment in the absence of the Masterplan. Being consistent with the strategic provisions of the Masterplan, this section provides a strategic description of aspects of environmental components which have the greatest potential to be affected by implementation of the Masterplan, if unmitigated.

5.2 Likely Evolution of the Environment in the Absence of the Masterplan

The preparation of a masterplan for the Loughmacask area is an objective (Z8 – City Zoning Objectives) of the *Kilkenny City and County Development Plan 2021-2027*. However, the development plan incorporates land use, zoning (including for permitted development) and objectives for the area, which if the Masterplan is not progressed outlines a sustainable planning and development strategy for the area. The development plan also notes that no significant development has taken place in Loughmacask due to the lack of waste water infrastructure in the area and accessibility issues.

Therefore while higher level environmental protection objectives – such as those of *Kilkenny City and County Development Plan* and various EU Directives and transposing Irish Regulations – would still apply, the absence of the Masterplan would mean that new development would be less coordinated and controlled. Less coordinated and controlled development would be less certain to result in the positive effects provided for by the Masterplan.

5.3 Description of the Environmental Baseline

The Loughmacask Masterplan area is situated on the western periphery of Kilkenny City, the largest urban centre in the County and the seat of local government. As detailed in **Section 3**, above, it has been earmarked by the Local Authority, Kilkenny County Council, to be developed as a new residential neighbourhood delivering c. 904 residential units. The development lands are predominantly comprised of intensive agricultural land, but also contain existing residential areas along the eastern margin, an existing industrial facility (Grassland Fertilisers, a SEVESO III site), sports grounds (including Dicksboro GAA), and two distinct pockets of semi-natural habitats / ‘green infrastructure’ at Lough Macask and in the riparian corridor of the River Breaghagh. ‘The Butts’, a 20th century residential development and early example of Local Authority housing, is situated in the south-eastern portion of the Masterplan area, at its interface with the city centre. Other existing residential developments are situated on Lord Edward Street and Lousybush Lane; and at Ayrfield, Talbot’s Court and Talbot’s Gate.

The landbank is bordered by Kilkenny City immediately to the east, by the River Breaghagh corridor to the south, and by rural hinterland to the west and north. The lands generally rise in a north-westerly direction, affording vistas of Kilkenny City, with localised undulations. Kilkenny Airfield or aerodrome is situated c. 1 km south-west of the Masterplan lands. There is a limestone quarry c. 900 m to the west.

Kilkenny City is served by rail, being situated on the Dublin – Waterford and Waterford – Limerick Junction lines. The station, Kilkenny (MacDonagh), is situated on the Dublin Road, approx. 1.3 km south-east of the nearest point in the Masterplan area. At present, the Masterplan lands are served by the existing road infrastructure, principally the Granges Road, Dunningstown Road, Lord Edward Street, Tullaroan Road

(which bisects the lands), Lousybush Lane, Water Barrack and Kenny's Well Road. Planned new roads to serve the area have been discussed in **Section 3**, above.

5.3.1 Biodiversity and Flora and Fauna

5.3.1.1 Natura 2000

There are no European (Natura 2000) sites within the Masterplan area. However, the River Breagh drains into the River Nore, which supports: the River Nore Special Protection Area (SPA) (site code 004233) and River Barrow and River Nore Special Area of Conservation (SAC) (site code 002162), both of which are c. 600 m downstream of the Masterplan lands via the Breagh (refer to Figure 5.1). Thus, there is a hydrological pathway linking the Loughmacask Masterplan lands with these European sites.

The Qualifying Interests (QIs) / Special Conservation Interests (SCIs) of these sites are as follows:

River Nore SPA:

- Kingfisher, *Alcedo atthis* [A229]

River Barrow and River Nore SAC:

- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Reefs [1170]
- Salicornia and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]
- European dry heaths [4030]
- Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]
- Petrifying springs with tufa formation (*Cratoneurion*) [7220]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]
- *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016]
- *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]
- *Austropotamobius pallipes* (White-clawed Crayfish) [1092]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Alosa fallax fallax* (Twaite Shad) [1103]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Trichomanes speciosum* (Killarney Fern) [1421]
- *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]

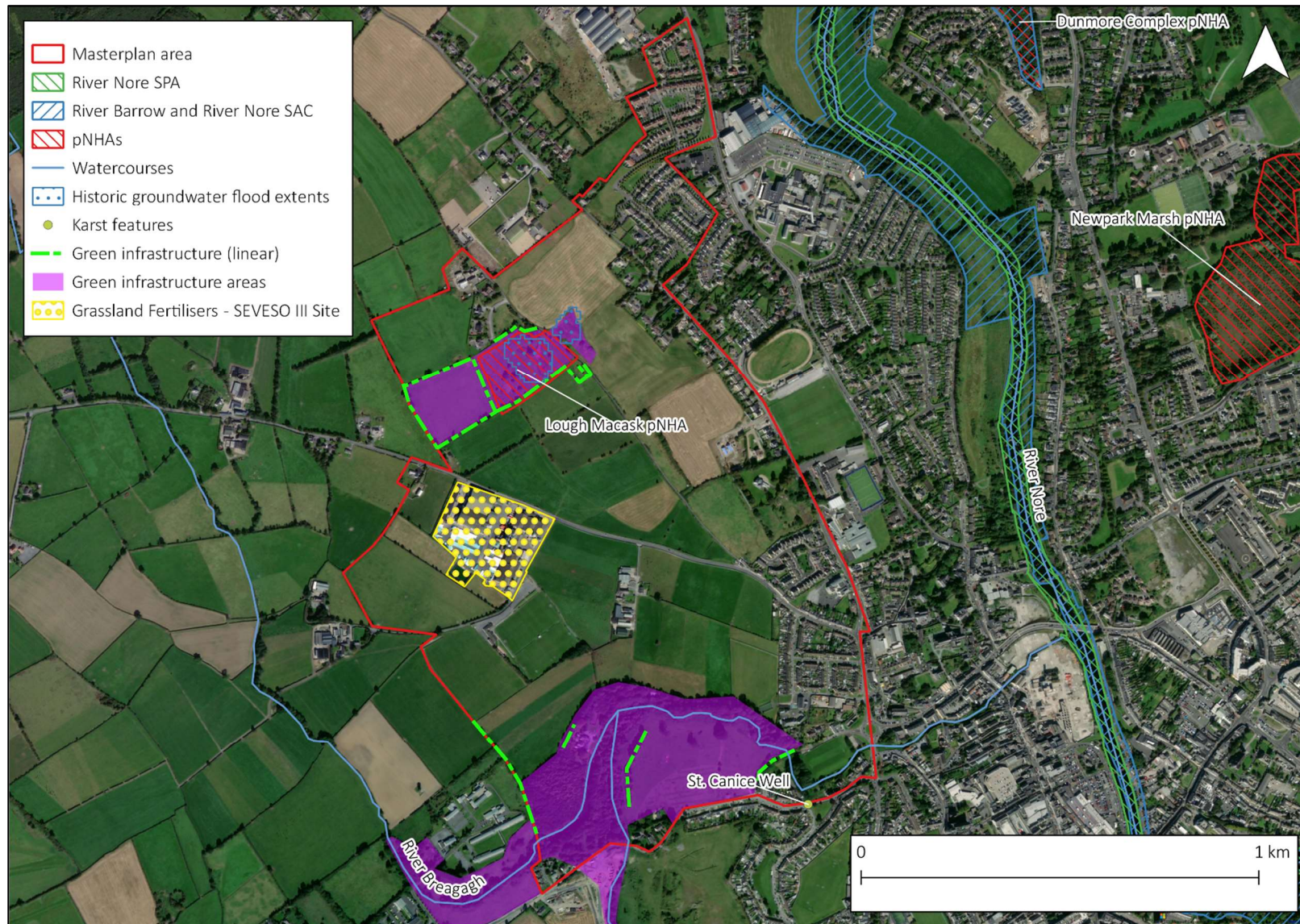
Mobile species associated with these sites may also use the River Breagh and associated riparian habitats, e.g. Kingfisher and Otter.

An AA Screening Report and Natura Impact Report (NIR) has been prepared in respect of the Masterplan.

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Figure 5.1: Key environmental features (© Bing Maps, 2021)



5.3.1.2 Proposed Natural Heritage Areas (pNHA)

There is one pNHA within the Masterplan area, the Lough Macask pNHA (site code 001914), whose location is mapped in **Figure 5.1**. The area of the pNHA takes in the pond known as ‘Lough Macask’ and immediately adjacent terrestrial margin. Land immediately east and west of Lough Macask pNHA (and several associated hedgerows / treelines) has been earmarked as part of Kilkenny City’s green infrastructure network in the Development Plan (refer to **Figure 5.1**).

The levels in the pond fluctuate throughout the year with a portion remaining permanently flooded year-round. According to the NPWS’s site synopsis for the pNHA (2009), the pond is “*isolated from the underlying limestone by glacial till*” and is, therefore, not regarded as a turlough, although it is considered to be “*similar in some ways*”. The land adjacent to the pond is grazed, resulting in poaching at the pond margin when water levels are high. The flora of the site is understood to be typical and not including any rare or protected species. However, it is noted that Greater Duckweed (*Spirodela polyrhiza*), which has been recorded at the site, is rare elsewhere in the County (NPWS, 2009; Smith *et al.*, 2010).

5.3.1.3 Ecological Networks and Connectivity

Ecological networks are important in connecting areas of local biodiversity with each other and with nearby designated sites so as to prevent islands of habitat from being isolated entities. They are composed of linear features, such as treelines, hedgerows and rivers/streams, which provide corridors or stepping stones for wildlife species moving within their normal range. They are important for the migration, dispersal and genetic exchange of species of flora and fauna particularly for mammals, especially for bats and small birds and facilitate linkages both between and within designated ecological sites, the non-designated surrounding countryside and the City.

In 2010, a habitat survey of Kilkenny City and environs was carried out on behalf of Kilkenny County Council (Smith *et al.*, 2010). It described Lough Macask (refer to **Figure 5.2**) as follows:

“Lough Macask is an isolated patch of Green Infrastructure within an intensive agricultural matrix. The main wetland on the west side of a small road is proposed for designation as an NHA (Lough Macask pNHA). The area identified as Green Infrastructure is slightly larger than this, as it also includes a small pocket of wet grassland on the east side of the road. Lough Macask itself is a wetland in two basins connected by a channel that was occupied by wet grassland at the time of surveying. The northern of the two basins is dominated by branched bur-reed emerging from open water, and the southern basin is dominated by pondweeds. The wetlands are surrounded by improved grassland grazed by cattle, and there is a small transition zone in between where the wetlands grade into marsh and then wet grassland. [...]

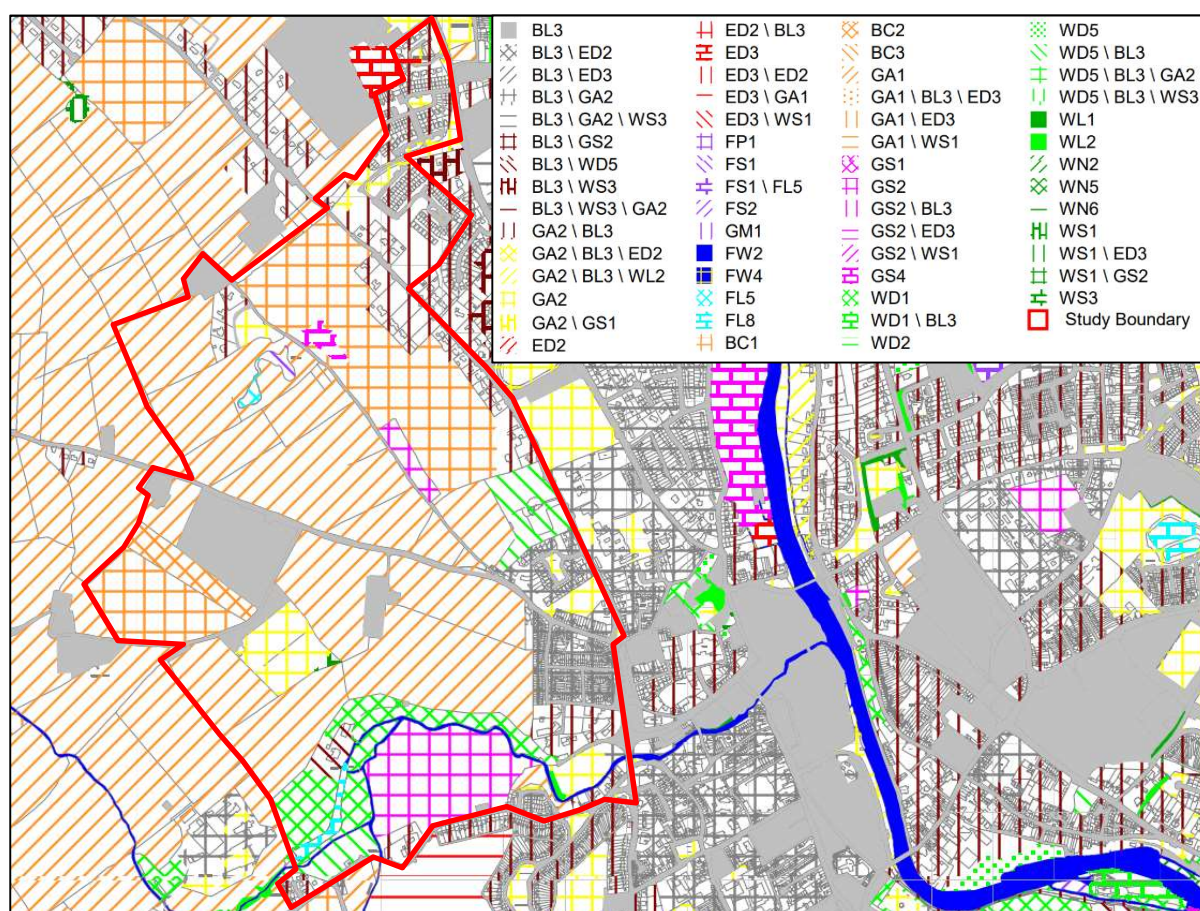
We saw Mallard and Moorhen using the wetlands during the habitat survey, and information gathered at the public consultation meeting confirmed that Water Rail has been recorded in Lough Macask. The ecological survey for the Lough Macask Local Area Plan 2008-2014 reports that the lough regularly supports dragonflies in the summer and small numbers of wintering waterfowl (Biosphere Environmental Services, 2005). It is likely that the pond is suitable for spawning frogs and perhaps smooth newt.

The habitat classification of the Lough Macask wetlands is confused by the fact that water levels fluctuate over the course of a year, similar to turloughs (Goodwillie, 1995). [...] We considered that it was not sufficiently similar to a “classic” turlough in that it does not drain and fill relatively quickly through underground channels joining the basin at a single point. Thus, we have classified the

northern basin as reed and large sedge swamp (FS1⁹) and the southern basin as a eutrophic pond (FL5).

The proposed Kilkenny Central Access Scheme is likely to impact the Green Infrastructure area, as the proposed road will run through the wet grassland pocket to the east of the existing road. This would result in the loss of this habitat, and the proximity of the road to Lough Macask pNHA may impact on water quality and hydrology. However, the EIS prepared for the road scheme concludes that impacts are unlikely, provided suitable mitigation is implemented (MORSW, 2008).” (p. 32)

Figure 5.2: Habitat mapping at Masterplan area – Kilkenny City Habitat Survey (Smith *et al.*, 2010)



In addition to the green infrastructure identified at Lough Macask, the Development Plan has also earmarked land and hedgerows / treelines in the River Breagh corridor as green infrastructure, as illustrated in **Figure 5.1**. In this area, Smith *et al.* (2010) noted mixed broadleaved woodland (WD1), dry meadows (GS2), scattered trees and parkland (WD5) and artificial lakes / ponds (FL8) in association with the River Breagh (depositing / lowland river, FW2) (**Figure 5.2**). The invasive species Japanese Knotweed (*Fallopia japonica*) and Himalayan Balsam (*Impatiens glandulifera*) were noted growing alongside the river (Smith *et al.*, 2010). Smith *et al.* (2010) made the following observations in relation to the value of the River Breagh:

“The Breagh River represents a valuable habitat resource for birdlife within the study area, including Kingfisher, a species listed on the EU Birds Directive, whilst Dipper, Reed Bunting and Grey Wagtail are also often sighted there (P. Durkin, pers. comm.). Grey Heron and Moorhen have been identified along the river near the Dominic Street Bridge, whilst consistent pipistrelle bat activity also

⁹ Habitat codes follow Fossitt (2000)

occurs within this area. Indeed some of the older houses in the area may currently act as bat roosts (O. Duggan, pers. comm.).

The Breagagh River provides valuable amenity services in the form of fishing and casual recreation. The Breagagh River is also a local water source and provides for the control of surface water in the surrounding areas. In addition to acting as a wildlife habitat in its own right, it has the potential to act as a corridor, allowing movement of plants and animals through an otherwise hostile landscape of intensive agriculture and built land.” (p. 36)

“The River Nore is a strong piece of Green Infrastructure acting as an ecological corridor across the city from north to south. However, east to west ecological linkage across the city and to the River Nore is much weaker [...]. Strategic planning should aim to strengthen east-west ecological linkages with the Nore where possible. The Breagagh River provides an opportunity for strengthening these linkages.” (p. 42)

With the exception of the semi-natural habitats noted above, the remainder of the Masterplan area is dominated by relatively intensive agricultural land and previously developed land (i.e. buildings and artificial surfaces), criss-crossed by hedgerows, treelines and roads. Not including previously developed areas defined by buildings and artificial surfaces, the predominant habitat types recorded by Smith *et al.* (2010) in the Masterplan area (**Figure 5.2**) were improved agricultural grassland (GA1) and arable crops (BC1); with improved amenity grassland (GA2), horticultural land (BC2) and dry meadows (GS2) also noted. The ecological value of old stone walls in Kilkenny City and environs was also noted by Smith *et al.* (2010), who highlighted the potential importance of these features for invertebrates and other fauna.

5.3.1.4 Existing Problems

As occurs with the development of all settlements, built development within the vicinity of the Masterplan site has resulted in loss of biodiversity and flora and fauna, however no current conflicts with legislative objectives governing biodiversity and fauna were identified. Existing problems in relation to biodiversity may be summarised as follows:

- Presence of invasive species, e.g. Japanese Knotweed and Himalayan Balsam;
- Pressures associated with intensive agricultural use, e.g. nutrient enrichment, land use change and habitat loss;
- Pressures associated with development, e.g. loss of habitats and / or habitat connectivity.

5.3.2 Population (and Human Health)

5.3.2.1 Population

Much of the area in question is green field and agricultural bounding a river valley. Existing residential, open space and industrial development are also present, together with some areas of permitted development. The population of Kilkenny Town was recorded as being 26,512 persons in 2016. The Masterplan area will accommodate new residential and employment populations through the development of this partly greenfield area with enhanced consolidation and connectivity to the city – allowing for a greater number of journeys via sustainable transport modes and associated positive environmental effects on overall energy usage and air and noise emissions.

5.3.2.2 Human Health

Human health has the potential to be impacted upon by environmental vectors (*i.e.* environmental components such as air, water or soil through which contaminants or pollutants, which have the potential to cause harm, can be transported so that they come into contact with human beings). Hazards or nuisances to human health can arise as a result of exposure to these vectors arising from incompatible adjacent land uses for example. These factors have been considered with regard to the description of the baseline of each

environmental component; and the identification and evaluation of the likely significant environmental effects of implementing the Masterplan. The Grasslands Fertiliser (Kilkenny) factory located off the Tullaroan Road is identified as an upper tier Seveso (Major Accidents) site within the Masterplan lands.

The positive impact of access to healthy aquatic and riparian habitats for wellbeing and mental health is noted by the Inland Fisheries Ireland SEA Scoping submission. It is also noted that the Masterplan provides for enhanced access to and connectivity via open space networks and sports facilities which can improve exercise and health.

5.3.2.3 Existing Problems

Wastewater infrastructure is under-developed in the area (discussed in further detail in **Section 5.3.4**, below). This is the responsibility of Irish Water.

5.3.3 Geology and Soils

The bedrock geology in the Masterplan area is shown in **Figure 5.3**. It shows that the area is underlain by limestone bedrock. This is a karstic area, and St. Canice's holy well at the southern margin of the Masterplan lands has been identified as a karst feature in the GSI databases.

The GSI mapping indicates that the Masterplan area has high source aggregate potential, and there are a number of quarries and gravel pits in the wider area, e.g. the Holdensrath Quarry, from which minerals for future development could potentially be sourced.

Soil is the top layer of the earth's crust. It is formed by mineral particles, organic matter, water, air and living organisms. Soil can be considered as a non-renewable natural resource because it develops over very long timescales. It is an extremely complex, variable and living medium and performs many vital functions including: food and other biomass production, storage, filtration and transformation of many substances including water, carbon, and nitrogen. Soil has a role as a habitat and gene pool, serves as a platform for human activities, landscape and heritage and acts as a provider of raw materials.

The principal soils are Minimal Grey Brown Podzolics with associated Gleys and Brown Earths of Limestone glacial till parent material. Run-off from hard surfaces and roads can pollute water courses. Therefore, the incorporation of sustainable drainage systems (SuDS) can be important in attenuating pollution, including suspended solids. When adequately designed and constructed, these can also add amenity and recreational value (refer to Inland Fisheries Ireland publication *Planning for Watercourses in the Urban Environment*¹⁰).

5.3.3.1 Existing Problems

No particular problems identified.

5.3.4 Hydrogeology and Water (including Flooding)

5.3.4.1 Water Framework Directive (WFD)

Since 2000, Water Management in the EU has been directed by the Water Framework Directive 2000/60/EC (WFD). For the purposes of implementing the WFD, Kilkenny County Council is implementing the programme of measures to address significant pressures on water outlined in the *National River Basin Management Plan 2018-2021* (RBMP) and will for the subsequent RBMP 2022-2027.

The Masterplan area is situated in the Nore_SC_090 Water Framework Directive (WFD) subcatchment, within the greater Nore WFD catchment. In terms of groundwater, the Masterplan area is predominantly

¹⁰ <https://www.fisheriesireland.ie/what-we-do/protection/environmental-protection/guidance-for-urban-watercourses>

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underlain by a regionally important, karstified, gravel aquifer, the Killkenny-Ballynakill Gravels (WFD code IE_SE_G_163). This groundwater body has been consistently rated as having ‘good’ status for all parameters, and is ‘not at risk’ of failing to achieve its WFD objectives / good status by 2027. The groundwater vulnerability is predominantly rated as being ‘high’ across the Masterplan area.

The River Nore within and in the vicinity of Killkenny City is listed on the Register of Protected Areas for the following:

- cSAC and SPA designations;
- Salmonid River;
- Nutrient Sensitive River (downstream of the City only); and
- Groundwater for Drinking Water.

The River Breaghagh (WFD code BREGAGH (KILKENNY) 030) traverses the southern portion of the Masterplan area before entering the River Nore (WFD code NORE_170) a distance of c. 650 m east of the Masterplan area boundary. Where it passes through the Masterplan area, the River Breaghagh is of ‘poor’ status (WFD 2013 – 2018) and ‘at risk’ of failing to achieve its WFD objectives / good status by 2027. The associated identified significant pressures are industry, hydromorphology (channelisation and embankments) and pastoral agriculture. The River Nore is of consistently ‘good’ status, with its level of risk under review at present.

Article 5 of the Surface Water Regulations (SI 272 of 2009) requires that a public authority shall not knowingly cause or allow deterioration in the chemical or ecological status of a body of surface water. Article 28(2) states that a surface water body whose status is determined to be less than good shall be restored to at least good status. Construction works adjacent to the river should have regard to Inland Fisheries Ireland’s *Guidelines on Protection of Fisheries during construction works in and adjacent to Waters (2016)*¹¹.

The protection of the River Breaghagh as an angling resource, as well as being important for the water environment, is also of significance for its recreational, cultural and landscape value.

Foul sewage (wastewater) from Killkenny City and its environs is treated at Irish Water’s Purcellsinch wastewater treatment plant (WwTP) (D0018-01). In 2020, this WwTP, which provides tertiary treatment, had a capacity of 77,000 population equivalent (PE) and was overall compliant with its emission limit values (ELVs). In Irish Water’s 2020 annual environmental report, it was noted that discharge from the WwTP was not having an observable impact on water quality or the WFD status of waterbodies.

The Development Plan has noted that the existing wastewater infrastructure in the receiving environment is deficient. As noted in the Development Plan:

“In line with the NPF Implementation Roadmap’s requirement for an infrastructure assessment and Tier 1 and Tier 2 considerations for future zoning, it is important to note that the Loughmacask area of the City, which includes extant permissions on 19.23 Ha of zoned lands outside the CSO boundary, is dependent on wastewater investment to realise the existing permissions.” (p. 46)

It is an objective of the Development Plan (10a), *“To facilitate Irish Water and to assist, subject to service level agreements, with the provision of water and wastewater infrastructure provision in accordance with the water services strategic plan, made in accordance with the Water Services Act 2007”* (p. 174) (refer also to Objective 4K). It is further stated that *“Irish Water and Killkenny County Council are continually progressing sewer rehabilitation activities, capital maintenance activities, etc, and the Council will continue to work with Irish Water to monitor the performance of the networks and to advance and realise capital expansions and upgrades of wastewater infrastructure for the continued sustainable growth of the County”* (p. 175).

¹¹ <https://www.fisheriesireland.ie/sites/default/files/migrated/docman/2016/Guidelines%20Report%202016.pdf>

A Drainage Area Plan (DAP) is being progressed for the wastewater network in Kilkenny City. The DAP will assess in detail the performance of the wastewater networks in the City, which will inform future investment requirements for the City network.

5.3.4.2 Groundwater and Aquifer Vulnerability

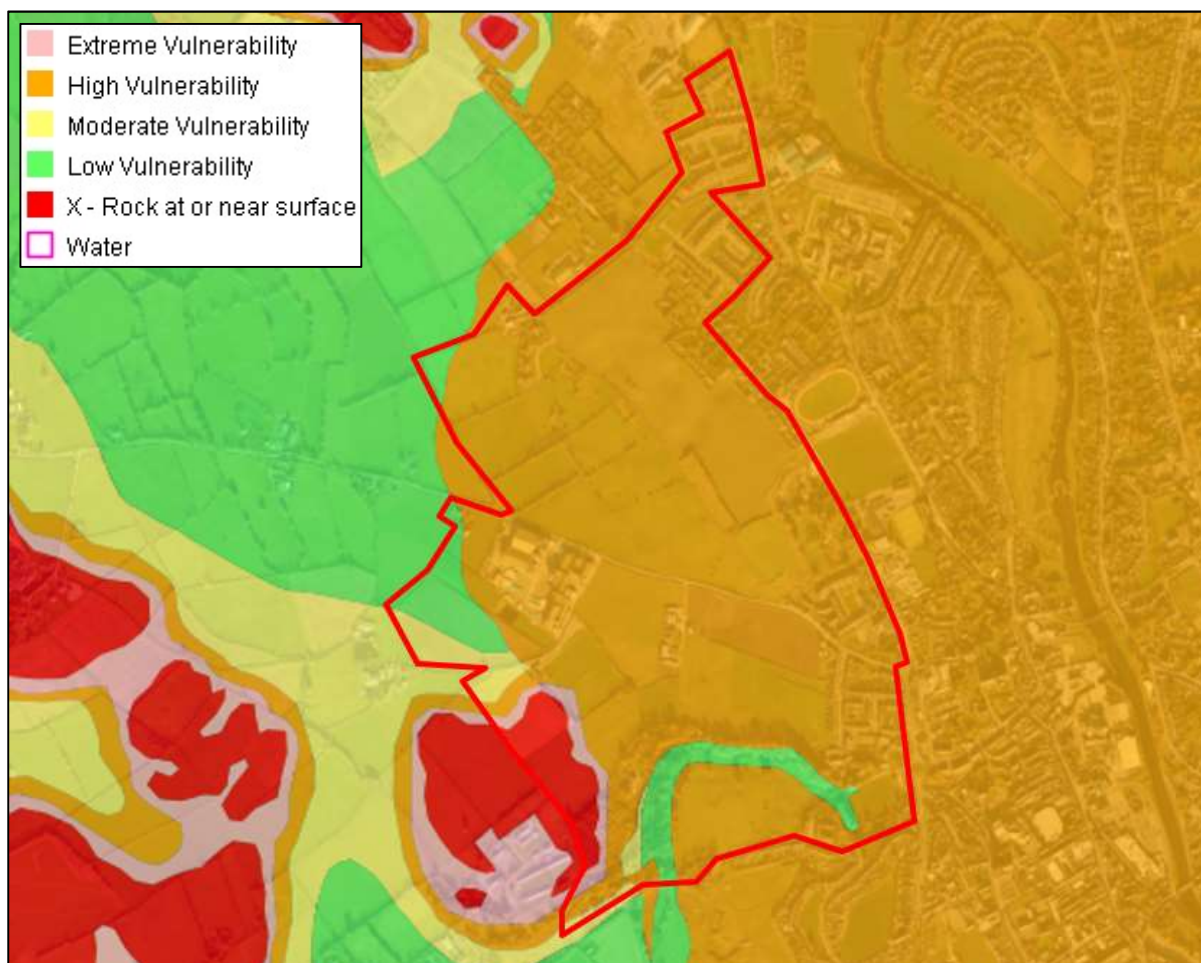
For each body of groundwater, both the chemical status and the quantitative must be determined. Both have to be classed as either good or poor. The status of groundwater within and adjacent to the Masterplan area is identified as being Good.

In their submission in relation to the SEA, the GSI noted that there are several aquifers underlying the Masterplan area, as follows:

- The River Nore (upper) gravel aquifer – a regionally important gravel aquifer;
- A bedrock aquifer – a locally important aquifer that is moderately productive only in local zones; and
- A karstified (diffuse) bedrock aquifer – a regionally important aquifer.

On account of the hydrogeological conditions in the area (e.g. presence karst limestone bedrock and gravel aquifer overlain by well-drained soil), groundwater vulnerability is high across much of the area, with localised extreme to 'X' vulnerability in the north-western extents.

Figure 5.3: Groundwater vulnerability in the Masterplan area and environs (GSI, 2022)



5.3.4.3 Flooding

As detailed in **Section 2.4**, above, there is localised fluvial and groundwater flood risk associated with the River Breagagh and at Lough Macask, respectively. While all areas earmarked for residential development are situated in Flood Zone C, there is a potential future risk of flooding in marginal areas neighbouring Flood Zones A and B, due to climate change. Development in the Masterplan area will incorporate SuDS measures to mitigate flood risk and mitigation-by-design (e.g. finished floor levels above the 1-in-100 year fluvial flood level, and step-ups from road levels) to prevent ingress. For further information, refer to **Section 2.4** and / or the SSFRA submitted under separate cover.

5.3.4.4 Existing Problems

With regard to overall Water Framework Directive status, the main channel of the River Breagagh is identified as being of Poor status. The SSFRA has identified lands within the Masterplan area (along the lower valley of the River Breagagh and at Lough Macask) that are at flood risk and has facilitated the integration of flood risk management considerations into the Masterplan. Groundwater vulnerability is largely rated as high across the Masterplan area, as is the case throughout much of Kilkenny City.

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Figure 5.3: Geology (© Bing Maps, 2021)

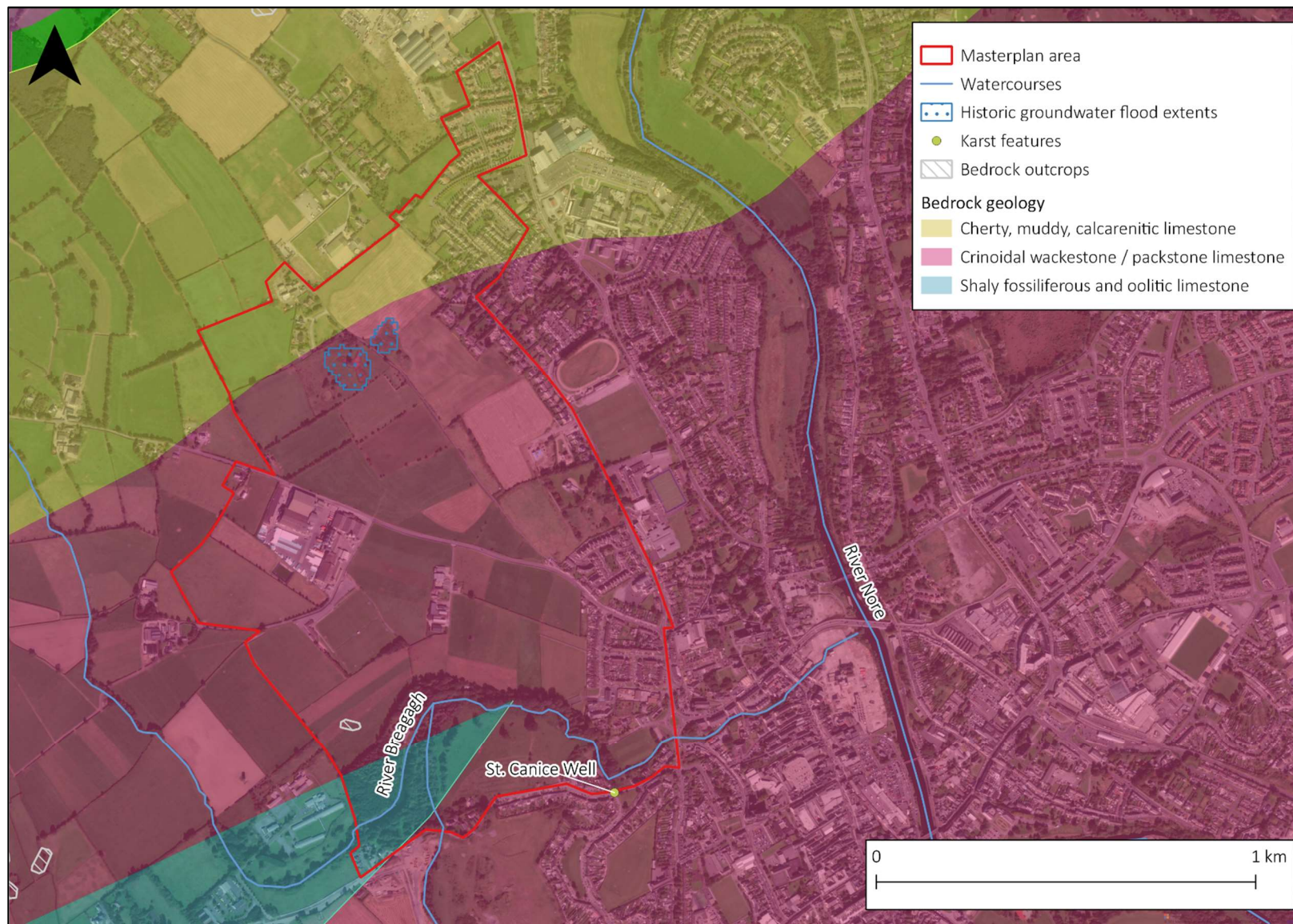
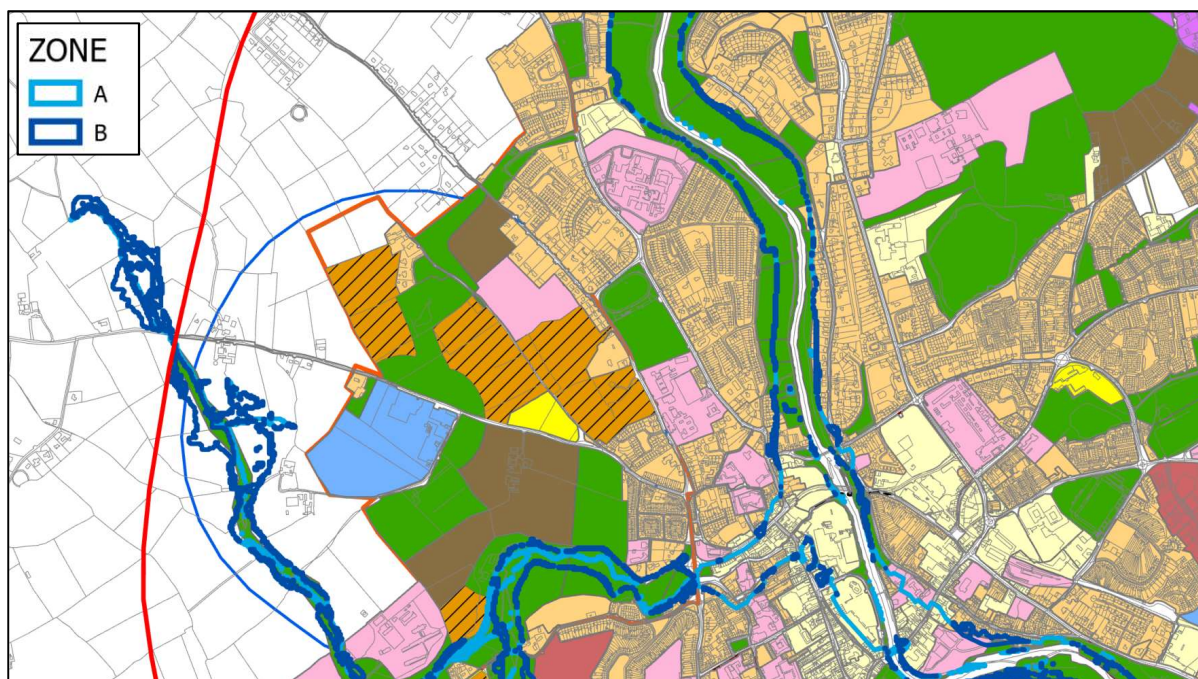


Figure 5.4: Flood Zones A and B in relation to the Masterplan area (Kilkenny County Council, 2021)



5.3.5 Air and Climate Factors

5.3.5.1 Ambient Air Quality

In order to protect human health, vegetation and ecosystems, EU Directives set down air quality standards in Ireland and the other Member States for a wide variety of pollutants. These pollutants are generated through fuel combustion, in space heating, traffic, electricity generation and industry and, in sufficient amounts, could affect the well-being of the areas inhabitants. The principles to this European approach are set out in the Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC).

The EPA's Air Quality in Ireland 2020 identifies that air quality in Ireland is compliant with legislation however there are localised issues – most notably particulate matter from the burning of solid fuel. Ireland was above World Health Organization (WHO) air quality guidelines for particulate matter (PM), sulphur dioxide (SO₂) and ozone at 52 monitoring sites across the country.

The Masterplan area will accommodate new residential and employment populations within a consolidated connected environment. This will allow for a greater number of journeys via sustainable transport modes and associated positive environmental effects on overall greenhouse gas emissions, energy usage and air and noise emissions. The Masterplan avoids development within Flood Zone A or B areas.

5.3.5.2 Noise

Noise is unwanted sound. The Environmental Noise Regulations (SI No. 140 of 2006) transpose into Irish law the EU Directive 2002/49/EC relating to the assessment and management of environmental noise, which is commonly referred to as the Environmental Noise Directive. Limit values are left to each member state The Directive requires the adoption of Noise Action Plans (NAPs) with the objective of preventing and reducing environmental noise where necessary and preserving environmental noise quality where it is good. NAPs are limited to major noise sources – which in terms of Kilkenny's Noise Action Plan 2019-2023 only applies to major roads, none of which are within the Masterplan area.

The Masterplan area will accommodate new residential and employment populations within a consolidated connected environment. This will allow for a greater number of journeys via sustainable transport modes and associated positive environmental effects on, inter alia, overall noise emissions.

5.3.5.3 Climate

The key issue involving the assessment of the effects of implementing the Masterplan on climatic factors relates to greenhouse gas emissions arising from transport. By addressing journey time through land use planning and providing for more sustainable modes and levels of mobility, noise and other emissions to air and energy use can be minimised.

The Masterplan facilitates improvements in sustainable mobility, thereby facilitating reductions in and limiting increases of greenhouse gas emissions. Such emissions would occur otherwise with higher levels of motorised transport and associated traffic.

While limited in the Masterplan area, flooding is also influenced by climatic factors and green infrastructure can achieve improvements with regard to the following:

- Provision of open space amenities;
- Sustainable management of water;
- Protection and management of biodiversity;
- Protection of cultural heritage; and
- Protection of protected landscape sensitivities.

Flooding and Green Infrastructure are issues which have been integrated into the Masterplan. Appropriate riparian planting can improve the climate resilience of watercourses. Maintaining and restoring channel sinuosity also enhances climate resilience and flood mitigation. The co-benefits of climate resilience measures with water quality, biodiversity and flood mitigation can also improve human well-being and quality of life.

As outlined in **Section 2.4**, above, an SSFRA has been prepared in respect of the Masterplan, which has considered the potential impact of climate change on flood risk in the Masterplan area. For development proposed in Flood Zone C but adjoining / proximate to Flood Zones A or B, there could be a risk of flooding associated with future climate change. A SSFRA will be required for future proposed development in these areas, with appropriate mitigation measures incorporated, where required.

5.3.5.4 Existing Problems

No particular problems identified.

5.3.6 Material Assets

5.3.6.1 Introduction

In order to protect human health, vegetation and ecosystems, EU Directives set down air quality standards in Ireland and the other Member States for a wide variety of pollutants. These pollutants are generated

Resources that are valued and that are intrinsic to specific places are called 'material assets'. Material Assets relevant to this SEA include:

- Water services; and
- Waste management.

Other material assets covered by the SEA include archaeological and architectural heritage (see **Section 5.3.7**) and natural resources of economic value, such as water and air (see **Sections 5.3.4 and 5.4.5**).

5.3.6.2 Water Services

Since January 2014 the delivery, integration and implementation of strategic water and waste water projects and infrastructural improvements are now the responsibility of State body 'Irish Water'. The function and role of Irish Water includes:

- Abstracting and treating water;
- Delivering water and waste water services to homes and businesses;
- Installing water meters and billing domestic and business customers;
- Raising finance to fund improvements and repairs in the water system; and
- Maintaining and operating the water system.

As noted above, wastewater infrastructure in the Masterplan area is deficient. KCC has committed, under the scope of the Development Plan, to facilitate and support Irish Water in the provision of necessary water and wastewater infrastructure improvements, to meet the needs of future development. A Drainage Area Plan is being progressed for the wastewater network in Kilkenny City, which will inform future investment in the municipal network.

According to the minutes of the Strategic Policy Committee on Economic Development, Enterprise Support & Tourism meeting on 20 December 2018, KCC has been in discussions with Irish Water regarding the installation of a new sewer line to serve the Loughmacask area:

"No timelines have been set as yet but agreement has been reached on a temporary solution which will free up existing permissions for housing in the area." (p. 5)

Potable water supply to Kilkenny City and environs is provided by two water treatment plants at Troyswood and Radestown, the latter of which is on the EPA's Remedial Action List. Improvement works to Troyswood Water Treatment Plant commenced in December 2021 and will take 2.5 years to complete. This upgrade will equip Troyswood to become the primary water treatment plant for Kilkenny City and environs. A new 2.9 km watermain from Troyswood to the Radestown plant will connect the existing service reservoirs, allowing the Radestown plant to be decommissioned. The upgrade will increase the capacity of the potable water supply in Kilkenny, supporting future growth in Kilkenny, including at Loughmacask. (Irish Water, 2021).

5.3.6.3 Waste Management

EU and National waste management policy can be summarised by the waste hierarchy of prevention, recycling, energy recovery and disposal. For the purposes of waste management planning, Ireland is now divided into three regions: Southern, Eastern-Midlands and Connacht-Ulster. Kilkenny City, including the Loughmacask area is located within the Southern Region and waste management is controlled in accordance with the Southern Region Waste Management Plan 2015-2021.

5.3.6.4 Existing Problems

Lack of or inadequacy of wastewater infrastructure is a known constraint for development in the Loughmacask Masterplan area.

5.3.7 Cultural Heritage

There are three Architectural Conservation Areas (ACAs) which adjoin or partially overlap with the Masterplan area:

- Talbot's Inch,
- St. Mary's and
- St. Canice's.

The locations of the ACAs are shown in **Figure 5.5**. Also shown are the National Inventory of Architectural Heritage (NIAH) and Record of Protected Structures (RPS) architectural heritage sites and recorded archaeological sites within the Masterplan lands. Details of these are provided in **Table 5.1**, below.

Table 5.1: Architectural Heritage Sites and recorded Archaeological Features in the Masterplan area

Ref.	Name / class / description	Notes
Architectural heritage		
12003001	House (1900 – 1905)	Not on RPS ¹² ; appears to have been demolished.
12003002	Presbytery / parochial / curate’s house (1915 – 1920)	Not on RPS
12003054	Cobbles / flags / paving / kerbing	Not on RPS
12005015	Handball alley	Not on RPS
12401927; C353; B117	Detached four-bay two-storey house, redeveloped 1863, incorporating fabric of earlier house, c. 1675. House containing a fine seventeenth-century chimney-piece taken from the now demolished Kilcreen House.	On County RPS (ref. C353) and City RPS (ref. B117).
B115	Kenny’s well	Not in NIAH
B116b	34 Kenny’s Well Road	Not in NIAH
Archaeology		
KK019-007----	Ring-ditch	
KK019-023----	Redundant record – linear ditch site: This was classified in the SMR ¹³ (1987) and the RMP ¹⁴ (1996) as a ‘linear ditch site’, having been identified as a linear cropmark on aerial imagery in the 1970s. The cropmark is indicated as a field boundary on the 1 st edition (1839 – 40) 6-inch OS map but not on the 1945 - 6 revision, suggesting it had been removed by then. It has been determined that this feature does not come within the remit of the Archaeological Survey of Ireland.	Discounted from further consideration
KK019-022002-	Ring-ditch	
KK019-022003-	Enclosure	
KK019-022004-	Field system	
KK019-022001-	Ring-ditch	
KK019-102----	Architectural feature: Currently built into Kilcreen Lodge, which was built c. 1860, is a fine late-17 th century chimney-piece, which came from Kilcreen House, c. 430m to the south-west, which was demolished in the 1950s and a hospital built in the grounds in 1959.	Refers to an element of NIAH ref. 12401927, as described above.
KK019-026073-	Water mill – unclassified: The ‘Black Mill’, a corn mill, likely incorporated into, or on the location of, a watermill dating back to at least the 17 th century, with probable earlier origins as a medieval mill belonging to the Black Abbey.	
KK019-024----	Ritual site – holy well: ‘St Canice’s well’ or ‘Kenny’s well’, a holy well historically used by the friars of the Black Abbey.	

¹² Kilkenny City Record of Protected Structures (2021)

¹³ Sites and Monuments Record

¹⁴ Record of Monuments and Places

5.3.7.1 Existing Problems

No particular problems identified.

Figure 5.5: Cultural Heritage and Protected Views and Prospects (© Bing Maps, 2021)



5.3.8 Landscape

The protected views and prospects, as identified in the Development Plan are shown in Figure 5.5. Those of pertinence to the Masterplan lands are:

- **No. 2:** View of St. Canice’s and St. Mary’s Cathedrals from Tullaroan Road
- **No. 6:** View of St. Mary’s Cathedral from Kenny’s Well Road
- **No. 14:** View of City from Dunningstown Road

By virtue of the gentle sloping topography of the Loughmacask lands, there are, in general, pleasant vistas over historic Kilkenny City, taking in landmarks such as St. Canice’s Cathedral and Round Tower, St. Canice’s Church and St. Mary’s Cathedral.

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5.3.8.1 Existing Problems

No particular problems identified.

6 Strategic Environmental Objectives

The SEA Directive requires that relevant environmental protection objectives established at international, EU or national level are listed in the Environmental Report. Given the position of the Masterplan beneath the *Kilkenny City and County Development Plan 2021-2027* in the land use planning hierarchy, the measures identified in the SEA for the Development Plan have also been considered in this assessment, with some modification where appropriate.

Specific Strategic Environmental Objectives (SEOs) are formulated and aligned with the environmental topics listed in the SEA Directive. Each SEO specifies a desired outcome *e.g.* reduce CO2 emissions, against which the potential future impacts of the plan can be assessed. These high-level SEOs are paired with specific targets which can be monitored using indicators (see **Section 10**). The Guiding Principles and SEOs for this SEA are set out in **Table 6.1** below.

Table 6.1: Strategic Environmental Objectives (SEOs)

Guiding Principle	SEO Reference	SEO Description
Biodiversity (Flora and Fauna)		
Guiding Principle: No net contribution to biodiversity losses or deterioration.	B1	To ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annex habitats and species.
	B2	Ensure no adverse effects on the integrity of any European site, with regard to its qualifying interests, associated conservation status, structure and function.
	B3	Safeguard national, regional and local designated sites and supporting features which function as stepping stones for migration, dispersal and genetic exchange of wild species.
	B4	Enhance biodiversity in line with the National Biodiversity Strategy and its targets.
Population and Human Health		
Guiding Principle: Improve quality of life for all ages and abilities based on high-quality, serviced, well connected and sustainable residential, working, educational and recreational environments.	P1	Consolidate growth and limit urban sprawl.
	P2	Enhance human health and promote healthy living through access to active travel opportunities, especially walking and cycling.
	P3	Safeguard the county's citizens from environment-related pressures and risks to health and well-being.
Water		
Guiding Principle: Protection, improvement and sustainable management of the water resource.	W1	Ensure that the status of water bodies is protected, maintained and improved in line with the requirements of the WFD and MSFD.
	W2	To prevent pollution and contamination of ground water.
	W3	Avoid inappropriate development in areas at risk of flooding and areas that are vulnerable to current and future erosion.
	W4	Integrate sustainable water management solutions (such as SuDS, porous surfacing and green roofs) into development proposals.

Guiding Principle	SEO Reference	SEO Description
Land and Soils		
Guiding Principle: Ensure the long-term sustainable management of land.	S1	Protect soils against pollution, and prevent degradation of the soil resource.
	S2	Safeguard areas of prime agricultural land and designated geological sites.
Air		
Guiding Principle: Achieving transition to a competitive, low carbon, climate-resilient economy that is cognisant of environmental impacts.	A1	To avoid, prevent or reduce harmful effects on human health and the environment as a whole resulting from emissions to air from all sectors with particular reference to emissions from transport, residential heating, industry and agriculture.
	A2	Maintain and promote continuing improvement in air quality through the reduction of emissions and promotion of renewable energy and energy efficiency.
	A3	Meet Air Quality Directive standards for the protection of human health — Air Quality Directive.
	A4	Decrease noise pollution and move closer to WHO recommended levels.
Climate		
Guiding Principle: Achieving transition to a competitive, low carbon, climate-resilient economy that is cognisant of environmental impacts.	C1	Contribute towards the reduction of greenhouse gas emissions in line with national targets.
	C2	Integrate sustainable design solutions into infrastructure (e.g. energy efficient buildings; green infrastructure, modal shift).
	C3	Promote development resilient to the effects of climate change.
	C4	Promote the use of renewable energy, energy efficient development and increased use of public transport.
Material Assets		
Guiding Principle: Sustainable and efficient use of natural resources	M1	Optimise existing infrastructure and provide new infrastructure to match population distribution proposals.
	M2	Promote the circular economy, reduce waste, and increase energy efficiencies.
	M3	Ensure there is adequate sewerage and drainage infrastructure in place to support new development.
	M4	Reduce the energy demand from the transport sector and support moves to electrification of road and rail transport modes.
Cultural Heritage		
Guiding Principle: Safeguard cultural heritage features and their settings through responsible design and positioning of development.	H1	Protect places, features, buildings and landscapes of cultural, archaeological or architectural heritage.

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Guiding Principle	SEO Reference	SEO Description
<i>Landscape</i>		
Guiding Principle: Protect and enhance the landscape character.	L1	To provide a framework for identification, assessment, protection, management and planning of landscapes having regard to the European Landscape Convention.
	L2	Protect identified views and prospects of significance.

7 Assessment of Alternatives

7.1 Introduction

The SEA Directive requires the Environmental Report to consider reasonable alternatives taking into account the objectives and geographical scope of the plan or programme and the significant environmental effects of the alternatives selected.

The alternative Masterplan scenarios were considered at an early stage of the process and through an iterative process, the most appropriate development plan scenario was selected.

In accordance with the Guidelines the alternatives put forward should be reasonable, realistic and capable of implementation. They should also be in line with the appropriate strategic level at which the Masterplan will be implemented within the national planning hierarchy. The Masterplan will be framed within a policy context set by a hierarchy of National, Regional and City / County level strategic plans as well as the Irish and European legislative framework. As the Masterplan lands are already included in the *Kilkenny City and County Development Plan 2021-2027*, a do-nothing scenario which retains the existing approach is included as a viable alternative.

The RSES allocated a projected population growth figure for the county, which must be adhered to. This population projection was translated into a housing land requirement, which has already been applied under development plan process and to which the Masterplan must also adhere.

Therefore, given the constraints, two reasonable alternatives scenarios have been assessed:

Alternative 1: Do-nothing (Approach set out in *Kilkenny City and County Development Plan 2021-2027*);

Alternative 2: Consolidated (Developed on basis of approach in the *Kilkenny City and County Development Plan 2021-2027* but with enhanced consolidation, land use and connectivity).

7.2 Assessment of Alternative Scenarios

The assessment of the alternatives scenarios is carried out with reference to potential impacts on the Strategic Environmental Objectives (SEOs) set out in **Section 6** of this report, and presented in **Table 7.1**.

When the restrictions of higher level plans are taken into consideration, both scenarios are broadly similar. However, Alternative 2 provides for more compact and consolidated development centred on the local centre, and for greater access and connectivity within the masterplan lands and adjoining areas. This provides for slightly greater environmental benefit in terms of community, connectivity, greenhouse gas emissions and use of existing and planned infrastructure.

Table 7.1: Assessment of Alternatives against SEOs

Alternative	Likely to <u>Improve</u> status of SEOs to a <u>greater</u> degree	Likely to <u>Improve</u> status of SEOs to a <u>lesser</u> degree	Likely neutral effect on SEOs	<u>Potential Conflict</u> with status of SEOs <u>likely to be mitigated</u>	<u>Probable Conflict</u> with status of SEOs- <u>unlikely to be mitigated</u>
Alternative 1		P1, P2, P3, A1, A2, A3, A4, C1, C2, C3, M1, M4	C4, H1, M2	B1, B2, B3, B4, W1, W2, W3, W4, S1, S2, L1, L2	M3
Alternative 2	P1, A1, C1, C2, M1, M4	P2, P3, A2, A3, A4, C3	C4, H1, M2	B1, B2, B3, B4, W1, W2, W3, W4, S1, S2, L1, L2	M3

7.3 Selection of the Preferred Alternative for the Masterplan

The selected alternative for the Masterplan is Alternative 2. This alternative facilitates the improvements in various environmental components by accommodating a more connected, integrated and consolidated land use arrangement that addresses environmental sensitivities and meets the opportunities of the Masterplan area.

Alternative 2 also allows for a greater number journeys via sustainable transport modes and would be likely to contribute towards associated positive environmental effects on overall greenhouse gas emissions, energy usage and air and noise emissions.

8 Assessment of Masterplan Provisions

8.1 Methodology

This section provides an environmental assessment of the provisions of the Masterplan. The relevant aspects of the current state of the environment (see **Section 5**) and the Strategic Environmental Objectives (see **Section 6** and **Table 6.1**) are used in the assessment process.

The SEA Directive requires the Environmental Report to include information on the likely significant effects on the environment, including on issues such as biodiversity, fauna, flora, population, human health, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors.

The provisions of the Masterplan are assessed (see **Table 8.1**) using compatibility criteria in order to determine how they would be likely to affect the status of the SEOs. The SEOs and the alternatives are arranged against each other to identify which interactions - if any - would cause effects on specific components of the environment.

The *Kilkenny City and County Development Plan 2021-2027* already provides for land use, zoning and objectives for the Loughmacask area. The development plan also includes a specific objective (Z8 – City Zoning Objectives) to prepare a masterplan for the Loughmacask area. It is noted that during its preparation the *Kilkenny City and County Development Plan 2021-2027*, including the Loughmacask area, was subject to full SEA, Appropriate Assessment (AA) and Strategic Flood Risk Assessment (SFRA)¹⁵.

The degree to which effects can be determined is limited as the Masterplan will be implemented through lower tier decision making and project level environmental assessment as relevant. Mitigation measures to prevent or reduce significant adverse effects posed by the Masterplan are identified in **Section 9** - these have been integrated into the Masterplan.

8.2 Appropriate Assessment

A Stage 2 Appropriate Assessment (AA) has been undertaken alongside the preparation of the Masterplan. The requirement for AA is provided under the EU Habitats Directive (Directive 92/43/EEC). The AA concluded that the Masterplan will not affect the integrity of the Natura 2000 network. Various measures have been integrated into the Masterplan to facilitate this (see **Section 9**). The preparation of the Masterplan, SEA and AA has taken place concurrently and the findings of the AA has informed the Masterplan and the SEA. Recommendations made by the AA and SEA were integrated into the Masterplan.

8.3 The Interrelationship between Environmental Factors

The presence of significant interrelationships between environmental factors is identified in **Table 8.2**.

8.4 Potential Adverse Effects and their Determination

Environmental impacts are determined by the nature and extent of multiple or individual projects and site specific environmental factors. Avoidance of conflict with SEOs and the environment is dependent upon compliance with mitigation measures, including those which have emerged through the SEA and AA processes and which have been integrated into the Masterplan. No potentially significant negative environmental effects have been identified however, some potential uncertain effects arising from

¹⁵ <https://www.kilkennycoco.ie/eng/services/planning/development-plans/city-and-county-development-plan/adopted-city-and-county-development-plan.html>

implementation of the Masterplan are detailed in **Table 8.3** and these are considered further in **Section 9 – Mitigation Measures** of this report.

8.5 Cumulative Effects

Cumulative effects can be described as the addition of many small impacts to create one larger, more significant, impact.

There are 2 types of potential cumulative effects that have been considered, namely:

- Potential intra-Plan cumulative effects - these arise from the interactions between different types of potential environmental effects resulting from a plan, programme, etc. The interrelationships between environmental factors that help determine these potential effects are identified on Table 8.2.
- Potential inter-Plan cumulative effects - these arise when the effects of the implementation of one plan occur in combination with those of other plans, programmes, projects, etc.

However, the Masterplan sits beneath the *Kilkenny City and County Development Plan 2021-2027*, as well as higher level plans, which oversee and manage development and environmental protection across the city and county, including Loughmacask.

During the preparation of the Masterplan, effects that may arise as a result of implementing the plan have been mitigated out to the extent that the only remaining effects are potential uncertain effects which are identified in **Table 8.3** and mitigated in **Section 9** of this report.

Table 8.1: Environmental Assessment of Masterplan

Masterplan Provision	Potential Positive Effects on SEO	Uncertain Effects on SEO	Potential Negative Effects on SEO	No Likely / Neutral Effects on SEO
Section 1: Introduction				
Sets out context and location of Loughmascask.				B1, B2, B3, B4, P1 , P2, P3, W1, W2, W3, W4, S1, S2, A1, A2, A3, A4, C1, C2, C3, C4, M1, M2, M3, M4, H1, L1, L2
Details public consultation and engagement process and findings of same. Highlighted importance of landscape and environment; amenity, community and social facilities; access and movement; public transport; traffic and safety; and other environmental and infrastructural considerations.	B1, B2, B3, B4, P1 , P2, P3, W1, W2, W3, W4, S1, S2, A1, A2, A3, A4, C1, C2, C3, C4, M1, M2, M3, M4, H1, L1, L2			
Section 2: Vision				
Sets out vision for Masterplan for Loughmascask to be “ <i>an exemplar and plan-led new residential quarter of Kilkenny City, characterised by</i> ”	P1, P2, P3, A1, C2, M1, M4, H1, L1			B1, B2, B3, B4, W1, W2, W3, W4, S1, S2, A2,

Masterplan Provision	Potential Positive Effects on SEO	Uncertain Effects on SEO	Potential Negative Effects on SEO	No Likely / Neutral Effects on SEO
<i>sustainable mobility connecting people to high quality housing, local facilities and amenities and the city centre and set within a distinctive landscape and historic city context.”</i>				A3, A4, C1, C3, C4, M2, M3, L2
Key themes include: <i>Distinctive and vibrant neighbourhood, building on the existing locality and communities and providing an excellent quality of life with urban and rural amenities.</i>	P1, P2, P3, A1, C2, L1			B1, B2, B3, B4, W1, W2, W3, W4, S1, S2, A2, A3, A4, C1, C3, C4, M1, M2, M3, M4, H1, L2
Key themes include: <i>A walkable urban quarter with day-to-day facilities and amenities within a 10 minute walk of homes – reducing private transport dependency and strengthening local communities.</i>	P1, P2, P3, A1, C2, M1, M4			B1, B2, B3, B4, W1, W2, W3, W4, S1, S2, A2, A3, A4, C1, C3, C4, M2, M3, H1, L1, L2
Key themes include: <i>A new urban quarter that expands on and is integrated with the historic city centre as well as the natural landscape of the Nore and Breagh river corridors.</i>	P1, P2, P3, A1, H1, L1			B1, B2, B3, B4, W1, W2, W3, W4, S1, S2, A2, A3, A4, C1, C3, C4, M2, M3, L2
Key themes include: <i>Excellent provision of open space, green networks and local facilities that cater for local need, foster community growth and support health and well-being.</i>	B4, P1, P2, P3, L1			B1, B2, B3, W1, W2, W3, W4, S1, S2, A1, A2, A3, A4, C1, C2, C3, C4, M1, M2, M3, M4, H1, L2
Key themes include: <i>Responds to climate change, through sustainable transport, energy efficient building technologies, and a strong green infrastructure network including sustainable drainage (SuDS) utilising soakaways, swales, infiltration trenches,</i>	B4, W1, W2, W3, W4, A1, A2, A3, A4, C1, C2, C3, C4, M1, M3, M4, L1			B1, B2, B3; P1, P2, P3; S1, S2; M2; H1; L2.

Masterplan Provision	Potential Positive Effects on SEO	Uncertain Effects on SEO	Potential Negative Effects on SEO	No Likely / Neutral Effects on SEO
<i>ponds and wetlands where feasible.</i>				
Section 3: Strategic Planning Context				
Sets out context of the Masterplan for Loughmacask within the hierarchy of national, regional and local planning strategies and policies. This includes reference to the Kilkenny City and County Development Plan 2021-2027.				B1, B2, B3, B4, P1, P2, P3, W1, W2, W3, W4, S1, S2, A1, A2, A3, A4, C1, C2, C3, C4, M1, M2, M3, M4, H1, L1, L2
Section 4: Lands at Loughmacask				
Provides a detailed description of lands and context of Loughmacask – including environmental sensitivities, land uses and identifying key challenges.	B1, B2, B3, B4, P1, P2, P3, W1, W2, W3, W4, S1, S2, A1, A2, A3, A4, C1, C2, C3, C4, M1, M2, M3, M4, H1, L1, L2			
Section 5: Principles and Strategy				
<p>Sets out the Principles for the Masterplan for Loughmacask as follows:</p> <ul style="list-style-type: none"> • Compact growth and integration: Loughmacask will establish a new urban quarter at Kilkenny City that is fully integrated with the City. • 10-minute city quarter: Residents should be able to access local services such as shops, schools and parks within a 10-minute walk or cycle from their homes. • Ease of access and movement: A significant difference between the Loughmacask LAP 2008 and this Masterplan is the removal of through traffic from the area by the reconfiguration of the road objectives for the area and the re-routing of through traffic. The primary 	P1, P2, P3, A1, A2, A3, A4, C1, C2, C3, C4, M1, M2, M3, M4	B1, B2, B3, B4, W1, W2, W3, W4, S1, S2, H1, L1, L2		

Masterplan Provision	Potential Positive Effects on SEO	Uncertain Effects on SEO	Potential Negative Effects on SEO	No Likely / Neutral Effects on SEO
<p>vehicular access will be from the east or the west into but not through Loughmacask.</p> <ul style="list-style-type: none"> Sustainable land use: New residential development will be the primary land use and a new secondary school will be provided at Lousybush Lane. The local centre will include an appropriate sized local supermarket, in accordance with the Development Plan Retail Strategy, and a number of smaller retail and commercial units that cater for the day-to-day need of the local community. 				
Sets out the <i>Strategy</i> for the Masterplan for Loughmacask.	P1, P2, P3, A1, A2, A3, A4, C1, C2, C3, C4, H1, L1	B1, B2, B3, B4, W1, W2, W3, W4, S1, S2, M1, M2, M3, M4, L2		
Section 6: Masterplan				
<p>Sub-section 6.1: sets out the approach to land use including for the Butts ‘Special Regeneration Area’.</p> <p>The primary land use will be residential comprising a range of housing typologies and densities that respect, extend and integrate with established residential areas. Land use will allow for a neighbourhood centre, new school and network of open spaces and recreational areas.</p>	P1, P2, P3, C2, C3, M1	B1, B2, B3, B4, W1, W2, W3, W4, S1, S2, C1, H1, L1, L2		C4; M2, M3, M4.
<p>Sub-section 6.2 sets out the approach to connectivity and access. The masterplan sets out that the area will be high-quality, walkable and connected new residential quarter with highly visible walking and cycling facilities</p>	P1, P2, P3, A1, A2, A3, A4, C1, C2, C3, M1, L1	B1, B2, B3, B4, W1, W2, W3, W4		S1, S2; C4; M2, M3, M4; H1; L2.

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Masterplan Provision	Potential Positive Effects on SEO	Uncertain Effects on SEO	Potential Negative Effects on SEO	No Likely / Neutral Effects on SEO
<p>throughout and with local access points for vehicular traffic quickly transforming to homezone style shared streets.</p> <p>Lousybush Lane will be a primary green link that is free of vehicles and providing a convenient and attractive route for local journeys from homes to the local centre, schools, community facilities and amenity spaces.</p>				
<p>Sub-section 6.3 sets out the approach to open space, including SUDS. The approach includes for protection and integration within open space of the key natural features including Lough Macask and the River Breagagh, enhancement of recreational / sporting facilities, and incorporation of sustainable drainage systems.</p>	B1, B2, B3, B4, P1, P2, P3, W1, W2, W3, W4, S1, A1, C2, C3, H1, L1			S2; A2, A3, A4; C1, C4; M1, M2, M3, M4; L2.
<p>Sub-section 6.4 sets out the approach to the roads hierarchy. Key road network objectives (i.e. Western Bypass, and Phase 2 of Central Access Scheme) have been included and assessed in the Kilkenny City and County Development Plan 2021-2027. Therefore, the masterplan only considers local roads and access streets, passive traffic calming, and pedestrian and cycle facilities.</p>	P1, P2, P3, A1, A3, A4, C1, C2, C3, M1, M4	B1, B2, B3, B4, W1, W2, W3, W4, S1, S2, A2, C4, M2, M3, H1, L1, L2		
<p>Sub-section 6.5 sets out the approach to density, with higher density around the local centre and centrally within the lands to underpin establishment of a local community in proximity to the newly planned secondary school.</p>	P1, P2, P3, W4, S1, S2, A1, C1, C2, C3, M1, M2	B1, B2, B3, B4, W1, W2, W3, A2, A3, A4, C4, M3, M4, H1, L1, L2		
<p>Sub-section 6.6 sets out the approach to character areas, including provision of high-quality, walkable and connected</p>	P1, P2, W4, S2, A1, C2, C3, M1	B1, B2, B3, B4, P3, W1, W2, W3, S1, A2, A3, A4, C1, C4, M2,		

Masterplan Provision	Potential Positive Effects on SEO	Uncertain Effects on SEO	Potential Negative Effects on SEO	No Likely / Neutral Effects on SEO
communities, with local access and cycle links.		M3, M4, H1, L1, L2		
<p>Sub-section 6.7 sets out the approach to phasing. The phasing includes for delivery of open space in tandem with development.</p> <p>It is also noted that permission exists for c.300+ residential units, however, no significant development has taken place due to lack of wastewater infrastructure. Therefore, delivery of critical infrastructure is required in advance of development of the lands.</p> <p>While the overall effect of the proposed phasing of development will be environmentally positive or neutral development has potential for uncertain effects on SEOs, which can be readily mitigated.</p>	P1, W3, W4, S1, S2, C2, M1, M3, M4	B1, B2, B3, B4, P2, P3, W1, W2, W3, W4, A1, A2, A3, A4, C1, C3, C4, M2, H1, L1, L2		
Section 7: Environmental Considerations				
Sets out the key environmental considerations for the Masterplan, including outputs from the SEA and AA assessments.	B1, B2, B3, B4, P1, P2, P3, W1, W2, W3, W4, S1, S2, A1, A2, A3, A4, C1, C2, C3, C4, M1, M2, M3, M4, H1, L1, L2			

Table 8.2: Significant Interrelationships between Environmental Factors

Component	Biodiversity & Flora / Fauna	Population & Human Health	Soil	Water	Air and Climate	Material Assets	Cultural Heritage	Landscape
Biodiversity & Flora / Fauna		No	Yes	Yes	Yes	Yes	No	Yes
Population & Human Health			Yes	Yes	Yes	Yes	No	Yes
Soil				Yes	Yes	Yes	Yes	Yes
Water					Yes	Yes	Yes	Yes
Air and Climate						Yes	Yes	Yes
Material Assets							Yes	Yes
Cultural Heritage								Yes
Landscape								

Table 8.3: Potential Uncertain Effects of Masterplan

Masterplan Provision	Potential Uncertain Effects on SEOs*
Section 5: Principles and Strategy	
Sets out the Principles for the Masterplan.	B1, B2, B3, B4; W1, W2, W3, W4; S1, S2; H1; L1, L2.
Sets out the Strategy for the Masterplan.	B1, B2, B3, B4; W1, W2, W3, W4; S1, S2; M1, M2, M3, M4; L2.
Section 6: Masterplan	
Sub-section 6.1 sets out the approach to land use including Butts Regeneration potential .	B1, B2, B3, B4; W1, W2, W3, W4; S1, S2; C1; H1; L1, L2.
Sub-section 6.2 sets out the approach to connectivity and access .	B1, B2, B3, B4; W1, W2, W3, W4.
Sub-section 6.4 sets out the approach to the roads hierarchy .	B1, B2, B3, B4; W1, W2, W3, W4; S1, S2; A2; C4; M2, M3; H1; L1, L2.
Sub-section 6.5 sets out the approach to density .	B1, B2, B3, B4; W1, W2, W3; A2, A3, A4; C4; M3, M4; H1; L1, L2.
Sub-section 6.6 sets out the approach to neighbourhoods .	B1, B2, B3, B4; P3; W1, W2, W3; S1; A2, A3, A4; C1, C4; M2, M3, M4; H1; L1, L2.
Sub-section 6.7 sets out the approach to phasing .	B1, B2, B3, B4; P2, P3; W1, W2, W3, W4; A1, A2, A3, A4; C1, C3, C4; M2; H1; L1, L2.

* **SEO (Summary):** Biodiversity (B), Population and Human Health (P), Water (W), Soils (S), Air (A) Climate (C), Material Assets (M), Heritage (H) and Landscape (L).

9 Mitigation

The environmental assessment of the provision of the Masterplan (**Section 8**) does not identify potential for significant negative environmental effects but does identify a number of potential uncertain effects as set out in **Table 8.1**.

Proposals for development within the Loughmacask Masterplan area must comply as appropriate with the relevant provisions included within the *Kilkenny City and County Development Plan 2021-2027*. Given that the Masterplan sits within and at a lower level in the planning hierarchy, the measures contained to the Development Plan, and in its Natura Impact Report (NIR), SEA Environmental Report / SEA Statement and Strategic Flood Risk Assessment (SFRA) are applicable to the Masterplan.

Therefore, the key environmental protection measures included in the *Kilkenny City and County Development Plan 2021-2027*, provide for appropriate and detailed mitigation of potential uncertain environmental effects of the Masterplan. These measures include the following selected aims / policies / objectives:

Strategic Objectives

- “2A *To support and encourage sustainable compact growth and settlement patterns, integrate land use and transportation, and maximise opportunities through development form, layout and design to secure climate resilience and reduce carbon emissions.*
- 2B *To support the implementation of the National Climate Action Plan and the National Climate Action Charter for Local Authorities, and to facilitate measures which seek to reduce emissions of greenhouse gases by embedding appropriate policies within the Development Plan.*
- 2C *To promote, support and direct effective climate action policies and objectives that seek to improve climate outcomes across the settlement areas and communities of County Kilkenny helping to successfully contribute and deliver on the obligations of the State to transition to low carbon and climate resilient society,*
- 2D *To integrate appropriate mitigation and adaptation considerations and measures into all forms of development.*
- 2E *To ensure that the Development Plan transposes, supports and implements strategic objectives of the National Planning Framework and the Southern Regional Spatial and Economic Strategy to create an enabling local development framework that:*
 - (a) promotes and integrates important climate considerations in local development and the assessment of planning applications and*
 - (b) supports the practical implementation of national climate policy and targets to assist in the delivery of the national transition objective.*
- 2F *To adopt nature-based approaches and green infrastructural solutions as viable mitigation and adaptation measures to reduce greenhouse gas emissions where feasible. The Council will promote and support physical activity, active recreation and an active lifestyle.*
- 2G *To reduce energy related CO2 emissions of Kilkenny County Council.*
- 2H *To achieve the commitment under the European Climate Alliance to the reduction of greenhouse gas emissions by 10 percent every 5 years.”*

Open Space

Strategic Aim: *To ensure the provision of open space and recreational facilities in order to maintain, and improve open spaces that contribute to the well-being and making of place for the benefit of residents, workers and visitors to the County while protecting and enhancing biodiversity.*

Heritage, Culture and the Arts

Strategic Aim: *To seek the protection and sustainable management of the arts, culture and heritage of Kilkenny for the benefit of current and future generations; to encourage the collection of knowledge to inform its protection; and to promote access to, awareness of and enjoyment of Heritage, Arts and Culture, to further develop the infrastructure and actively support engagement with communities, throughout Kilkenny*

The Council will support the implementation of the National Heritage Plan and National Biodiversity Action Plan.

Biodiversity Policy / Objectives

9A *Continue to identify and map habitats and green infrastructure of county importance, and raise awareness and understanding of the county's natural heritage and biodiversity identifying green corridors and measures to connect them.*

- To ensure that development proposals, where relevant, improve the ecological coherence of the Natura 2000 network and encourage the retention and management of landscape features that are of major importance for wild fauna and flora as per Article 10 of the Habitats Directive.*
- To protect and where possible enhance wildlife habitats and landscape features which act as ecological corridors/networks and stepping stones, such as river corridors, hedgerows and road verges, and to minimise the loss of habitats and features of the wider countryside (such as ponds, wetlands, trees) which are not within designated sites.*
- To ensure that appropriate mitigation and/or compensation measures to conserve biodiversity, landscape character and green infrastructure networks are required in developments where habitats are at risk or lost as part of a development.*
- Require all developments in the early pre-planning stage of the planning process to identify, protect and enhance ecological features and habitats, and making provision for local biodiversity (e.g. through protection of existing breeding sites, and provision of appropriate new infrastructure such as swift, bat and barn owl boxes, bat roost sites, green roofs, etc.) and provide links to the wider Green Infrastructure network as an essential part of the design process.*
- The Council will consult the Geological Survey of Ireland when considering undertaking, approving or authorising developments which are likely to affect County Geological Sites. In some locations, in consultation with landowners, it may be possible to access geological and geo-morphological features of interest, and the Council will support and facilitate this where appropriate.*
- To protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character of the county, and to ensure that proper provision is made for their protection and management, when undertaking, approving or authorising development.*
- To retain hedgerows, and other distinctive boundary treatment such as stone walls, when undertaking, authorising or approving development; where the loss of the existing*

boundary is unavoidable as part of development, to ensure that a new hedgerow is planted using native species, and species of local provenance to replace the existing hedgerow and/or that the wall is re-built using local stone and local vernacular design.

- *The Council will protect, manage and enhance the wetlands of the County having regard to the 'County Kilkenny Preliminary Wetland Survey, 2020' and subsequent surveys published during the lifetime of this plan. The Council will also ensure that there is an appropriate level of assessment in relation to proposals which involve draining, reclaiming or infilling of wetland habitats.*

Landscape

The Council will protect and sustainably manage the landscape character of County Kilkenny, having regard to the findings of the landscape character assessment and the Development Management Requirements as set out in this chapter for the sustainable development of the county and appropriate conservation of its landscape character.

Views and Prospects Policy / Objectives

The Council will preserve and support the improvement of places or areas from which views or prospects of special amenity value exist, as identified in Appendix H and on Figure 9.2.

Architectural Heritage Policy / Objectives

It is Council policy to ensure the protection of architectural heritage by including all structures considered to be of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest in the Record of Protected Structures.

Architectural Conservation Area (ACA) Policy / Objectives

9J To ensure the preservation of the special character of each ACA listed in this Plan (See Table 9.2 and Volume 2 Heritage Strategy) with particular regard to building scale, proportions, historical plot sizes, building lines, height, general land use, fenestration, signage, and other appendages such as electrical wiring, building materials, historic street furniture, paving and shopfronts.

Water and Waste Water Infrastructure Policy / Objectives

Strategic Aim: *To ensure a sufficient level of water services within the county for the implementation of the core strategy, provide a framework for the protection of the environment, including water quality, the avoidance of flood risk and the provision of a high-quality telecommunications infrastructure.*

10A To facilitate Irish Water and to assist, subject to service level agreements, with the provision of water and wastewater infrastructure provision in accordance with the water services strategic plan, made in accordance with the Water Services Act 2007.

Water Framework Directive Objectives

10B To implement the measures of the River Basin Management Plan, including continuing to work with communities through the Local Authority Waters Programme to restore and improve water quality in the identified areas of action.

Water Quality Objectives

10C To complete the mapping of source protection areas and to map Source Protection Areas for any new public water supply schemes as appropriate.

10D To ensure that Source Protection Areas are identified for any multiple unit housing developments with private water supplies.

Air Quality Policy / Objectives

The Council will promote the best ambient air quality compatible achievable with sustainable development.

Pollution Control Objectives

- 10E *To continue to update noise mapping in accordance with revised or updated thresholds for noise mapping.*
- 10F *Develop priority list of actionable works to mitigate against excessive noise and implement subject to cost benefit analysis.*

Flood Management Policy / Objectives

It is Council policy to adopt a comprehensive risk-based planning approach to flood management to prevent or minimise future flood risk. In accordance with the Planning System and Flood Risk Management – Guidelines for Planning Authorities, the avoidance of development in areas where flood risk has been identified shall be the primary response. The Council will ensure that new developments do not reduce the effectiveness or integrity of any existing or new flood defence infrastructure, and will facilitate the provision of new, or the reinforcement of existing, flood defences and protection measures where necessary.

Waste Management Objectives

- 10G *To implement the Southern Region Waste Management Plan.*

Seveso Sites Objectives

- 10H *It is an objective of the Council to, with due regard to the provisions of the Major Accidents Directive and Regulations, give effect to the Directive by controlling development with respect to—*
- *The siting of Major Accident Hazard sites*
 - *The modification of an existing Major Accident Hazard site*
 - *Development in the vicinity of a Major Accident Hazard site*

Renewable Energy Policy / Objectives

Strategic Aim: *To generate 100% of electricity demand for the County through renewables by 2030 by promoting and facilitating all forms of renewable energies and energy efficiency improvements in a sustainable manner as a response to climate change in suitable locations having due regard to natural and built heritage, biodiversity and residential amenities.*

Integration of Land Use and Transport Objectives

- 12A *To plan for and progressively implement a sustainable, integrated and low carbon transport system by enhancing the existing transport infrastructure in terms of road, bus, rail, cycling and pedestrian facilities and interfacing different modes as the opportunity arises.*
- 12B *To plan for a transition towards sustainable and low carbon transport modes, through the promotion of alternative modes of transport, and ‘walkable communities’ together with promotion of compact urban forms close to public transport corridors to encourage more sustainable patterns of movement in all settlements.*
- 12D *To develop a 10-minute city framework for Kilkenny City to map and identify infrastructural requirements to support the ‘10 minute’ city.*

Modal Share Objectives

- 12E *To deliver on sustainable mobility with an accompanying investment in infrastructure to provide for integration between all modes of transport to support the use of sustainable travel choices.*
- 12G *To achieve a modal shift from the private car to walking or cycling in accordance with the targets in Table 12.1 for County Kilkenny.*

In addition, the Masterplan has been informed by the sensitivities of the receiving environment as identified herein. While no significant negative environmental effects are predicted to arise as a result of the Masterplan, various provisions of the Masterplan will have the effect of avoiding and / or minimising potential adverse environmental effects. These include but are not limited to the following:

- The Masterplan provides the framework for a compact, planned new urban neighbourhood adjoining and integrated with the existing city centre; avoiding unplanned, one-off scattered or ribbon development at the urban-rural interface – and, therefore, minimising the impacts of unplanned urban sprawl and greenfield development, e.g. habitat loss.
- Vegetated setbacks and buffers will be retained around the River Breagh and Lough Macask, providing for habitat conservation, reduced flood risk and safeguarding of water quality.
- The proposed green spine will buffer future residential development from the existing industrial facility (a Seveso site), Grassland Fertilizers.
- Mature hedgerows and treelines will be retained, and a network of green infrastructure created, safeguarding ecological corridors.
- The Masterplan proposals will promote sustainable mobility and reduce through traffic, thereby minimising environmental effects (including greenhouse gas emissions, noise and air quality impacts) associated with vehicles with internal combustion engines.
- Development of the Masterplan lands will incorporate a network of SuDS measures, including bio-retention swales, reducing flood risk and safeguarding water quality.
- The existing ‘Butts’ community will be integrated into the Masterplan area by means of a ‘Special Regeneration Area’ designation, avoiding community severance that may otherwise arise.
- As detailed in the Site Specific Flood Risk Assessment (SSFRA) prepared in respect of the Masterplan (and outlined in **Section 2.4**, above), there are areas of localised flood risk associated with the River Breagh and Lough Macask. While all lands earmarked for residential development under the Masterplan are situated in Flood Zone C, future proposed development adjoining / proximate to Flood Zones A or B near the River Breagh could be at risk of flooding under the future (i.e. climate change) scenarios. Additionally, the zone associated with a low probability of groundwater flooding at Lough Macask partially enters into areas earmarked for residential and community use. Development in the Masterplan area will incorporate sustainable drainage systems (SuDS) measures to mitigate flood risk and mitigation-by-design (e.g. finished floor levels above the 1-in-100 year fluvial flood level, and step-ups from road levels) to prevent ingress.

10 Monitoring

10.1 Introduction

The SEA Directive requires that the significant environmental effects of the implementation of plans and programmes are monitored. The Loughmacask Masterplan is a stated objective of the *Kilkenny City and County Development Plan 2021-2027* and must be prepared in accordance with the requirements of the development plan. The SEA Statement for the adopted development plan provides (at Section 5 & Table 5¹⁶) for a detailed monitoring programme of the implementation of the plan, which will include the Loughmacask Masterplan. Therefore, separate monitoring of the masterplan is not required.

10.2 Indicators and Targets

Monitoring is based around indicators which allow quantitative measures of trends and progress over time relating to the Strategic Environmental Objectives (**Section 6**) used in the assessment. Each indicator to be monitored is accompanied by the targets. The monitoring programme may be updated to deal with specific environmental issues - including unforeseen effects - as they arise. Such issues may be identified by the Council or identified to the Council by other agencies.

10.3 Sources

Measurements for indicators generally come from existing monitoring sources. Existing monitoring sources include those maintained by the Council and the relevant authorities *e.g.* the Environmental Protection Agency, the National Parks and Wildlife Service and the Central Statistics Office.

10.4 Reporting

The Council is responsible for monitoring and the preparation of monitoring evaluation report(s), the publication of these reports and, if necessary, the carrying out of corrective action. The Chief Executive's Report on the implementation of the Development Plan, including the Loughmacask Masterplan, which must be carried out within two years of the making of the Plan, will include detail on the monitoring of the indicators for the masterplan.

Environmental indicator assessment during monitoring can show positive / neutral impacts or negative impacts on the environment. Where an indicator value highlights a positive / neutral impact on the environment, it is likely that the objectives of the Masterplan are well-defined with regard to the environment. Conversely where the objectives of the Masterplan have a negative impact on the environment, it may be necessary to review the objectives of the Masterplan or to take some other form of intervention. For example, if an objective is having a significant adverse impact, an amendment may be considered during the lifetime of the Masterplan.

¹⁶ <https://www.kilkennycoco.ie/eng/services/planning/development-plans/city-and-county-development-plan/city-and-county-development-plan-2021-sea-statement.pdf>

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Brady Shipman Martin

DUBLIN

Mountpleasant Business Centre
Ranelagh
Dublin 6
D06 X7P8
+353 1 208 1900

CORK

Penrose Wharf Business Centre
Penrose Wharf
Cork
+353 21 242 5620

mail@bradyshipmanmartin.com
www.bradyshipmanmartin.com

