MONARD STRATEGIC DEVELOPMENT ZONE 2015

Environmental Report

August 2015

CORK COUNTY COUNCIL

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1.0 Introduction

Monard was designated a Strategic Development Zone in May 2010 for the creation of a new rail based settlement between Cork City and Blarney. Following designation, a Planning Scheme was prepared and adopted by Cork County Council. Following the adoption two appeals were subsequently lodged and permission was refused by An Bord Pleanala in September 2013. It was decided following careful consideration of other options to address the reasons for refusal in a revised Planning Scheme. The 2010 government designation of lands in Monard as a Strategic Development Zone remains in place.

This is the Environmental report to accompany the Planning Scheme. An addendum to the environment was prepared following the amendments to the Draft scheme, this is a separate document. The environmental report is the main output of the Strategic Environmental Assessment process which aims to integrate environmental and sustainability considerations into strategic decision making. (Therivel, 2004)

The purpose of this report is to provide a clear understanding of the likely environmental consequences of decisions regarding the adoption of the Planning Scheme. This SEA process has been undertaken to comply with the SEA directive (European Directive 2001/42/EC) and with the provisions of the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI No. 436 of 2004) as amended. This report should be read in conjunction with the Planning Scheme.

1.1 Strategic Environmental Assessment Process

In essence, SEA is a formal systematic evaluation of the likely significant environmental effects of implementing the Planning Scheme. It should commence at the earliest opportunity and should facilitate the identification of alternative strategies as well as possible impacts from decisions to be made; it should also determine the use of appropriate measurable targets, indicators and mitigation measures.

1.2 SEA Directive and Legislation

The European Community issued the Strategic Environmental Assessment (SEA) Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment. It introduced the requirement that SEA be carried out on plans and programmes, for a wide range of sectors including land use plans.

Article 1 of the SEA Directive has a stated objective "*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 if certain plans and programmes which are likely to have significant effects on the environment".*

The SEA Directive was transposed into Irish Law under the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. 435 of 2004) and the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (S.I. 436 of 2004) it became operational on 21 July 2004.

1.3 Strategic Development Zones – Environmental Legislation

The concept of Strategic Development Zones was introduced in the Planning and Development Act 2000. Part IX of the Planning and Development Act makes provision for the government to designate a site or sites which are deemed in the opinion of the Government to be of economic or social importance to the State. Cork County Council has prepared a Planning Scheme as the designated development agency under section 168 of the Planning and Development Act 2000.

Articles 11 of the Planning and Development (Strategic Environmental Assessment) Regulations 2004 introduced the Articles 179A to 179J which are concerned with planning schemes and the environmental report. (This was introduced by way of amendment of Part 14 of 2001 Regulations, Planning Schemes)

Article 179A requires that a Planning Scheme prepared under section 168 of the Planning and Development Act 2000 - 2010 "*shall be accompanied by or include an environmental report".*

Article 179C of the (SI No. 436 of 2004) sets out the content for the environmental report to accompany a Planning Scheme. An environmental report shall include;

(a) current knowledge and methods of assessment
(b) the contents and level of detail in the planning scheme
(c) the stage of planning scheme in the decision making process
(d) the extent to which certain matters are more appropriately assessed at different levels in the decision making process in order to avoid duplication of environmental assessment.

The findings of the SEA process are expressed in this Environmental Report which accompanies the Planning Scheme. The planning authority/elected members are required to take account of this report during their consideration of the Planning Scheme. The Environmental Report assessed changes proposed to the Draft Planning Scheme on foot of submissions made during the period of public consultation in the form of the addendum to the environmental report. An SEA Statement has been prepared summarising, inter alia, how environmental considerations have been integrated into the Planning Scheme.

2.0 Methodology

The methodology used in this Environmental Report is based on the SEA directive. The EPA guidelines and the Department of the Environment, Heritage and Local Government guidelines entitled "Guidelines to Regional Authorities and Planning Authorities on the implementation of the SEA Directive" have informed the preparation of the environmental report along with international and national guidelines and published documents.

The preparation of this Environmental Report took place in tandem with the formulation of the Planning Scheme. This allowed an environmental awareness and consideration of the environmental consequences particularly within the small in-house strategic development team. A number of experts within the local authority were consulted throughout the process, in particular the Archaeologist and Appropriate Assessment Officer.

Finally preliminary reports were prepared by external consultants in relation to Water Supply, Waste Water and Sustainable Urban Drainage Systems. A Landscape Report and a Transportation Assessment were also prepared in response to the identification of the potential significant impacts both receptors are likely to have on the environment.

2.1 SEA Steps

- **Screening –** Not required in this instance, SEA is mandatory for Strategic Development Zones.

- **Scoping** –The range of environmental issues and the level of detail to be included in the Environmental Report are decided upon, in consultation with the prescribed environmental authorities.

- **Environmental Report** - Publishing an environmental report on the plan including its significant environmental effects, and consulting on it.

- **Adoption** - Providing information on the adopted scheme including incorporation of the consultation output and outlining the monitoring framework.

- **Monitoring** - Monitoring significant environmental effects and taking appropriate remedial action for any unforeseen significant environmental effects.

2.2 Screening

It is a requirement under Article 179A of the Planning and Development (SEA) regulations 2004 (S.I. No 436 of 2004) that a Planning Scheme shall be accompanied by or include an environmental report. Therefore the initial process known as "screening" was not required, an environmental report is a mandatory requirement for Strategic Development Zones.

2.3 Scoping

The scoping process was carried out in conjunction with the four environmental authorities to determine the extent of the environmental issues and the level of detail to be included in the environmental report. The scoping process focused on the changes to address An Bord Pleanala's reasons for refusal of the 2012 Planning Scheme.

The scoping report was sent to the prescribed Environmental Authorities namely: The Environmental Protection Agency, The Department of the Environment, Heritage & Local Government, the Department of Communications, Energy and Natural Resources, the Department of Agriculture Food and Marine. The scoping report was also sent to South Western Regional Fisheries Board having regard to the Blarney River which flows through the site. The responses were taken

into account during the formulation of the environmental report.

The submission from the **EPA** outlined very similar points to the 2012 Planning Scheme.

The merit of including a review of the Scheme has been highlighted again (potentially 5 years after adoption). The reason is to ensure the Planning Scheme takes account of the prevailing policy, legislative requirements and economic conditions of the time. The EPA submission for 2012 Planning Scheme remains relevant, the points are summarised as follows;

- Provision of adequate and appropriate infrastructure (drinking water, wastewater, waste etc)
- Reviewing service infrastructure and assessing the potential impact of extreme weather events
- Protection of biodiversity and designated habitats and species.
- Protection of nationally and internationally designated conservation sites.
- Protection of Surface Water and Ground Water Quality
- Inclusion of "green infrastructure" as appropriate into developments.
- Promotion and incorporation of energy and water conservation measures.
- Incorporation of Flood Risk Assessment and SUDS.
- Protection of areas of significant landscape within and adjacent to the Plan area.
- The submission in relation to the Scheme acknowledged the incorporation of the Lee CFRAMS, clarification if a detailed FRA was carried out was sought, ensuring compliance with the Planning System and Flood Risk Management Guidelines for Planning Authorities.

An SFRA has been included in Appendix 2 of this report.

The **Inland Fisheries Board** submission highlighted the same points as the 2012 Planning Scheme following points.

- The most significant potential for negative impacts is in relation to the Blarney River. The Blarney River is a significant salmonid habitat, a basis requirement is a 10 metre riparian corridor on both banks of the river in which no development should take place.
- Construction of further road crossings over the Blarney River should be avoided.
- No potential exists for disposal of foul sewage to the Blarney River.

A submission was received from the **Geological Survey of Ireland**. No site of geological importance was identified within the Monard area. The GSI have requested notification of ground excavations for infrastructure to undertake recording or rock sample gathering.

The **Department of Agriculture, Food and Marine** made a submission in relation to potential impact on sea fisheries. No submission was received from the DEHLG.

2.4 Environmental Baseline Data

The SEA process is led by the baseline data, which provides an accurate description of the existing environment. Baseline information was collated based on the information provided in the scoping report. The environmental receptors identified during the scoping process were: biodiversity, population and human health, soil and geology, water, landscape, transportation and material assets, archaeological cultural heritage, air quality and noise. The SEA directive requires the information to be provided on "any existing environmental problems relevant to the plan or programme "to ensure the plan doesn't result in a deterioration of existing environmental problems. The Directive also requires baseline information to focus on the environmental characteristics likely to be significantly affected, and disregard the less significant ones. The baseline study consisted primarily of existing available data from relevant environmental source in order to describe the current state of the environment.

2.5 Environmental Protection Objectives

Environmental Protection Objectives were formulated with regard to the National, European and International policies for the environmental receptors considered to be the most significant. These environmental objectives were used to evaluate the alternative options and select the preferred option. Along with environmental objectives targets were used to provide more detail and indicators were used as a measure to evaluate the achievement of the environmental objectives.

The likely significant environmental effects were identified using matrix and qualitative analysis. Where conflicts were identified opportunities to prevent, reduce or offset the adverse environmental impact were explored.

2.6 Consideration of Alternatives

The environmental report is required to identify, describe and evaluate reasonable alternatives to the proposed scheme taking account of the objectives and geographical scope of the Planning Scheme. The options for development within the site were identified at a preliminary stage and their possible environmental consequences. The options were evaluated using a matrix and qualitative assessment of the Planning Scheme. The preferred option is based on the minimisation of impacts on the environment and also the most sustainable approach for the site.

2.7 Environmental Assessment of Planning Scheme

This Environmental Report outlines the likely significant environmental effects of implementing the scheme (and alternatives) having regard to the baseline situation identified at the scoping stage. The evaluation of the likely impacts and their significance is the core of the SEA process. The Specific Development Proposals for Monard (identified during the formulation of the scheme) were evaluated against the Environmental Protection Objectives for the site to determine the potential impacts of the Planning Scheme on the Environment.

2.8 Environmental Report and Public Consultation

This Environmental Report constitutes one stage of the SEA process, it will continue after the period of public consultation for the Planning Scheme. The Environmental Report will be circulated to the Elected Members and accompany the Planning Scheme on public display. The Appropriate Assessment Screening will accompany both documents on public display. Written submissions are invited on all reports.

The SEA Directive requires that the Environmental Report must take account of the opinions expressed by the environmental authorities and the public, during the preparation of the Planning Scheme and before its adoption.

2.9 Environmental Statement

As required by the SEA Directive and the SEA Regulations, an SEA Statement (DoEHLG, 2004) was produced and made available to the public following adoption of the Planning Scheme. The SEA Statement detailed how environmental considerations have been integrated into the Planning Scheme. It highlighted the main changes to the scheme which resulted from the SEA process; while also detailing how the preferred option was selected. It introduces environmental responsibility and transparency into the strategic decision making process.

2.10 Difficulties encountered in Compiling Required Information

The SEA guidelines state that no new major research is required. The environmental report was prepared and informed by many available data sources. These included: CSO, EPA, WFD

River Basin Management Plans, GSI, internal reports etc. Difficulties encountered included the availability of data for human health, infrequent air quality monitoring and lack of legislation on soils, which unlike water is not protected under environmental legislation.

2.11 Legislative Conformance

This Environmental Report complies with the provisions of the SEA Regulations and is written in accordance with Schedule 2B of the Planning and Development (Strategic Environmental Assessment) regulations 2004 (SI No. 436 of 2004).

Table 3.2 reproduces the checklist of information to be contained in the Environmental Report and includes the relevant sections of this report which ensure these requirements are met.

Table 2.1 Summary of Methodology for Environmental Report

1. Scoping brief	Circulated informally to environmental authorities.
2. Informal Consultation with EPA	Discussion regarding contents of the environmental report.
3. Scoping	Scoping report prepared
4. Consultation with Environmental Authorities and local groups.	Report sent to:- • Environmental Protection Agency. • Department. of Environment, Heritage & Local Government. • Department. of Communications, Marine & Natural Resources. • South West Fisheries board. • Department of Agriculture Marine and food.
5. Comments received.	Comments incorporated into preparation of environmental report.
6. Research into:- • **Legislation & Policies.** • **Baseline information.**	
7. Produce Environmental Protection objectives from legislation & policies.	
8. Feedback to the preparation of the planning scheme.	
9. Produce Specific Development Proposals	Produced from:- • Environmental baseline data, • Feedback from Public exhibition. • Feedback from preparation of Draft Planning scheme.
10. Test Environmental Protection Objectives and Specific Development Proposals for compliance.	Matrix and qualitative approach
11. Assess development options for compliance with Environmental Protection Objectives	Favoured option indicated.
12. Select preferred option	Outline reason for not selecting others.
13. Mitigation	Measures detailed.
14. Monitoring	Measures detailed.

Table 2.2 Checklist of information to be contained in the Environmental Report

Information Required to be included in the Environmental Report	Corresponding Section of this Report
(A) Outline of the content and main objectives of the Draft Planning Scheme, and its relationship with other relevant plans and programmes.	Chapter 3, 4
(B) Description of relevant aspects of the current state of the environment and the evolution of that environment without implementation of the guidelines.	Chapter 5
(C) Description of the environmental characteristics of areas likely to be significantly affected.	Chapters 5, 6, 7, 8
(D) Identification of any existing environmental problems, which are relevant to the guidelines, particularly those relating to European protected sites.	Chapters 5,8
(E) List environmental protection objectives, established at international, EU or national level, which are relevant to the guidelines and describe how those objectives and any environmental considerations have been taken into account when preparing the guidelines.	Chapters 6 ,10
(F) Describe the likely significant effects on the environment.	Chapters 8
(G) Describe any measures envisaged to prevent, reduce and as fully as possible offset any significant adverse environmental effects of implementing the plan.	Chapter 9
(H) Give an outline of the reasons for selecting the alternatives considered, and a description of how the assessment was undertaken (including any difficulties).	Chapter 7
(I) A description of proposed monitoring measures.	Chapter 10
(J) A non-technical summary of the above information	Non technical summary

3.0 Relationship of Other Plans and Programmes

The planning context for the Planning Scheme is set within a hierarchy of plans, these include; The National Spatial Strategy, Smarter Travel, Regional Planning Guidelines – South West 2010, Cork Area Strategic Plan, Cork County Development Plan 2014, Blarney-Kilbarry Special Local Area Plan 2005, Blarney Local Area Plan 2011. The Scheme must comply with higher level strategic actions and may, in turn, guide lower level strategic actions.

3.1 Hierarchy of Plans

The policy context of Monard relevant to hierarchy of plans is set out in the following sections.

National Spatial Strategy

This strategy set out the strategic planning framework for the future development of the Country and proposed a more balanced pattern of spatial development for the state as a whole. The strategy emphasises the critical role of 'Gateways' and 'Hubs' in delivering future economic growth and designates Cork as a 'Gateway' City. The creation of a new rail based town in Monard will contribute to the critical mass needed for the population and employment targets set for the Gateway City. The NSS places emphasis on the creation of high quality living environments through urban design and the integration of social and community amenities.

Smarter Travel – A Sustainable Transport Future (2009)

"Smarter Travel" is the Government's action plan to free towns and cities from traffic congestion, substantially cut CO2 emissions, encourage car based commuters to leave their cars at home, and encourage a shift toward walking, cycling and greater public transport usage. This philosophy is in keeping with the rationale for the creation of a rail based town at Monard.

Regional Planning Guidelines – South West 2010

The guidelines set out the strategic plan for growth and prosperity in the region in line with the key principles of the national strategy. The guidelines include specific policies and objectives for the four spatial development areas within the region including population targets for the Region for 2010-2022.

The priority for population growth in the region will be the "gateway" of Cork City. However planned growth in metropolitan towns is intended to complement growth in the City, to offer a broad choice of locations for sustainable future development. The regional plan identifies the metropolitan towns comprising the settlements along the suburban rail corridors including Midleton, Carrigtwohill, **Monard**, Blarney, and Cobh as the main gateway locations (outside Cork City) for future population growth. This new rail line is a considered a major step in providing integrated public transport services to centres of high population growth.

Cork Area Strategic Plan

Prepared jointly by the City and County Councils in 2001 it set out a shared vision for the Cork area for the period up to the year 2020, the plan was updated in 2008. The plan establishes the concept of 'Metropolitan Cork' as an area embracing Cork City, its 'environs' (within the County) and the Metropolitan (or satellite) towns as an integrated unit where there is a single market for jobs and housing and where there is equality of access for all to shops and services, educational and cultural facilities.

CASP proposed a balanced spatial development pattern which includes developing the potential North of the City to maximise the use of the existing rail infrastructure. The plan favoured Monard / Rathpeacon as the location to accommodate some of the development between Blarney and Midleton subject to a detailed assessment. This

detailed assessment took place in the rail feasibility study and the Blarney- Kilbarry Special Local Area Plan, adopted in 2005. The CASP Update (2008) revised population predictions for 2020. The updated population projections for Monard /Rathpeacon /Whitechurch is a population of 11,153 by 2020 with 4,628 households. These figures take account of the revised timescale for Monard.

Blarney- Kilbarry Special Local Area Plan 2005.

The primary aim of the (SLAP) was to prepare an agreed development framework for the rail corridor between Blarney and edge of Cork City at Kilbarry. The SLAP established a planning framework for the creation of a new settlement at Monard. It identified the broad planning principles of the site including; numbers of housing units, number of primary and secondary schools, list of sports and recreation facilities including the provision for a county park. The process went through extensive public consultation and was adopted in 2005.

Cork County Development Plan 2014

The County Development Plan sets out the Core Strategy for the growth and development of County Cork to the year 2020. The proposed rail based town is an important component of it's core strategy for growth and development to the year 2020. It remains an objective of the plan to establish a new town at Monard on the basis of the Blarney – Kilbarry Special Local Plan 2005, including provision for on and off site infrastructure necessary to service the new town. The Joint Retail Strategy hierarchy identifies Monard as fulfilling the role of a Metropolitan Town in this section of the rail corridor and seeks provision of retailing as part of the new settlement.

Blarney Local Area Plan 2011

The current Blarney Local Area Plan 2011 sets out the strategy for the proper planning and sustainable development of the electoral area for the next six years (2011- 2017). It also includes the objective for a new town at Monard as originated in the Blarney- Kilbarry Special Local Area Plan 2005.

The framework plan as outlined in the 2005 SLAP and the current LAP identifies the broad planning principles including the number of housing units, schools and provision for a county park.

The Blarney SEA provides for an overarching assessment of the environmental issues. This environmental report for the Scheme identifies the significant environmental issues which pertain to Monard at a much greater level of detail for both present and future scenarios.

3.2 Relationship with Existing Plans and Strategies

Monard is located on the edge of a large urban centre, a number of projects and masterplans are proposed within the metropolitan area. In terms of neighbouring projects, Stoneview Blarney is the closest project located 1km East of Monard. Stoneview is primarily a residential development, permission has been granted by An Bord Pleanala for a reduced housing development. In a Westwards direction 4km away, the Blarney Local Area Plan contains a special policy area objective to facilitate development of between 2,400 and up to 3,600 dwellings at Ballyvolane, the preparation of a masterplan is required. This development is further removed from Monard in terms of location and possible in combination effects. In recent times a masterplan has been prepared for the Cork Science and Innovation Park in Curragheen (2011). The Blarney Electoral Area Local Area Plan 2011 sets out the supply of zoned land for future housing and employment within the electoral area.

The Scheme has been guided by a hierarchy of plans and strategies at the EU, local, national and EU levels. These plans and strategies include:-

International Plans

- EU Directive 2001/42/EC, assessment of effects of certain plans and programmes on the environment.
- EU Habitats Directive (Council Directive 92/ 43/EEC).
- EU Birds Directive (Council Directive 79/409/EEC).
- EU Water Framework Directive (Council Directive 2000/60/EC).
- EU floods directive.
- The Air Quality Framework Directive; (Council Directive 96/62/EC).
- Soil Thematic Strategy.
- EU Drinking Water Directive.
- EU Ground Water directive.
- Urban Waste Water Treatment Directive.
- European Union: 6th Environmental Action Programme 2001-2010. (Climate change, nature and biodiversity, natural resources, health and quality of life)
- European Biodiversity Strategy (1998) - Strategy aims to anticipate, prevent the reduction of biodiversity at source.
- UN convention on Biological Diversity.
- European Landscape convention 2000.
- European Convention on the protection of Archaeological Heritage – Valletta Convention.
- Energy Performance buildings Directive
- Ramsar Convention.

National Plans

- National Development Plan 2007-2013.
- National Spatial Strategy (2002-2020).
- Transport 21.
- Smarter Travel – A Sustainable Transport Future (2009).
- Wildlife Act 1976.
- Wildlife (Amendment) Act 2000.
- Air Quality Standards Regulations 2002.
- Ozone Regulations 2004.
- Sustainable Development – A strategy for Ireland (1997).
- Housing Policy Framework-Building Sustainable Communities. (2007)
- Residential Density Guidelines (2000).
- National Heritage Plan (2002).
- Architectural Heritage Protection, Guidelines for Planning Authorities (2004) or 2005.
- National Climate Change Strategy (2007-2012).
- Retail Planning Guidelines for Planning Authorities (2005).
- Government White Paper on Sustainable Energy Future for Ireland. Energy Policy Framework 2007-2020.
- The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009.
- Guidelines on Habitat Directive Assessment – Do EHLG.
- Architectural Heritage Protection: Guidelines for Planning Authorities 2004.
- Sustainable Urban Housing: Design Standards for new apartments. Guidelines for Planning Authorities 2007
- Sustainable Residential Development in Urban Areas –guidelines for planning authorities 2009.
- Landscape Assessment Guidelines 2000– landscape character assessment.
- Childcare Facilities Guidelines for Planning Authorities, 2001.
- Birds and Natural Habitats Regulations 2011.
- National Biodiversity Plan Actions for Biodiversity 2011-2016.

Regional Plans

- South West Regional Planning Guidelines 2010
- South West River Basin District Draft River Basin Management Plan.

Local Plans

- Cork Area Strategic Plan 2001-2020.
- Cork County Development Plan 2014.
- Blarney – Kilbarry Special Local Area Plan -2005.
- Blarney Electoral Area Local Area Plan 2011.
- Cork County Biodiversity Action Plan 2009-2015.
- Cork County Heritage Plan 2005-2010.
- Draft Lee Catchment Flood Risk Assessment and Management Study.

3.3 Habitats Directive Screening

Appropriate Assessment Screening was undertaken to assess, in view of best scientific knowledge, if the Monard Planning Scheme was individually or in combination with other plans or projects likely to have a significant effect on any "Natura 2000" site. The stage one screening for the Monard Planning Scheme was completed by Cork County's Appropriate Assessment Officer. In addition to the overall project screening, two other stage 1 screenings were completed for the Water Supply and Waste Water infrastructure required to facilitate Monard. Screening is the first stage within the overall process of Appropriate Assessment required by the European Habitats Directive (92/43/EEC).

The Habitats Directive Screening Statement states that there are no Natura 2000 sites located either within or adjacent to the Strategic Development Zone. However elements of the Scheme associated with the provision of water and wastewater infrastructure could potentially give rise to impacts on a number of designated sites in Cork Harbour. The screening conclusion highlighted the requirement to assess trenchless technology at the Glashaboy River and its impact on Natura 2000 sites within Cork harbour. An addendum to the waste water preliminary report was prepared by Nicholas O' Dwyer consultants to address this issue. The Habitats Directive screening conclusions stated that the potential effects can be screened out and that the effects are not considered significant. The recommendations of the Habitats Directive Screening Statement have been included in the Planning Scheme. The Natura Impact Screening Statement conclusions state that potential effects can be screened out and that the effects are not considered significant.

4.0 Planning Scheme

4.1 Strategic Development Zone Area

Monard is located North West of Cork City approximately 3 km East of Blarney village. The N20 Cork to Limerick National Primary Route is located within the valley between Blarney and Monard. The extent of the site is 391 hectares /966 acres. The area is characterised by a rural setting with a settlement pattern concentrated along the poorly aligned local road network. The lands are primarily engaged in agriculture with a scattering of farm complexes throughout the site. Landownership within the site is held by a sizeable number of landowners (23), however some holdings are of considerable size. The main Cork to Dublin railway line forms the Southern site boundary. Much of the subject lands are elevated and exposed with long slopes down to the Old Mallow road (former N20), the upper parts of the site form the backdrop to Cork City.

4.2 Background to Planning Scheme

The vision for a new settlement at Monard originated from the recommendations in the Cork Area Strategic Plan 2001-2020. It recommended the promotion of the suburban rail line as a future location for development to the North and East of Cork City. The Faber Maunsell Cork Suburban Rail Feasibility Study endorsed the Cork rail project. The Blarney-Kilbarry Special Local Area Plan, adopted in 2005, established a framework for the creation of a new settlement at Monard.

The concept of creating a new town at this location originated in 2001 prior to the introduction of environmental legislation including the SEA directive (July 2004). A strategic environmental appraisal of CASP was however carried out as contained in Appendix D of the Cork Area Strategic Plan (2001-2020). The objective has subsequently been incorporated into the CASP 2008 Update, the 2009 County Development Plan and the 2014 CDP all of which were subject to the SEA process.

In 2012 the Monard Planning Scheme was adopted by Cork County Council. Unlike other plans, SDZ Planning Schemes can be subject to appeal by An Bord Pleanala. Following adoption two appeals were lodged. The Bord decided not to accept the inspector's recommendation which was to seek further information. The Bord decided to refuse to approve the Planning Scheme in September 2013.

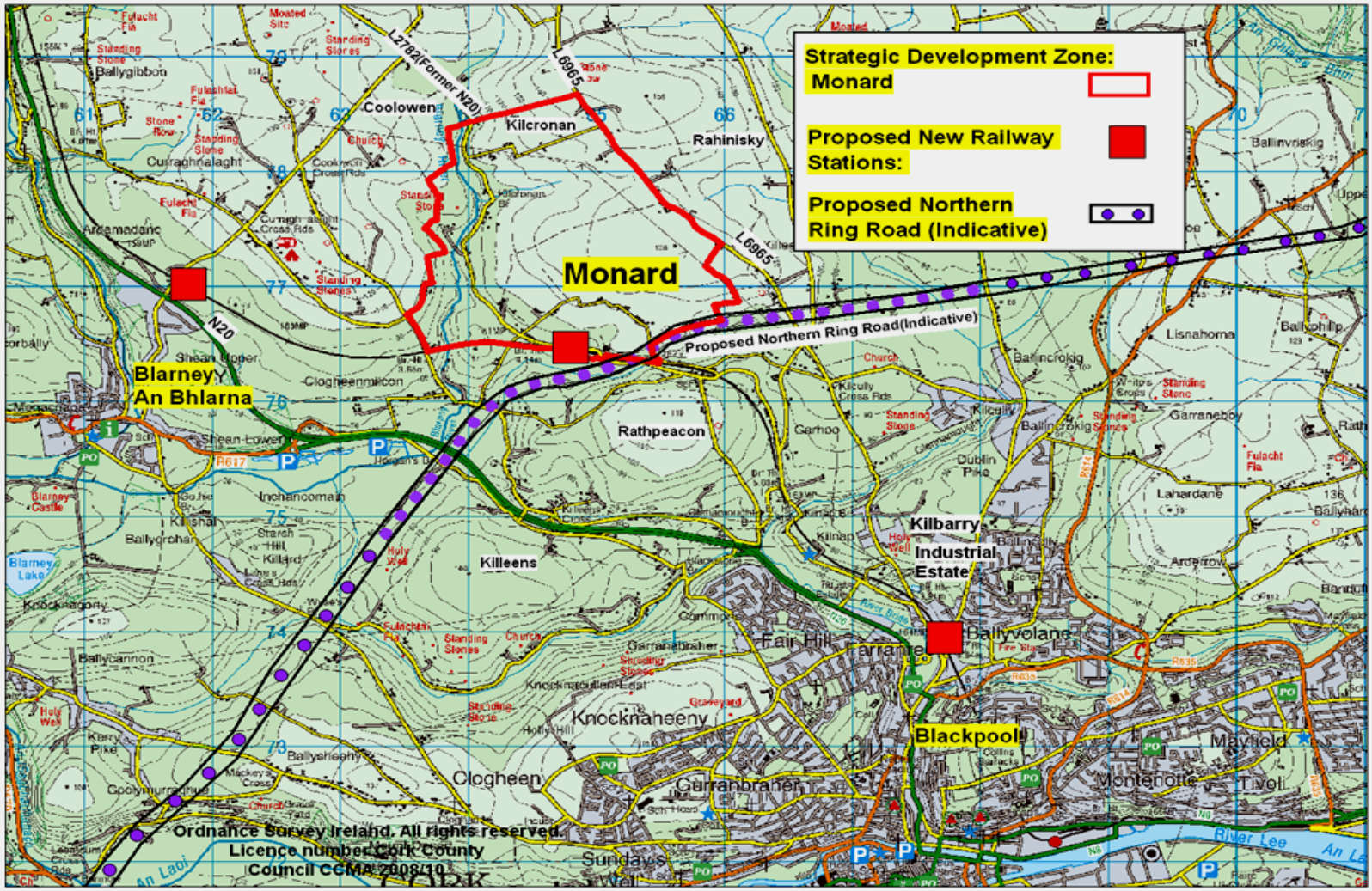
The 2015 Planning Scheme was prepared in response to the Bord's decision. This SEA process is broadly similar to the SEA process undertaken for 2012 Planning Scheme.

Table 4.1 Planning History of Monard

Date	Organisation /Plan	Proposal/Conclusion /Action
2001	CASP (2001-20)	- Development to be focused on Mallow-Cork-Midleton/Cobh rail corridor, to support/benefit from high frequency service -Flagship development at Monard (subject to detailed assessment)
2002	Cork Suburban Rail Feasibility Study	Both endorse Cork Suburban Rail Project
2003	Dep't of Transport Strategic Rail Review	
2003 (July)	Cork County Council – Public Participation exercise on distribution of growth along rail corridor	Discussion Paper on Proposals for Rail Corridor
2003 (Nov)		Exhibition. 108 submissions received, 39 relating to Monard.
2004	Minister for Transport	Approves Cork Rail Project
2004	Cork Local Authorities	Adopt Supplementary Rail Contribution Schemes
2005	Blarney-Kilbarry Special Local	Public Consultation Draft (Jan.) Adopted by Council (Sept.)

	Area Plan	Proposes 5000 houses, 13,000 population for Monard
2008	CASP Update	Monard seen as one of 4 main growth areas on rail line
2008	Cork County Council	Seeks SDZ designation from Minister for the Environment
2009	Cork County Development Plan	Envisages population of 7,800 by 2020
2009	Iarnród Éireann	Midleton Rail Line reopened
2010 (May)	Government	Monard designated as Strategic Development Zone
2012	Cork Co Co (Development Agency)	Draft Planning Scheme adopted, with amendments
2013 (May)	An Bord Pleanála	Scheme appealed, Bord does not approve Planning Scheme for 4 reasons.
2014	Cork Co Co (Development Agency)	Systra Commissioned to carry out Cork Northern Environs Transport Assessment

Fig 4.1 Site Context

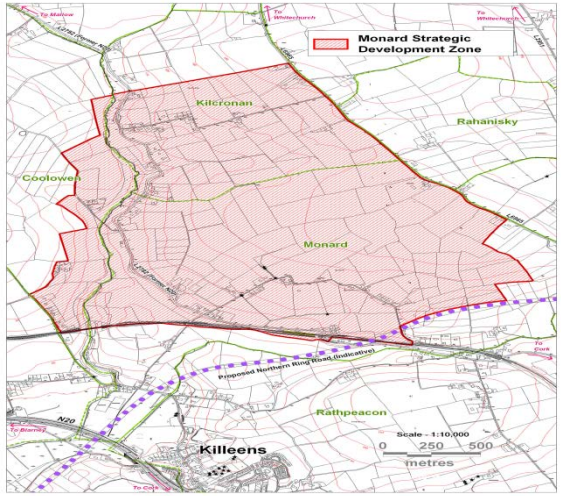


4.3 Description of Planning Scheme

Monard will be developed as a satellite town with an intended population of 12,500 -13,000 +. The sluggish economic recovery allows for the necessary lead time to prepare the Planning Scheme and associated infrastructure. This Planning Scheme allows for detailed design of the town, outlining the form, scale and nature of development which will be permitted.

The town will be developed as a single entity providing infrastructure, transport connections, public and commercial services, in tandem with housing to create a balanced form of sustainable development.

Fig 4.2 Site Area



4.4 Contents of the Planning Scheme

The Planning Scheme comprises a written statement accompanied by maps. The chapters and related themes within the Planning Scheme are as follows;

- **Planning Framework**-
  Location of major infrastructure and facilities are outlined. Fixed elements create a framework for more detailed planning.

- **Design, Layout and building Issues** General approach to design and layout.

- **Development in Villages and Neighbourhoods** Core of the Planning Scheme indicative layouts, volumes and requirements for the four villages.

- **Transportation**
  Details of the transport infrastructure are outlined.

- **Infrastructural Services**
  Location of major infrastructure and facilities are outlined within the constraints of the site.

- **Amenities, Facilities, Community Services** Details regarding services and facilities to be provided.

- **Minimising the effects on the environment**
  Summarises measures used to minimise adverse effects on the environment.

- **Contributions & Equalisation-**
  Contribution scheme for Monard

- **Phasing & Implementation-**
  Describes the flexible form of phasing envisaged for the new town.

The Planning Scheme now forms part of the Development Plan, it will remain part of the plan until such time as the Planning Scheme is amended or revoked. Any development within it will require planning permission from Cork County Council. Where development proposals are consistent with the provisions of the Planning Scheme they will be granted permission, inconsistent proposals will be refused permission. There is no leave to appeal the decision made by Cork County Council to An Bord Pleanála once the scheme is in place.

5.1 Introduction to Environmental Baseline

The SEA process is led by the baseline data, which provides an accurate description of the existing environment. Baseline information was collated during the scoping report. The environmental receptors identified during the scoping process are based on the legislative requirements and encompass the following; biodiversity, population, soil & geology, water, landscape, transportation, cultural & archaeological heritage, air quality and material assets. The baseline study consisted primarily of existing available data. However a number of internal and external reports were carried out, which informed the baseline description. The reports remain largely the same as those utilised in the preparation of the 2012 Planning Scheme, with the exception of an additional Transportation Assessment.

The interrelationship between the range of environmental receptors is an important consideration in the environmental assessment. Table 5.1 outlines the interrelationships identified between the environmental components.

Table 5.1 Inter relationship between Environmental Receptors

Receptors	Bio-diversity	Population & Human Health	Water	Landscape	Cultural Heritage	Soil, Geology Hydrogeology	Air, Noise climate	Transportation & Material Assets
Biodiversity		No	Yes	No	No	Yes	Yes	Yes
Population & Human Health			Yes	Yes	No	Yes	Yes	Yes
Water				No	No	Yes	No	Yes
Landscape					Yes	No	No	Yes
Cultural Heritage						No	No	Yes
Soil, Geology							No	Yes
Air Noise Climate								Yes
Transport & Material Assets								

5.2 Biodiversity

5.2.1 Introduction

Biodiversity in the simplest of terms is the variety of life on earth. The concept of biological diversity was recognised at the Convention on Biological Diversity (CBD) organised by the United Nations. It recognised the "common concern for humankind" to halt the loss of biodiversity. In 2009, Cork County Council produced the Cork County Biodiversity Action Plan to foster awareness of heritage issues and to conserve and enhance biodiversity within the county.

5.2.2 Designated /Protected Sites

The SDZ area does not contain any sites or habitats designated under European or National legislation within or directly adjacent to the site boundary.

Natura 2000 Sites

Natura 2000 sites form part of a European wide network of sites designated for nature conservation. Cork harbour, approximately 7.5km from the site has a concentration of natural heritage designations. Numerous bird species and habitats are afforded protection under the EU Bird's Directive and EU Habitats Directive. Fig 5.2.2 outlines the context of Monard relative to Cork Harbour within its European and National heritage designations. The designations in Cork Harbour include two Natura 2000 sites namely Cork Harbour Special Protection Area (SPA) site code 004030 and the Great Island Channel Special Area of Conservation (SAC) site code 001058. It is also designated a Ramsar site for wetland protection. The development at Monard and its impact on Cork Harbour can be considered an ex situ impact.

Natural Heritage Areas

Natural Heritage Areas are a National designation under the Wildlife Act 2000. Blarney Bog located approximately 1 km South West of the site is a proposed NHA site code 1857. The bog is an area of reed grass fen situated in the valley floor of the Blarney River. The main habitats are lowland wet grassland grazed and ungrazed and freshwater marsh/fen. It is an important recreational amenity area within the locality. The habitat mapping conducted by Atkins consultants on behalf of the County Council considers Blarney bog an area of local biodiversity value with two artificially constructed pond habitats.

The primary consideration is the protection of the hydrology of this bog, this will be particularly relevant in terms of flooding and disposal of surface water run off. The Blarney River channel downstream of Monard drains into this lowland flood plain adjacent to Blarney Town where wet grassland and fen habitat have developed. The pNHA is dependant to a large extent on the hydrological inputs of the Blarney River, in addition to the hydrogeological inputs from the groundwater catchment. Maintaining and protecting the existing hydrological and hydrogeological flow regime of the Blarney River was paramount in the creation of the SUDS strategy, both to prevent flooding and to protect the integrity of the pNHA downstream.

The other proposed Natural Heritage Areas within 4 km's of the site include; Ardamadane Wood North of Blarney, Blarney Castle Wood and Blarney Lake. The sites are well removed from the Planning Scheme. The Blarney River runs through Blarney bog, continues westwards where it is bounds the Blarney Castle Woods to the south. The River course is north of the artificially created Blarney Lake, which has a varied wetland community but is primarily used for recreational purposes. The three sites compose a very caved area with interesting aquatic and terrestrial habitats[1]. Whilst there is a concentration of designations around Blarney village, given the separation distance from the site and the topography it is considered unlikely that the proposed Scheme will have a significant impact on these three sites. Fig 5.2.3 outlines the location of the pNHA's in relation to Monard. There are also a

[1] Site synopsis Ardamadane wood PNHA site code: 0017

number of pNHA sites within Cork harbour which overlap with some of the boundaries of the Natura 2000 designated sites.

5.2.3 Non Protected Sites

Biodiversity is not restricted to protected sites but includes; rivers, trees, soil and hedgerows supporting biodiversity at a local level. Habitat mapping was conducted by Atkins consultants for the entire Blarney electoral area as an action of the Heritage Plan. Habitat and survey mapping was carried out in Monard, no species of note were recorded in the survey. The predominance of mixed woodland and scrub along the slopes of the Blarney River Valley was identified. Fig 5.2.1 outlines the habitats identified within Monard. The mapping is a valuable source of baseline information.

The lands in Monard are in agricultural use with a mixture of tillage and pasture with improved grasslands. This is confirmed by the Corine Landcover (CLC) map 2006. The habitats are generally of low ecological value, having regard to the disturbed nature of the ground. Hedgerows have been removed from two large farms, however most have been retained.

Sod and stone banks are the dominant type of field boundary. Some sections of bank have few or no trees while others have sporadic small trees such as hawthorn. The full sized trees on banks are scattered throughout the site and include ash and sycamore. There are substantial sections of bank in relatively good repair, having retained their original height and stone facing, including one running along the townland boundary between Monard and Kilcronan. Hedgerows, sod and stone banks and town land boundaries are both important on-site features and wildlife habitats. Hedgerows provide a habitat for species and function as a wildlife corridor. They should be retained as far as practicable both for their aesthetic value and for the variety of life they support.

5.2.4 Ecological Surveys & Assessment

An ecological survey and assessment was carried out on the Blarney River corridor and the riparian corridor of the Kilcronan and Rathpeacon streams by Ecofact environmental consultants on behalf of the SuDS consultants T.J. O' Connor and Associates. It provides very useful baseline information by way of desktop and field surveys of the main watercourse and its tributaries. The field surveys included botanical, macroinvertebrate, birds, mammal activity, and habitat surveys.

Watercourses

The Blarney River is part of the extensive River Lee Catchment which is designated salmonid water under the Freshwater Fish Directive. The sloping banks are populated with coniferous and broadleaf bankside vegetation. The Blarney River contains a population of brown trout; salmon and sea trout have not been recorded from this watercourse due to fish passage issues in the lower reaches. The assessment concludes that the Blarney River is evaluated as being of high value and locally important, due to the presence of extensive salmonid habitat and populations of brown trout. The Kilcronan Stream is evaluated as being of low value and locally important.

Mammals & Birds

The ecological survey included a survey for mammals such as otters, badgers and bats. The otter *Lutra lutra* is a legally protected species listed under Annex II of the EU Habitats Directive. The river corridor was checked for the presence of otter holts and signs of otter activity (spraints/droppings, slides, tracks). No evidence of otter holts was recorded from within the river corridor, however otter are expected to occur and have been recorded within the stretch of the river in the vicinity of the mill ponds downstream of the SDZ. Evidence of otter activity was recorded downstream of the bridge at the private road south of Coolowen (W 63830 77344). Otter is identified as a key ecological receptor for the SuDS scheme. The riparian zone is also an optimal habitat for the badger, however no badger sets were found.

All bat species in Ireland are protected under the Wildlife Acts. The continuous woodland and treeline corridor of the Blarney River is evaluated as being of importance for commuting and foraging bats, the railway bridge on the Blarney River corridor may be used by bats (especially pipistrelle species) but no evidence of this was recorded during the recent survey. The water birds Mallard, Grey Heron, Moorhen, Dipper and Grey Wagtail were all recorded within the riparian corridor of the Blarney River. Between the railway bridge and the bridge at Monard Glen, there are two weirs which create mill ponds. These held Grey Herons, Mallard and Moorhen. Peregrine falcons have been previously recorded nesting in the railway bridge upstream of the Monard spade mills on the Blarney River.

Invasive Species

The issue of invasive species and its impact on biodiversity has been highlighted recently in a UN report. The Japanese Knotweed plant (*Fallopia japonica*) is the number one invasive species in Cork according to the National Biodiversity Data Centre. The habitat mapping recorded the presence of Japanese Knotweed located centrally within the site. Measures to eradicate this fast growing invasive species will be required. The ecological survey recorded Giant rhubarb (*Gunnera tinctoria*) and Japanese knotweed along the riparian zone, both are liable to spread, management of these species is recommended.

5.2.5 Related Baseline Receptors

The protection of biodiversity is inextricably linked to water quality. The quality of the surface and ground water has a symbiotic relationship with biological diversity. This is particularly relevant for both the Blarney Bog outside the site and the Blarney River which flows through the site.

5.2.6 Key (Significant) Environmental Issues

Cork Harbour comprises habitats of international importance, particularly as a feeding ground for wintering waterfowl. The harbour is situated at the mouth of a number of river estuaries in a mixed use environment with competing uses of urban, rural, industrial, recreation, agriculture etc. Therefore the myriad of run offs from urbanised areas, agriculture, urban waste water discharge, industrial /chemical, together with a busy shipping channel need to be carefully balanced to protect the ecological equilibrium.

The ultimate treatment and disposal of effluent from the projected population at Monard cannot be considered in isolation. The effect on the biological diversity of the harbour is complex. Not withstanding the ability of the habitats to adapt, the piecemeal intensification of land use should and has been investigated. This Planning Scheme should not result in a loss of habitat or deterioration in the quality of the habitats within the harbour. The indirect or ex situ impacts on the biological systems of the harbour have been assessed in the Habitats Directive Screening Assessment which accompanies this report. The screening report concluded that the proposed development alone or in combination with other projects will not have a significant impact on the Natura 2000 sites within the harbour.

The agricultural landscape of Monard has generally a low level of biodiversity, the heavily grazed and cultivated grasslands support limited diversity. Accordingly, opportunities have been incorporated within the Planning Scheme to create new ecological habitats, the integration of SUDS features will ensure the creation of an ecological corridor for the movement of species for breeding or to search for food. Loss of hedgerows would lead to the fragmentation of habitat. The provision of green infrastructure through the creation of a green network utilising existing water courses, woodlands etc will provide both social and environmental benefits protecting the natural systems.

The protection and maintenance of Blarney bog's fen hydrology will ensure the ecological equilibrium is maintained and the wet grassland habitats which support the bird

population remain largely unaffected by the proposed new town.

The layout of the 2015 Scheme includes the addition of the tree belt from East to West as part of the landscaping infrastructure. This will create a substantial wildlife corridor across the site itself, it will greatly enhance the biological diversity of the new town.

5.2.7 Impact in the absence of Planning Scheme

It is likely that the area would remain agriculturally productive with limited species and habitat variety, opportunities to enhance the biological diversity would be limited, the area would remain ecologically quite similar to the present scenario.

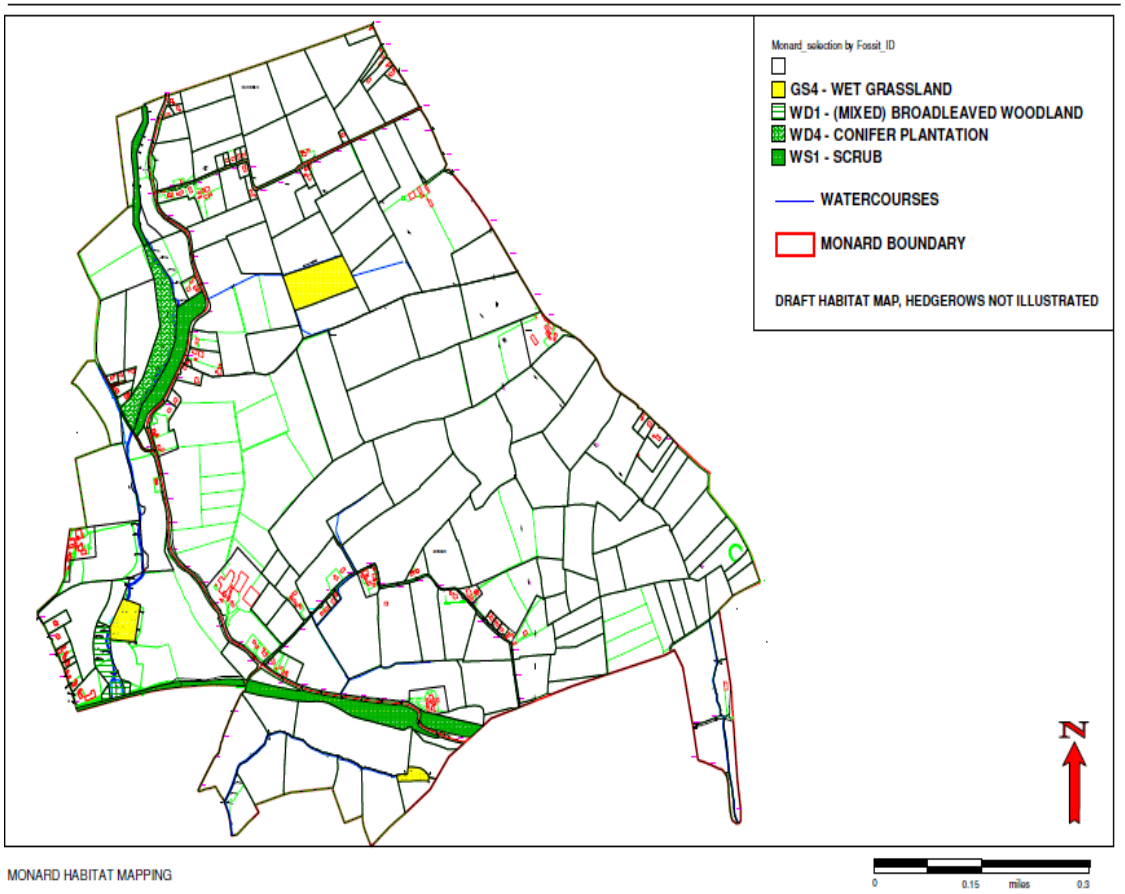
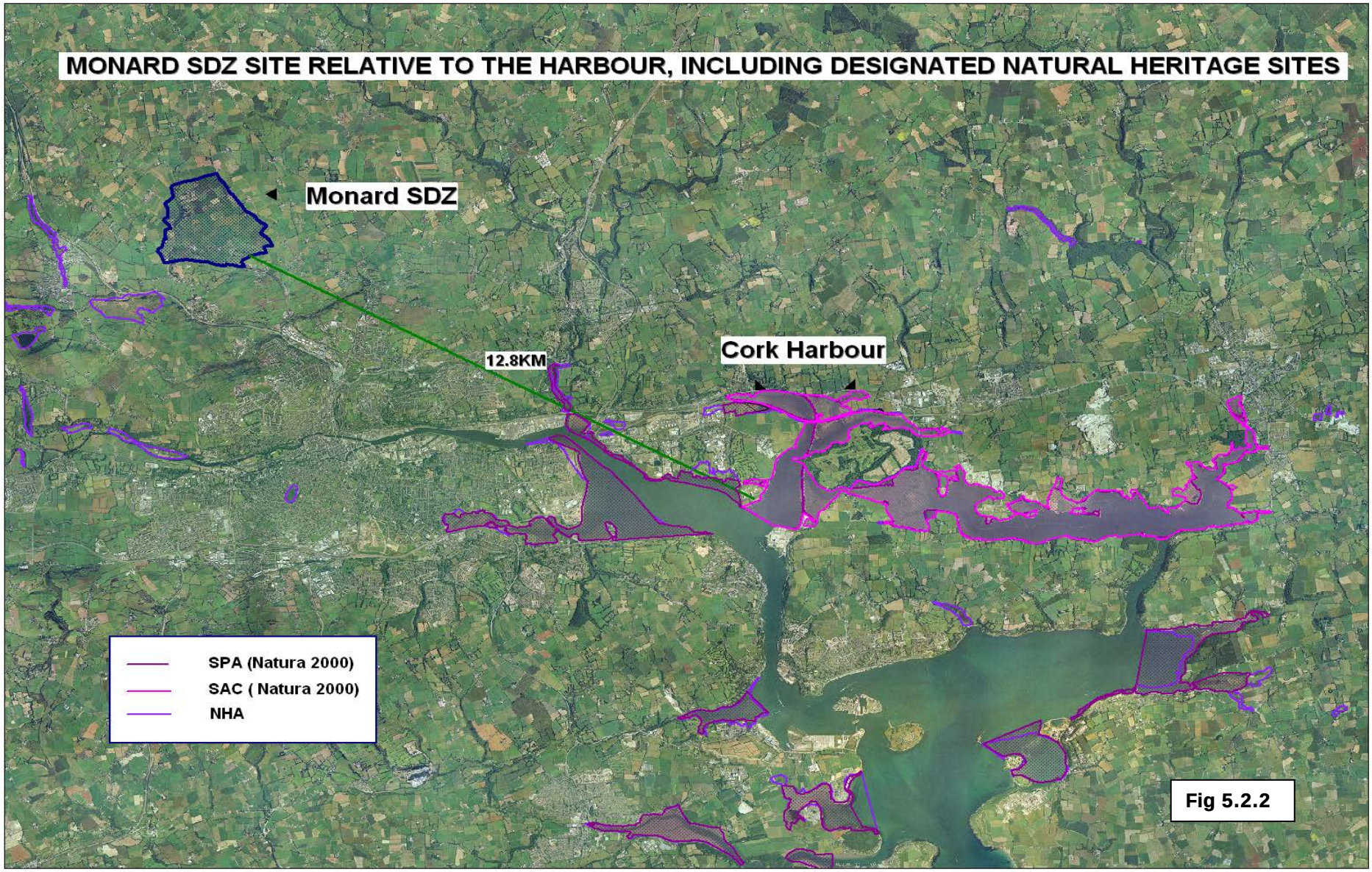
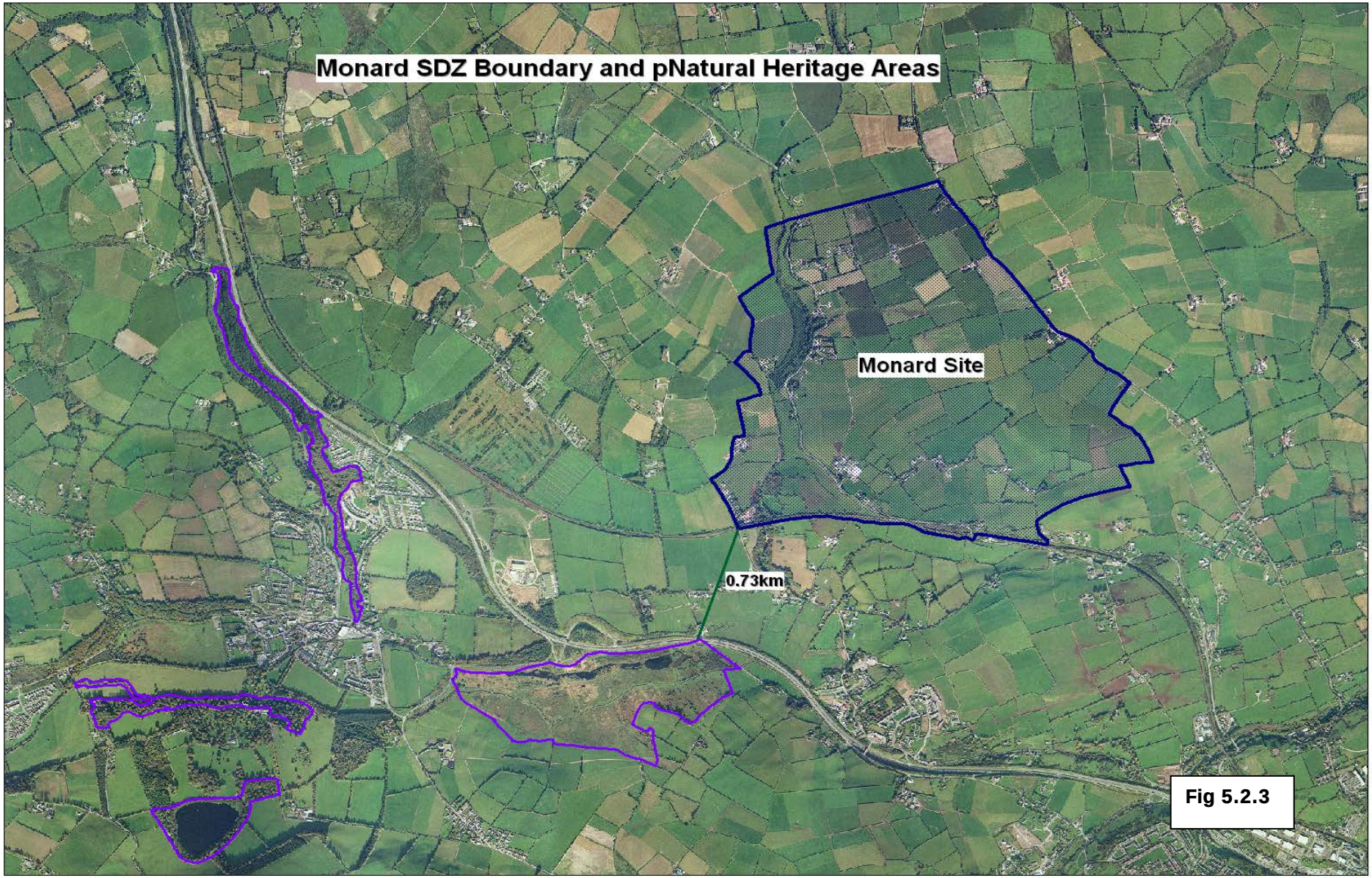


Fig 5.2.1 Monard Habitat Map


MONARD SDZ SITE RELATIVE TO THE HARBOUR, INCLUDING DESIGNATED NATURAL HERITAGE SITES
Monard SDZ
12.8KM
Cork Harbour
SPA (Natura 2000)
SAC (Natura 2000)
NHA
Fig 5.2.2


Monard SDZ Boundary and pNatural Heritage Areas
Monard Site
0.73km
Fig 5.2.3

5.3 Population and Human Health

5.3.1 Introduction

The Planning Scheme proposes a new town with a significant increase in the baseline population, the quality of life for the existing and future population is the fundamental focus of this baseline assessment.

5.3.2 Historical Trends

The existing settlement pattern in Cork is concentrated to the South of the City. The CASP strategy for metropolitan Cork envisaged a major growth corridor extending from Blarney in the West to Midleton in the East, served by a suburban rail network. An important element of CASP is to redress the imbalances in the historic pattern of development around Cork by creating a balanced spatial development pattern.

The CASP update adopted in 2008, prioritises locations close to the City for population growth along the railway line. The dispersal of population along the rail corridor will ensure sufficient carrying capacity for this sustainable mode of transport.

5.3.3 Population – existing

The existing rural population within Monard site is approximately[2] 150-200 persons. The population is low having regard to the rural and sporadic nature of the settlement pattern. Monard is located within the Whitechurch *DED*, the population in the 2011 Census results was 2813 persons.

In 2006 the population was 2477 persons, which represents a 13.6% change. The large increase is most likely attributed to the new residential developments in Whitechurch.

The surrounding area is also sparsely populated, with small settlements including Rathpeacon and Killeens to the South, Whitechurch is the largest of the three settlements located North East of the site. There is a scattering of farm complexes and stand alone commercial developments within the site also. Agriculture is the predominant source of employment within the area including both tillage and pasture.

[2] Figure based on geo directory figure and average household size.

5.3.4 Travel to Work

Travel to work and commuting patterns affect a person's quality of life. Sustainable commuting maps were formulated for the Local Area Plan process which show the percentage of people per DED who travel to work by sustainable means e.g. walking, cycling, public transport or working at home from the 2006 census data. The Monard site is located within the Whitechurch DED. There is only between 0 to 5% of the population commuting in a sustainable manner.

5.3.5 Population – Proposed

The new settlement proposes a population range of between 4750-5850 new housing units, this represents an increase of 5 to 10% in density when compared to the 2012 Planning Scheme. However the projected population of approximately 13, 000 persons has not changed. The increased density will comprise smaller housing units including apartments which would generally have a smaller household size and therefore not add significantly to the population. The target population for the Blarney electoral area in 2020 is 64,934. Monard is one of three main settlements which are expected to accommodate 62% of the target growth.

The Blarney–Kilbarry Special Local Area Plan adopted in 2005 outlined a framework for

development in Monard including the scale and nature of development for the future new town. The project will be developed as a single entity and will provide for infrastructure, transport connections, public and commercial services in tandem with housing to create a balanced form of development.

The framework plan envisaged a settlement with all necessary facilities these included; a town centre, localised areas of employment with provision for office and industry, schools, community facilities and a "Heritage Spine" or country park along the Blarney River.

5.3.6 Human Health and Quality of Life

There is a strong correlation between human health and environmental protection; humans are part of the environment. Therefore the impacts from the Planning Scheme on the environment will also affect human health and their quality of life. The effects on human health can be broad ranging, derived from any of the environmental receptors. The effects either direct or indirect will impact the quality of life for residents both positively and negatively. The most likely direct effects include water quality, air quality, noise, waste management and quality of life. The latter can be affected by issues including commuting patterns and access to recreational facilities. The physical changes and the magnitude of the landscape change is also a direct effect on humans and their quality of life. The residents are visual receptors their proximity will dictate the likely effect.

It is difficult to ascertain data for human health particularly at the geographical scale of Monard (391 hectares). The present socio economic climate will have a direct impact on quality of life for residents. The construction of Monard is dependant on an up turn in the property market, which will no doubt coincide with improved employment opportunities. The rail station will open up new opportunities for the existing and proposed population.

The population within the area has remained relatively unchanged due to the rural nature of the site. The increase in population will have a substantial impact on the existing population. The provision of facilities including schools and services in tandem with housing to support the new population will be critical to reducing the impact on existing facilities. The construction of new units is dependant on the recovery of the market, the most ambitious rate of construction would be 300-400 per annum. The impact of the Scheme on the existing population will extend outside of the site boundary. The effects on the existing residents has been considered in the formulation of the scheme to reduce the negative impacts, this is discussed in a later section of the report.

5.3.7 Key (Significant) Environmental Issues- Population and Human Health

- The key issues for population and human health are those linked with drinking water quality, waste water treatment and air quality as they are all integral to human health.

- The protection of the residential amenity for the existing population during and post construction is a principal consideration, particularly having regard to rural context of the site.

- Quality of life is linked to commuting patterns. The key to increasing sustainable commuting and decreasing car dependency is to focus targeted population in areas well served by public transport. The timing of the new rail station is critical to encouraging the use of the train as a sustainable mode, before unsustainable commuting patterns become established.

- The existing recreational and amenity provision within the area is low, sports pitches and community facilities are provided in Rathpeacon. The proposed Scheme is of a low density with generous open space provision to enhance the quality of life for future citizens and that of the existing population.

- The increase in the number of units from the 2012 Planning Scheme is approximately 200 – 500 extra units from that previously proposed. The projected population is not expected to increase in excess of 13,000 persons as Irish apartments generally comprise very small households.

5.3.8 Impact in the absence of Planning Scheme

The absence of the planning scheme would lead to an uncoordinated and unbalanced development pattern, resulting in pressure on infrastructure and services which would affect people's quality of life. Maximising the use of the rail line will support more sustainable commuting patterns and lifestyle which will provide a greater quality of life.

5.4 Water Resources & Infrastructure

5.4.1 Introduction

This section is divided into two sections namely; water resources and water infrastructure. The former examines water quality including surface water and ground water. The latter section deals with water related infrastructure, including the source and supply of potable water and the treatment and disposal of waste water.

5.4.2 Water Framework Directive

The EU Water Framework Directive promotes the protection of surface water, groundwater, coastal and estuarine water resources. It sets out objectives and standards for waters via the river basin districts plans. Cork is located within the South Western River Basin District Plan. It is an objective of the Water Framework Directive to achieve "good water status" for all waters by 2015.

5.4.3 Surface Water

The Blarney River is the most significant water body within the site. It runs along the entire Western site boundary. It rises North East of the site and discharges to the Martin River South East of Blarney town. It forms part of the extensive River Lee Catchment. The Kilcronan stream is a first order tributary of the Blarney River. The ecological survey carried out as part of site specific SUDS strategy evaluated the stream as being of low value and locally important within the ecological survey report carried out for the SUDs strategy. The Rathpeacon stream is within the route corridor of the Northern Ring Road South of the site boundary.

There are a number of sources of baseline information for biological water quality of the Blarney River these include; South Western River Basin Management Plan, Environmental Protection Agency who and the "kick sampling" carried out by Ecofact as part of the ecological survey work for the SUDS strategy carried out in 2011. Table 5.4.1 outlines the results for the three sources.

The biological quality rating known as the Q value system has been used to measure river quality since the 1970's. The phosphorus regulations utilises the Q value rating index which has a scale range from Q5-Q1. A Q value of 5 indicates unpolluted pristine waters; a Q value of 1 indicates grossly polluted waters. The South Western River Basin Management Plan provides details on the water quality status of all water bodies within the River Basin District. The quality of the Blarney River as outlined in the SWRBD WMU[3] for 2009 is Moderate, (the status was good in 2008). The macro invertebrate status of the Blarney River is 'good'.

Ecofact environmental consultants carried out macro invertebrate sampling in June 2011 on the three watercourses. Kick sampling of the Blarney River took place at the most northerly and Southerly points of the River within the site to ensure a comprehensive assessment of its water quality throughout the course of the River within the site. The Blarney River was rated as Q4 "good status" as was the Kilcronan stream. The Rathpeacon Stream (outside site boundary) was Q 3-4 "moderate status".

The EPA monitor biological water quality in the Blarney River at the bridge Northwest of Killeen's Cross at the confluence with the Rathpeacon Stream. (EPA station code 19B020500). This would be the closest sampling point to the site. The river was also rated as Q4 "good status" in 2005, an improvement on the historical Q3-4 which is an unsatisfactory status at this monitoring location. The Q value of 4 remains unchanged to the present day.

Table 5.4.1 Summary of Water Quality

Source	Results	Year
SWRBMP	Moderate	2009
EPA	Q4 (good)	2004 to present
Ecofact	Q4 (good)	2011

[3] Lower Lee/Owenboy Water Management Unit

Water Testing

Enva Ireland Ltd under took sampling surveys on a monthly basis over a six month period as part of the site investigations for the SUDS strategy. Water samples were taken from the Blarney River, Kilcronan stream and Rathpeacon Stream the samples were tested for an extensive list of parameters. The results show high levels of ammonia, ammonium and nitrates when compared to recommended guideline limits. The BOD and suspended solids are within the guideline limits. The entire set of results can be found in the Environmental Report submitted with the SUDS strategy. The data for surface water quality in Monard is quite extensive, it provides a valuable baseline resource.

5.4.4 Groundwater Quality

The SWRBMP provides details on the quality of ground water bodies also. The assessment is more complex but none the less very important given the presence of existing wells within the site. The Monard area lies within the Ballinhassig_1 groundwater body. The overall status of the Ballinhassig_1 groundwater body has been assessed as 'good'.

5.4.5 Water Supply

Monard is an unserviced rural area with a dependence on private supplies, provision of a potable public water supply to serve the new town is required. The consultants RPS on behalf of Cork County Council examined the sources, storage and route options for the site. An environmental assessment of the nine pipe route options and reservoir locations were conducted as part of the overall route and reservoir selection process. The preferred water supply option is a connection to Cork City WSS at Churchfield reservoir, with a trunk main from Churchfield to serve Monard. The option is recommended subject to completion of proposed strategic trunk link between Cork harbour & City WSS and the City Council's Lee Road Water Treatment plant to allow water from Iniscarra via the City's water supply infrastructure to a new trunk main feeding Monard.

An ecological Impact Assessment of the preferred and alternative water supply and preferred route options was conducted to assess the potential of negative impacts on the environment, namely designated sites for nature conservation; or habitats, flora species or fauna species of ecological value. The impacts are most likely to occur during the construction phase and mitigation measures are recommended.

The trunk main, pumping station and reservoirs form part of extensive off site infrastructure to facilitate development at Monard. The construction of a new main and entirely new service network will provide an opportunity to include metering and to conserve water loss during the construction of the internal network.

5.4.6 Waste Water

Monard is an un serviced rural area with a reliance on individual septic tanks/ treatment systems to serve a dispersed population. Development of new sewerage infrastructure for the collection, treatment and disposal of waste water is required to facilitate the creation of the new town. The options for waste water provision were examined by Nicholas O'Dwyer Ltd consultants on behalf of Cork County Council. All possible options were investigated at length, the treatment and disposal of waste water for a large new town has the potential to cause the most significant impact on the receiving environment. The preferred option for treatment of Monard's 20,000 population equivalent (p.e.) was at Carrigrennan WwTP. Carrigtohill WwTP was a secondary option proposed in the consultant's report. The conveyance of effluent via a dedicated twin rising main to the wastewater treatment plant at Carrigrennan, Little Island with outfall to Lough Mahon was the preferred option from an environmental perspective. The second option proposed treatment at Carrigtohill WwTP, which currently discharges to Slatty water. The capacity at that facility is currently being upgraded with a new relocated

discharge point under construction. A temporary proposal for the initial phase of development will be provided in Kileens until sufficient volumes are available to pump to Carrigrennan. The Carrigrennan facility is operated by Cork City Council, sufficient capacity is available for the proposed new town within its operating license. The Scheme has identified Carrigrennan as the preferred location for the treatment and disposal of waste water.

An environmental assessment of the treatment options for Monard was produced including an Ecological Impact Assessment and Archaeological Impact Assessment. A Habitats Directive Screening Assessment was carried out in accordance with the Habitats Directive 92/33/EEC (2000) for all options proposed by consultants for water supply and waste water disposal. It is requirement that any plan or project that has the potential for a significant effect on Natura 2000 sites i.e. a Special Area of Conservation (SAC) or Special Protected Area (SPA)[2] must be screened in order to determine whether an Appropriate Assessment is required.

The reports all concluded that there is not likely to be significant effects on Natura 2000 sites resulting from the proposed works, accordingly a Stage 2 Appropriate Assessment is deemed unnecessary.

A new source of baseline information related to Cork Harbour has emerged since the 2012 Planning Scheme. Bec consultants ltd carried out an assessment on the qualifying interests of the Great Island Channel SAC (site code 001058). The aim was to determine the current conservation status of the habitats and to assess the likely impact on the SAC site of the population targets set out in the 2014 CDP and resultant waste water loadings. The report concluded that the conservation status of the mudflats and sandflats will not be compromised by the population targets on the once the upgrades of certain WWTPs are in place in advance of any population increase. The two plants identified were Carrigtohill and Midleton. Work has since commenced on the construction of a 30, 000 PE WWTP in Carrigtohill, it's due for completion at the end of 2015.

5.4.7 Flood Risk

The introduction of systematic flood risk assessment was an important development in land use planning, it ensures a more consistent approach to flood risk assessment within all levels of the planning hierarchy. The consequences of flooding can be profound with environmental, economic and social consequences as well as a threat to human life. Consequently the potential impact could be significant to humans and the environment they inhabit. A Strategic Flood Risk Assessment was prepared in parallel with the SEA process , the SFRA is located in appendix B of this report.

5.4.8 Key Significant Environmental Issues

- Protection of water quality both surface water and ground water. The collection, treatment and disposal of waste water to a WwTP with sufficient capacity will ensure protection of the existing baseline environment.

- Flood Risk, this is particularly relevant for settlements and lands downstream of Monard. The implementation of the site specific SUDS strategy is of paramount importance for the prevention of downstream flood events.

- Ensure sufficient capacity in Kileens WWTP to cater for the initial phase of development at Monard.

5.4.9 Impact in the absence of Planning Scheme

The quality of surface and groundwater is considered moderate and good, the water quality in the area would largely remain the same in the absence of a plan. It is an objective of the WFD that the Blarney River achieves an overall "good" status by 2021. The area would remain unserviced in terms of public water and sewerage.

The pressure for uncoordinated development would most likely continue close to the City boundary which would lead to an incremental rise of septic tanks which could threaten the quality of ground water in the area.

Fig 5.4.1 Proposed Route of pumped main from Monard to Carrigrennan.

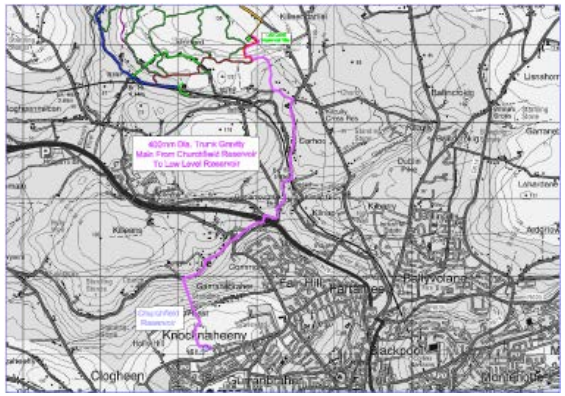


Fig 5.4.2 Proposed Route of water main from Churchfield Reservoir to Monard.

5.5 Landscape

5.5.1 Introduction

Landscape can be defined in a myriad of ways, the Department of Environment, Heritage and Local Government states that landscape embraces all that is visible when one looks across an area of land. Landscape is the context in which all changes take place.

This section of the environmental baseline was prepared with inputs from the landscape report produced by Nicholas De Jong Associates during the formulation of the Planning Scheme. The description of the baseline includes; a description of the character, quality, value and sensitivity of the landscape resource and also the type and potential sensitivity of visual receptors.

Landscape impacts and visual impacts are considered separate, but related factors. Landscape impacts are changes in the fabric, character and quality of the landscape as a result of development.

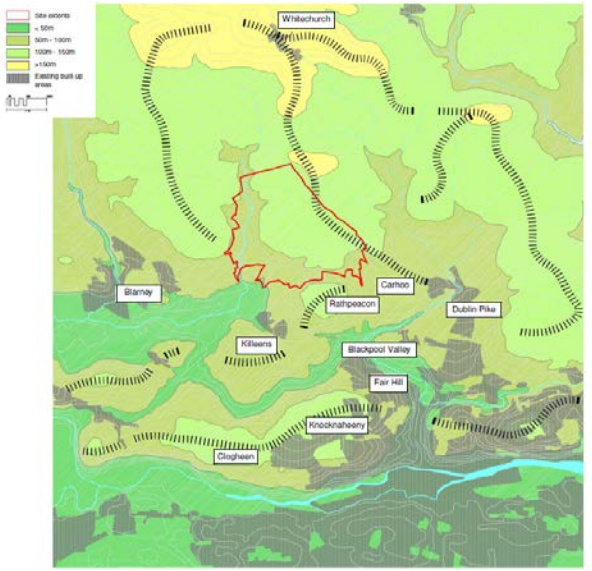
Visual impacts are a subset of landscape impacts. They relate solely to changes in available views of the landscape, and the effects of those changes on people.

5.5.2 Site Context

The physical environment of Monard is characterised by hilly terrain defined by the River Lee valley to the South and by the Boggeragh Mountain to the west and north. The topography is dissected by shallow river valleys running North South (River Martin and Blarney River) towards the broad east-west axis of the River Lee. The elongated interlocking hills form sinuous river valleys with major roads such as the N20 Cork to Limerick road located within. The visual envelope of the City is defined by prominent ridges to the North with a natural bowl containing much of the built up area of Cork City. Ridgeline development has taken place in Gurranabraher /Fairhill which has views over the Blackpool valley to Monard.

The topography of the site itself is undulating within an active agricultural landscape. The site rises from levels of approximately 80 meters adjoining the railway line to a plateau-type hilltop in the Monard townland (c 140m OD). Monard has circa 50 hectares of land with a gradient between 1 in 5 and 1 in 12. The upper slopes form part of the backdrop from areas within Cork City. Away from the hilltop, level land is limited in Monard, with tree cover concentrated in certain parts but otherwise sparse. This renders the site quite exposed to the elements and visually very open. The Blarney River is the dominant watercourse with some smaller streams within the site. The partially wooded steep slopes of the river valley, (mixture of broadleaf and conifer plantation) forms part of the distinctive character of the site, West of the Old Mallow Road.

Fig 5.5.1 Topographical and built form within 5 km of site.



5.5.3 Landscape Policies

The 2014 County Development Plan has a number of development objectives related to

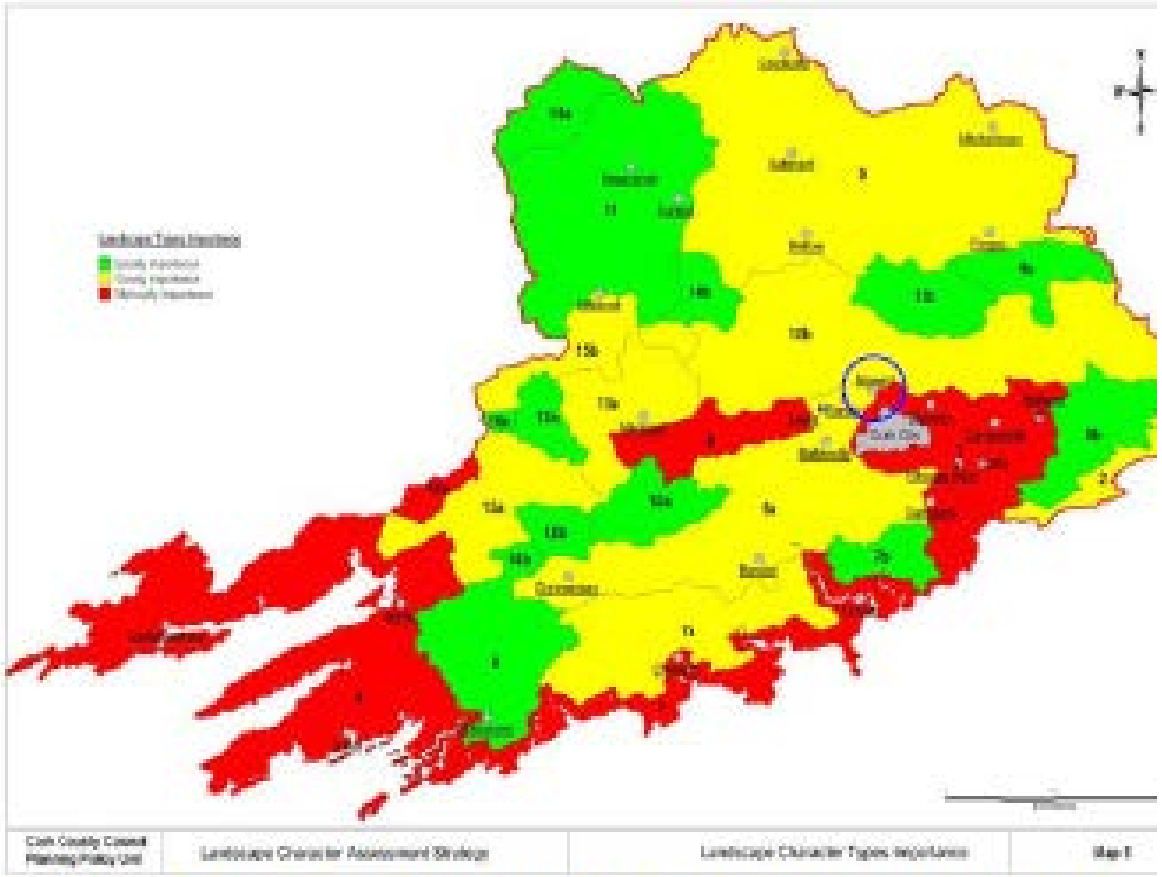
landscape, these remain unchanged since the 2009 County Development Plan. There are no scenic landscape designations within the site, the closest scenic landscape is south east of the site north of the N20 National Primary Route as identified in the County Development Plan. The Draft Landscape Strategy prepared as part of the Landscape Character Assessment of County Cork in 2007 remains in draft form. A total of 16 landscape types were identified, each of which cover a large geographical area. The Monard site is located at the juxtaposition of three landscape character types. The majority of the site is within the Broad Fertile Lowland Valley, the northern section is within the Fissured Fertile Middle-ground, and lastly the South Eastern corner is within the City Harbour and Estuary.

The following table from the Draft Landscape Strategy outlines the value and sensitivity of the landscape types that pertain to Monard.

Table 5.5.1 Landscape Character Types

Landscape Character Types	LCT Value	LCT Sensitivity	LCT Importance
Mainly Fissured Fertile Middle-ground	Medium	High	County
Broad Fertile Lowlands Valleys	High	High	County
City Harbour And Estuary	Very High	Very High	National

Fig 5.5.2 Landscape Character Type
Source: Draft Landscape Strategy 2007



Landscape Character Types Importance - Cork Landscape Character Assessment Strategy

The City Harbour and Estuary has both a very high value and very high sensitivity rating attributed to it. Very high sensitivity landscapes are considered especially vulnerable landscapes and are likely to be fragile and susceptible to change. The predominant landscape character type in Monard namely Broad Fertile describes the Monard area as the following: The land cover in the vicinity of Monard generally comprises fertile, regularly shaped fields typically of medium size and with mature broadleaf hedgerows. Agricultural use primarily involves intensive dairying as well as tillage, with farmsteads relatively well screened by the hedgerows.

Given the hilly character of the landscape and the fertile soils, woodlands are scarce. Apart from the more steeply sloping river valleys where stands of mature trees remain, the vegetation pattern tends to comprise mature hedgerows with occasional shelterbelts providing punctuation across the landscape or indicating the presence of farmsteads.

The uppermost parts of this area are located on the main ridge that forms the backdrop to Cork City and is the boundary of the City and Harbour Landscape Character Area. It is recognised that care needs to be taken to ensure that any new development in this sensitive area does not impinge on the setting of the city itself. Despite the large geographical areas of the landscape types, the Monard site (approximately 1000 acres) is located within three separate landscape types, highlighting the topographical variations and challenges within the site.

The Blarney – Kilbarry Special Local Area Plan acknowledged the complex and undulating topography of the area and the difficulties for design during the site selection stage. The lands south and west of the station overlook the Blarney River valley, with a steep fall to the N20 National Primary Route. Development on these lands was considered visually intrusive and prominent when viewed from long range views from the West.

The lands west of the station form part of the steeply sloping Blarney River Valley; the topography lends itself to the creation of the “country park”. The Monard spade mills are located downstream of the proposed country park. The lands east of the station are a further area of steep slopes near Rathpeacon with views of the City, the SLAP considered this area had limited development potential. In the area north of the proposed train station gradients are less steep with some open agricultural land.

5.5.4 Vegetation Pattern

The vegetation on site is characterised by mature hedgerows that line the bordering roads and define the largely regular field pattern. Hedgerows are often raised on low earthen banks and comprise whitethorn, elder and blackthorn with an occasional upper canopy of ash and sycamore. The hedgerows give form and definition to an otherwise open landscape structure. They can be identified as a landscape asset, the trees surrounding the farm complexes and vernacular houses are also a landscape asset to be retained.

In places where hedgerows have been removed the visual sensitivity to development is increased. Lands exposed to winds from the South West will require planting that is tolerant to the wind, hardy and robust species will be required in groups.

It is intended to retain and enhance the hedgerow pattern as far as practical throughout the site to help integrate new development within its surroundings. The existing hedgerows will provide basis for establishing a more robust structure for amenity, shelter, biodiversity and visual screening purposes.

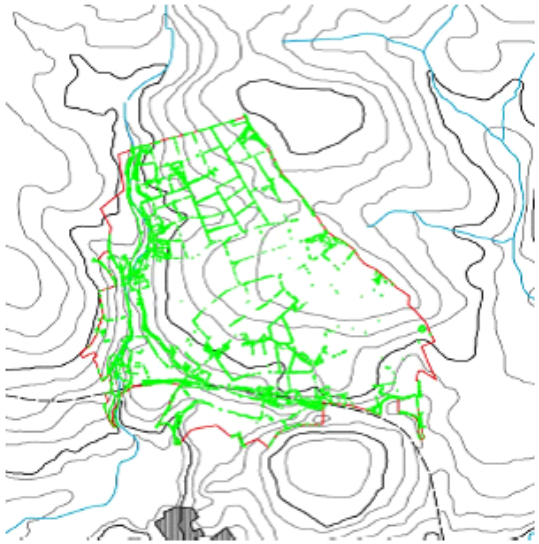


Fig 5.5.3 Existing Vegetation Pattern

5.5.5 Visual Characteristics

The visual character of the landscape is formed by the undulating topography and shallow river valleys, overlain with a generally regular field pattern defined for the most part by mature hedgerows which, in parts, have become fragmented. Tree cover is limited, apart from the steeper valley slopes and occasional shelterbelts around farmsteads. From higher vantage points, therefore, views of the landscape can be extensive. Human influences are evident in all views, ranging from sporadic housing and farms to roads and overhead cables. The overall appearance is one of a managed and settled rural landscape.

A site appraisal was carried out based on guidance from the Design Guide produced by Cork County Council "Making Places a design guide for residential estate development". It identified a number of landmarks within the wider area. Due to the topographic influences, long distance views out from the site are largely restricted to views west and northwest towards the Boggeragh Mountains. The wooded hilltop of Garravagh Hill to the south west with over lapping ridges forms the middle distance views from the site. Furthermore, there are restricted outward views of the Lee Valley and South Eastwards of Cork City down to Blackpool valley.

The physical character of Monard within the wider context is of a recognisably rural landscape in close proximity to the Northern fringes of Cork City. The two hills at Rathpeacon and Killeens are prominent in most views and the combined topography tends to physically and visually separate the built up area of the City from Monard.

There is an existing 110kv ESB line which passes along the Eastern and Northern sections of the site. It has the potential to pose a visually unattractive corridor within the new settlement. If the line remains insitu the retention of existing hedgerows contiguous to the corridor together with the design of development in the vicinity of the corridor will be important. The physical constraints within the site combined with the elevated undulating topography will have a significant influence on the layout, design and visual impact of the new town.

5.5.6 Landscape & Visual Impact Assessment

A detailed landscape and visual impact assessment was prepared for the Planning Scheme. The identification of the potential impacts and their magnitude was incorporated into the preparation of the Planning Scheme. In order to help determine the potential visibility or *Zone of Potential Visibility* (ZPV) of the site, a digital information model was undertaken. This determined the visual sensitivity of the receiving landscape. It is a tool used to understand the potential visual impact a site will have on the surrounding area. The output from the analysis was used to create a map of 'theoretical visibility'. The term 'theoretical visibility' is used because the analysis does not take into account any landscape features such as trees, woodland or buildings, etc. The analysis is made on the basis of topography alone and, as such, should be considered as 'worst case scenario'.

Also, the results are not intended to show the actual visibility, but instead to indicate where the site may be visible from. Conversely, the process does show where the parts of the site may not be seen from, which greatly assists in the identification of representative view points while reducing the need for extensive 'ground truth' checks.

This process was carried out at a stage when no detailed proposals were available therefore the method adopted a Potential Visibility Index (PVI) across the whole study area. The results are presented as a colour map, informing the overall visual sensitivity of the site. The process is helpful in determining location of key viewpoints into the site from the surrounding area. Fig 5.5.3 Outlines the Zone of Potential Visibility Map.

The significance of landscape and visual impact is a function of the sensitivity of the affected landscape, the visual receptors and the magnitude of change. Once the baseline conditions were fully established the magnitude of change was judged which takes account of whether change is temporary or permanent. The proposed development was reviewed to identify aspects of development likely to cause landscape and visual effect. Mitigation measures were formulated to limit or modulate these effects and to develop a landscape framework plan.

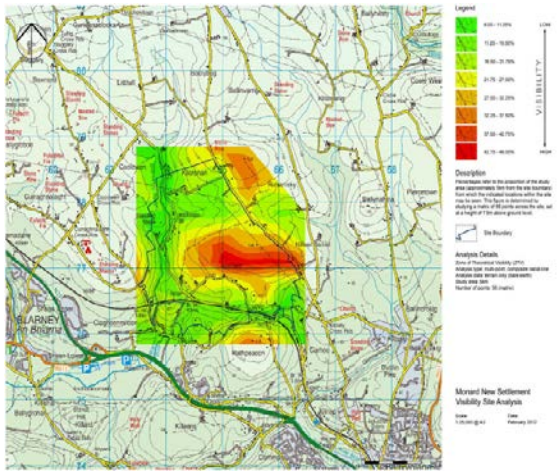
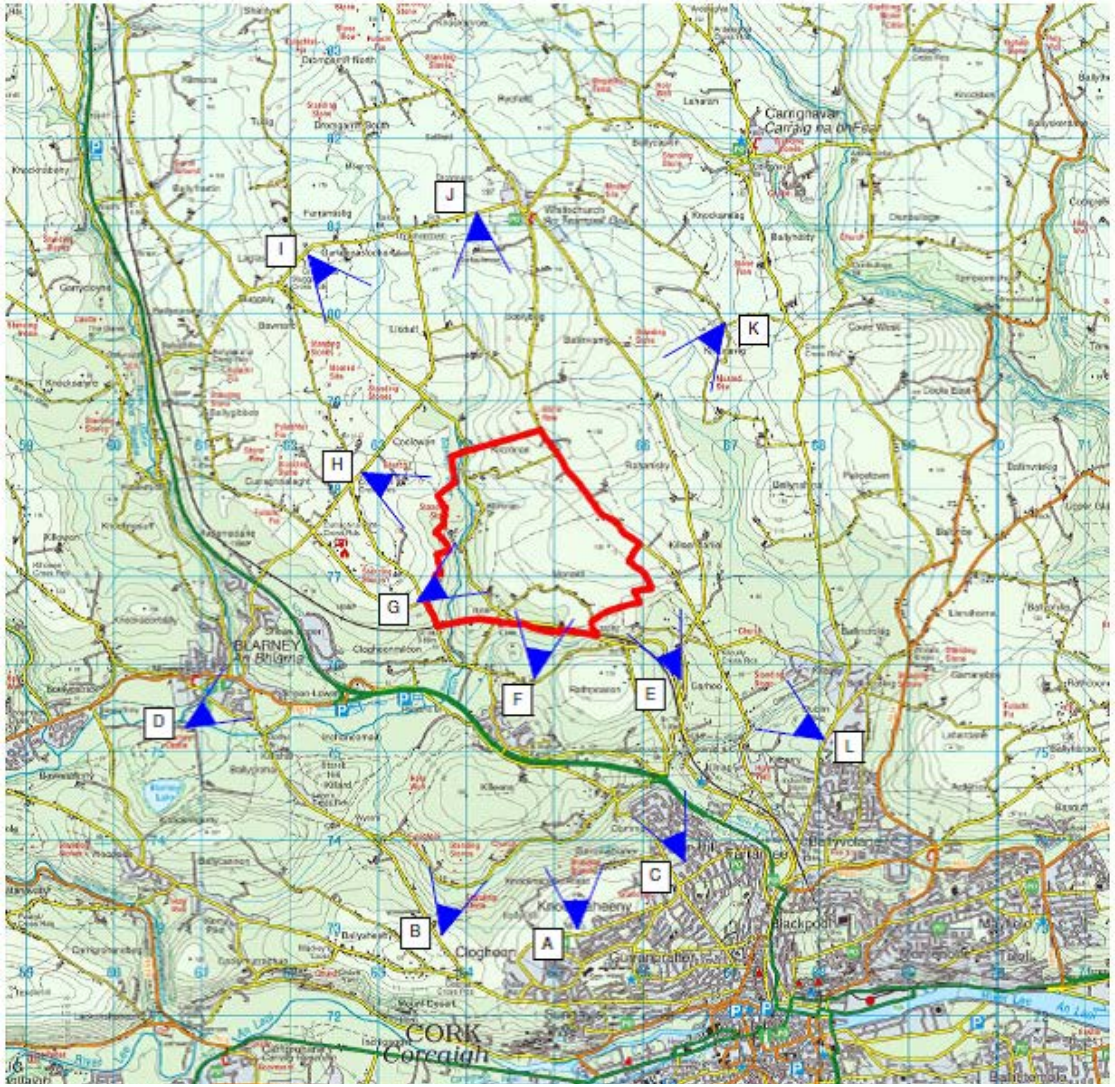


Fig 5.5.4 Zone of Potential Visibility Map

5.5.7 Views

The principal views into the site were identified from the initial ZVI combined with appraisal of mapping (OSI discovery series) and on site investigations. The locations were chosen to represent potential vantage points from nearby communities or well known locations along with a range of distances and locations. The viewpoints were almost entirely taken from the public road. The field work reinforced the importance of the topography and the existing vegetation pattern in determining the extent of visual influence of the site. The location of the selected viewpoints is shown on the adjoining map.



Location ID	Viewpoint Name
A	Meadows Estate, Knocknaheeny
B	Clogheen
C	Fair Hill
D	Blarney Castle
E	Carhoo, Old Mallow Road
F	Rathpeacon Lane
G	Lower Coolowen
H	Coolowen Cross Roads
I	Tullig Cross Roads
J	Whitechurch
K	Killavarrig
L	Ballincrokig

Table 5.5.2 Viewpoints

Fig 5.5.5 Location of viewpoints

Key (Significant) Environmental Issues

- Development on the South Eastern corner of the site would impinge on the setting of Cork City, views from the Northern suburbs up to the site should be protected. (This area has both a very high value and sensitivity rating in the Draft Landscape Character Assessment.)

- The uppermost parts of the site are classified as Broad Fissured in the Draft Landscape Character Assessment, this is the main ridge that forms the backdrop to Cork City and is the boundary of the City and Harbour Landscape Character Area. This area is known as Upper Monard within the Planning Scheme. The potential visibility map concurs with the description in the landscape character assessment. This area requires care and attention in design and landscaping to ensure that any new development in this sensitive area does not impinge on the setting of the City itself.

- The depleted vegetation structure on the exposed West facing slopes will reduce the capacity of the landscape to accommodate development.

- Lower Monard is quite prominent from both short and long distance views from the South, loss of vegetation structure to accommodate the town centre will result in a significant impact on the landscape.

- The avoidance of continuous linear residential development will reduce the negative visual impact from the ESB line.

- The overall layout and design will need to take account of the rural context, with particular attention to the periphery of the site.

- The 2015 Draft Planning Scheme should be more explicit in terms of the layout and how it will interact with the topography. This should be reflected in the revised layouts.

5.5.9 Impacts on landscape in the absence of Planning Scheme

In the absence of the Planning Scheme, it is likely that the lands would continue in their existing agricultural use. However, having regard to the location of these lands close to the City's urban area, it is likely that development pressures would arise in an uncoordinated fashion, thereby impacting incrementally on the existing landscape character of the area. Over time such a piecemeal development pattern could impact significantly on the existing character.

The Planning Scheme allows for the management of change to the landscape and visual impact in a coordinated and sensitive manner.

2.2.11 Viewpoint G: Lower Coolowen

View Type: Restricted, short distance (0-1.5 km from site)

From the local road between the railway line and Coolowen Cross Roads there are immediate views of most of the site across the Blarney River Valley. Although intermittent, between roadside hedgerows, the western sloping fields of the site are fully exposed to views from these vantage points.

The large farm complex immediately north of the railway line and the road are particularly prominent, as well as views of sporadic housing along Monard Lane and the small settlement of Rathpeacon.

There are also several sporadic properties backing-onto the site between the railway bridge and Coolowen Cross Roads.

Whereas the hedgerow pattern and clumps of conifer trees help to absorb much of the existing development to the south of the site, the removal of several field hedges to the north of the farm complex has resulted in a more open landscape structure that accentuates the exposure to views from these vantage points.

As the views are fleeting, and mostly restricted to motorists, the sensitivity of the receptors to change is expected to be moderate, but given the prominence of the site, the potential impact of development could be considerable when viewed from this direction.

Fig 5.5.6 Viewpoint G

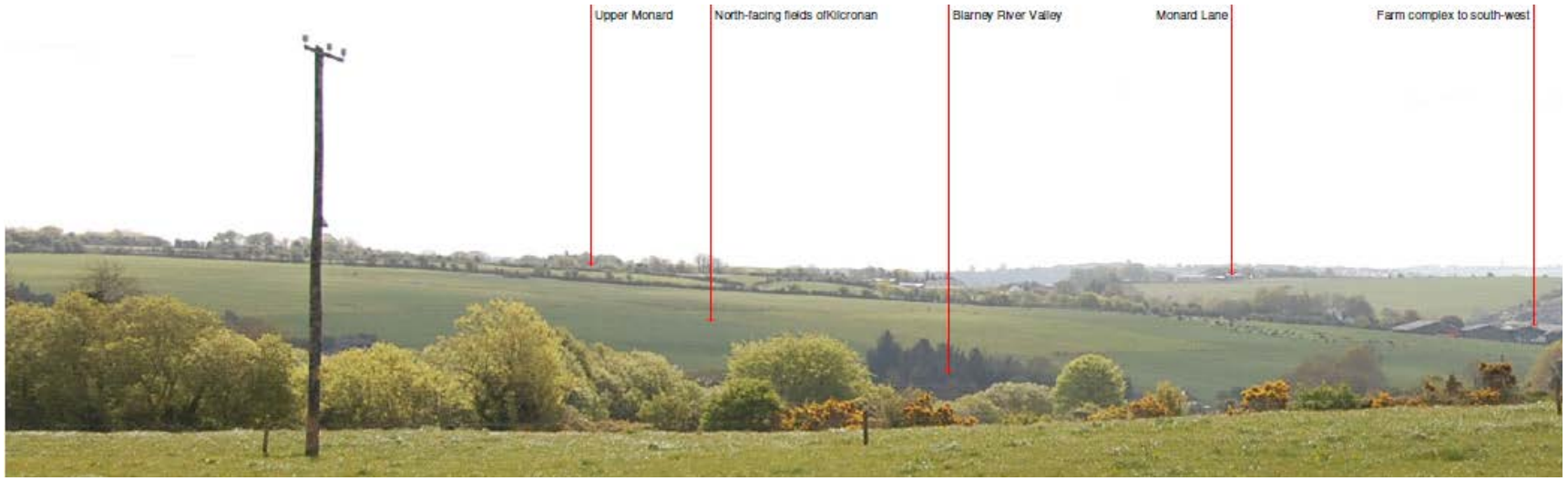


Fig 5.5.7 Viewpoint H

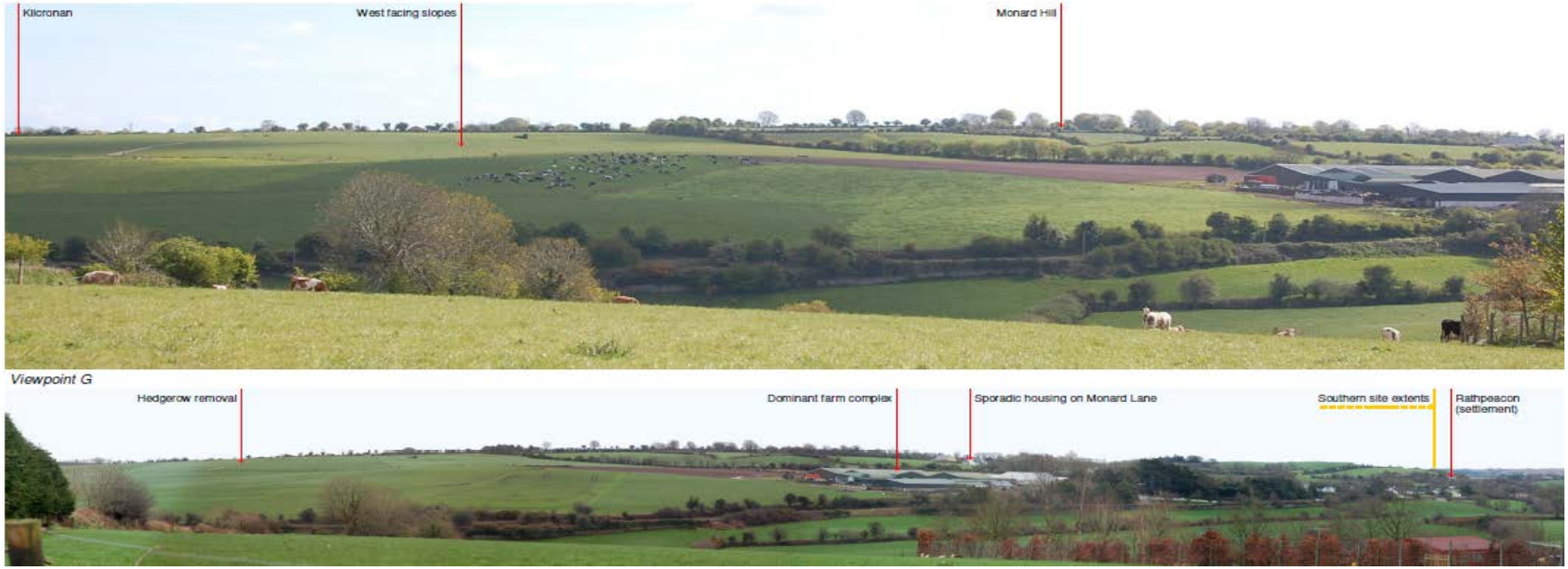
2.2.12 Viewpoint H: Coolowen Cross Roads

View Type: Restricted, short distance (1.0-3.0 km from site)

To the east of Coolowen Cross Roads (from Rocky Road) there are a number of intermittent views of the site through roadside hedgerows and across the Blarney River valley. There are also occasional sporadic properties along the road, with rear views of the site, and a large farmstead at the end of a cul-de-sac driveway.

The northern and part of the western sloping fields of the site are fully exposed to views from these vantage points, extending from the large farm complex in the south-west to the back Whitechurch Road in the north-east. The removal of hedgerows to the north of the farm complex has resulted in a more open landscape structure that further accentuates the exposure to views from these vantage points. To the left of the farm there are middle distance views of sporadic properties on Monard Lane.

As the views from the road are fleeting, the sensitivity of motorist receptors to change is expected to be moderate, while the sensitivit of the few residential receptors can be expected to be high. Given the prominence of the northern fields of the site, the potential impac of development could be considerable when viewed from this direction.



5.6 Material Assets and Transportation

5.6.1 Material Assets

Material assets are usually defined as infrastructure and utilities. These include: rail, road, water supply and wastewater treatment facilities. It also includes economic assets such as quarries and agricultural lands. Agriculture including dairy beef and tillage is the predominant land use within the site. The existing utilities are limited, which is representative of a rural area. There is a strategic Bord Gáis gas line which traverses the site in an East West direction close to the proposed town centre. Also, strategic in nature is the existing 110kv ESB line (Kilbarry to Carrigdrohid) the route of which runs parallel to the Eastern site boundary, and crosses over the Northern section of the site.

The site is not presently served by broadband; however the roll out of broadband does extend to Blarney and along the main Dublin - Cork rail way line which forms the southern site boundary. The proximity of this broadband line is a potential asset. There is no public water or foul sewerage in the area. The primary material asset that pertains to this site is the existing rail line, maximising the capacity of this asset is the corner stone of the Planning Scheme. Transportation in all its forms is dealt with separately.

5.6.2 Road Based Transport

The existing transport demand within the locality is low. The traffic movements are largely confined to peak times in the morning and evening to locations such as the City, south west of City and further afield. The population is car dependant with little or no public transport provision in the area. The local road network is substandard with a myriad of narrow roads in the area. The main access road which links the site to Blackpool and the City is the Old Mallow road (downgraded N20) with two skew bridges which cross over the rail way line. The primary access roads within the site follow a North South orientation. There are two very poorly aligned tertiary roads which cross the site; however access in an East West direction is more difficult.

The route of the Old Mallow road follows the western site boundary, some improvements are needed to cater for proposed traffic volumes. The back Whitechurch road is located along the Eastern site boundary. A very minor road links the site to Killeens due south, which requires a significant upgrade to facilitate development in Monard. Local movements are concentrated on the periphery of the site.

The route of the proposed Northern Ring Road forms the south eastern boundary of the site, access to it via a suitably located junction will be important for Monard. A junction would greatly improve currently poor transport connections from Monard to the major concentration of employment and regional services in the South West of the City. The responsibility of the Northern Ring Road is with the National Roads Authority, close communication and cooperation with external authorities including the NRA is needed for the future success of this rail based town.

Fig 5.6.1 Existing Road Network

5.6.3 Traffic Assessment

A transport assessment was prepared in tandem with the 2012 Planning Scheme by the external consultants Arup. The aim was to identify the capacity of the existing road

network and to determine the improvements necessary to facilitate development of the new town without generating unacceptable levels of congestion within the existing local road network. In addition to the more detailed assessment a Strategic Transport Assessment was prepared in response to An Bord Pleanala's refusal reasons. The primary refusal reason related to the uncertainty of the proposed Northern Ring Road and a junction to serve the new town. There was also concern regarding operational rail links. The Cork Northern Environs Transport Assessment was carried out by Systra in 2014. It concluded that the NRR would provide the strategic function of long distance movements on the M8 whilst also facilitating existing and future residents on the Northern fringes of Cork City travelling to East or West of Cork avoiding the need to traverse the city. A total of 16 scenarios were compared utilising the SATURN model, two locations emerged as the best options for an intermediate junction to serve the North of Cork City.

Baseline Traffic Counts

As part of the Arup Transport Assessment traffic counts were carried out on the local road network to determine the current travel patterns in the vicinity of the site. The traffic counts were carried out on the 29th of March 2012 during both the morning and evening peak period. The traffic on the road network in and around the subject site is relatively light. However, as the roadway approaches Cork City the level of traffic increases with the N20 Cork to Mallow recorded as the busiest roadway in the vicinity of the proposed development. The road network in the vicinity of the proposed development is under capacity, any queuing in the area is associated with the operation of the junctions closer to Cork City.

A traffic count/ speed survey was also carried out in November 2010 at four locations close to the South Eastern corner of the site and along the Southern boundary. The survey was carried out over a two day period using Sierzega Elektronik GmbH Traffic detection devices. The traffic count documented the existing travel patterns in the vicinity of the site. The highest volume of traffic was at the two survey locations closest to the City end. These traffic counts were carried out for the 2012 planning scheme however they remain relevant as the road infrastructure in the vicinity of the site remains unchanged.

Assessment & Recommendations

The provision of public transport, services and schools within the town have was factored into the traffic generation model produced by Arup. A phased approach was considered the most appropriate, the first phase commencing prior to the Northern Ring Road with the second phase delivered post construction of the same. Furthermore, the first phase was divided into three sub phases, the provision or addition of road improvements increases with the number of housing units. A brief account of the number of housing units associated with each phase is included in Table 5.6.1

Table 5.6.1 No of units per Phase

Phases	No of Housing Units
1 a	1,000
1 b	3,000
1 c	3,800

The road improvements proposed in the Arup Traffic Assessment will provide for almost 4,000 housing units. In excess of the 3,800 units phase two will require improved access to the National Road Network. Further details regarding the nature of the road improvements are contained in Planning Scheme. The need for further traffic assessments was identified in the Arup report. This is discussed in the evaluation section of the environmental report.

Monard is located close to Blackpool which is at present close to capacity in terms of the road and associated junctions as documented in the Transport Assessment. Any development North of Blackpool will impact this location. The congestion associated with cities is partly due to increase in car use and

historical design of cities and their constrained streetscape (particularly relevant in Cork context). Creating additional capacity is not always the correct solution. The implementation of CASP strategies should reduce the need for car travel with the promotion of bus priority and car parking restraint within the City centre. The Systra report is discussed in the evaluation section, later in the environmental report.

5.6.4 Public Transport & Opportunities

The existing public transport provision is limited to an in frequent bus service. A suburban bus line serves Cork City to Waterloo via Blarney, with a daily rural bus service to Whitechurch. The majority of the County's population travel to work by car, especially in rural areas like Monard. The Suburban Rail Feasibility Study conducted by Faber Maunsell identified Monard as the preferred location for a new rail station along the rail corridor between Blarney and Midleton. Subject to planned conditions being fully realised, the Faber Maunsell Cork Suburban Feasibility Study (2002) projected a shift in modal split in favour of rail of 24% in the Cork – Mallow corridor. This shift is dependent on Monard, as one third of rail passengers on this section are projected to board at the proposed station serving it.

The sustainable commuting maps formulated for the Local Area Plan process document the very low proportion (0 to 5%) of the population commuting in a sustainable manner with this area. The key to increasing sustainable commuting and decreasing car dependency is to focus targeted population in areas well served by public transport. The timing of the new rail station is critical to encouraging the use of the train as a sustainable mode, before unsustainable commuting patterns become established. The addition of the Monard rail station will provide the critical mass for the success of the suburban rail line designed to rebalance the expansion of Cork.

5.6.5 Slow Modes

This green field site represents the opportunity to provide public transport, pedestrian routes and cycle ways in a manner that allows for direct and attractive routes. The 2015 Planning Scheme identifies an increased number of pedestrian and cycle routes from that outlined in the 2012 Planning Scheme. There are a number of pedestrian and cycle flagship routes. These include a direct pedestrian route partially covered from upper Monard to the train station. The scheme also outlines a cycle route connecting Kilcronan to the station along a suitable gradient. The creation of useable cycle routes within the new town will be both a priority and a challenge. The provision of pedestrian routes to the town centre and public transport should be an option for most people as the maximum distance to walk will be 2kms. The national "smart travel" policy advocating a national cycle policy framework is being implemented through a number of funded projects in Cork and elsewhere. The Cork Cycle Network Plan a joint venture between City and County Councils is being prepared at present, it will identify the strategic cycle network existing and proposed within the metropolitan area.

5.6.6 Key (Significant) Environmental Issues

The primary provision of transport to serve the new town should be the rail line, with walking and cycling for shorter journeys. The improvements to the road network should be implemented on a phased basis as the settlement expands, otherwise the rail line will not succeed. The increase in congestion in Blackpool and close to Cork City will continue to grow if the suburban rail line is not successful. Increased energy costs and greenhouse gas emissions are both factors where the upward trend is likely to continue, the implementation of the rail corridor will help address concerns regarding congestion and rising fuel costs.

The significant environmental issue will be the increased trip generation as a consequence of new town particularly as it expands.

Important elements to influence the modal choice include:

- Frequent good quality public transport by rail and bus. The capacity and operation of the railway line is very important in this regard. More definitive proposals on the route of bus services have been included in the 2015 Scheme.

- The provision of initial road improvements in advance of development including the service corridor, with later road improvements implemented as the town develops.

- Car parking for the rail station, including provision for park and ride.

- The inclusion of additional cycling spurs and pedestrian route throughout the site ensuring connectivity, also provision has been made for bike parking at the station. The site maybe challenging for cyclists in certain parts, however the route selected reflects the most suitable gradient.

- The Northern Ring Road is outside the remit of the County Council and therefore the Draft Scheme. This substantial road project is separate to Monard, however its presence would greatly improve accessibility and reduce congestion within the City whilst also providing a strategic function if the number of junctions is limited. The recommendations contained within the Strategic Transport Assessment represent the optimal location for an intermediate junction to serve Monard and proposed developments North of the City.

- Transportation is also directly related to air quality, noise and population. The provision of waste water and water supply infrastructure is discussed in the Water section.

5.6.7 Impact in the absence of Planning Scheme

In the absence of the Planning Scheme this rural area would remain car dependant. It is likely that development pressures would arise in an uncoordinated fashion. The preparation and adoption of a Planning Scheme provides for the creation of a sustainable new rail based town to decrease our dependency on energy and reduce congestion close to the country's second largest City.

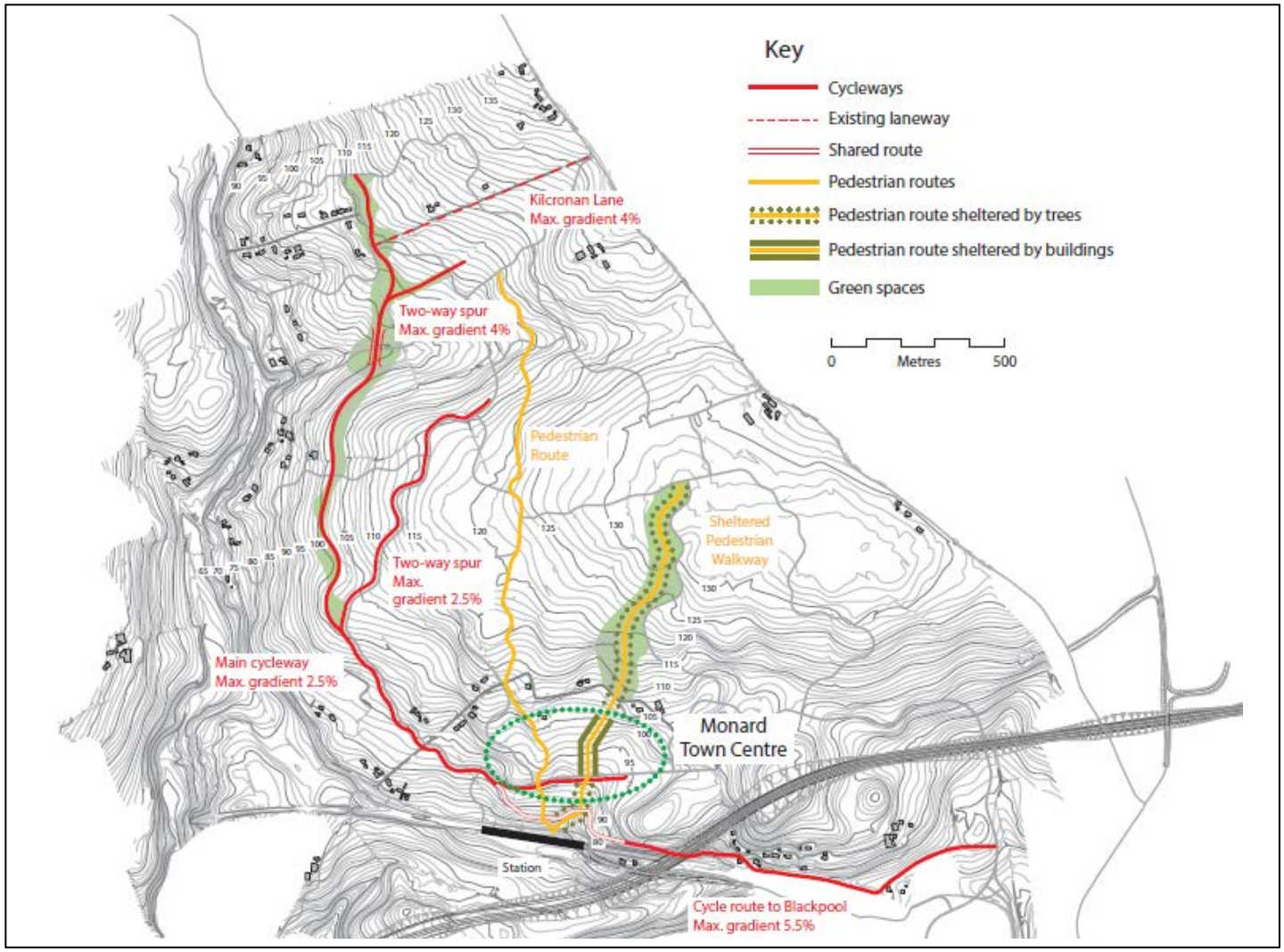


Fig 5.6.2 Cycle & Pedestrian Routes

5.7 Soil, Geology, Hydrogeology

5.7.1 Introduction

Soil is defined as the top layer of the earth's crust. It is formed by mineral particles, organic matter, water, air and living organisms. It is an extremely complex, variable and living medium. Soils are generally considered a non renewable resource. It performs many important functions including food and biomass production, storage, filtration and transformation of substances that are introduced into the environment, this quality is crucial in producing and protecting water supplies and for regulating greenhouse gases. However, the value of soil is not always appreciated. Soil degradation is accelerating, with negative effects on human health, natural ecosystems and climate change, as well as on our economy. The functions of soil are worthy of protection because of its socio economic and environmental importance.

Different EU policies are contributing to soil protection however they are not sufficient to ensure an adequate level of protection. The Commission adopted a Soil Thematic Strategy with a proposal for a Soil Framework Directive. However at present there is no EU directive or legislation relating to soils.

This section was prepared with inputs from TJ O' Connor & Associates.

5.7.2 Bedrock

The Geological Survey of Ireland (GSI) 6" drift maps c 1850 provides information on the geology of rock outcrops, the regional geology, surface topography, general ground conditions and drainage features that have been mapped in the area.

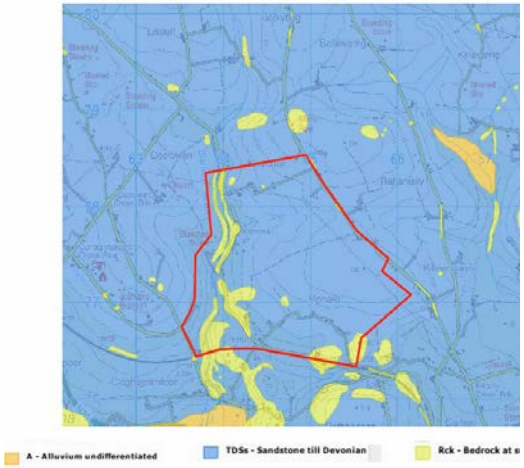
The rock outcrops that occur generally consist of Red Sandstones and Shales. The Monard SDZ is plotted on the 1:100,000 Geological Maps. The geological map shows the Planning Scheme lies predominately on the Ballytrasna Formation (BS) described by the GSI as sandstone with mudstones. A small region to the northeast of the site and at the Southern tip of the site lies on the Gyleen Formation (GY).

The GSI stated in their scoping submission that no sites of geological importance had been identified in their database for Monard.

5.7.3 Soil Cover and Soil Type

The predominant soil types within the site are Acid Brown Earths Brown Podzolics. This soil type is a combination of two parent soil types, Acid Brown Earths and Brown Podzolics. This soil type is a deep well drained productive mineral soil, commonly used for cultivation of both crops and pasture production. The subsoil is predominately sandstone till (Devonian), with several regions of exposed bedrock along the west side of the site with smaller pockets South East of Boreen Dearg.

Fig 5.7.1 EPA Subsoil Map



Source: Teagasc, EPA, GSI

The lands in Monard are in agricultural use with a mixture of tillage and pasture. Whilst the quality of soils is generally good, these productive soils would be of a disturbed nature.

5.7.4 General Geological Characteristics

Soils in Monard generally comprise glacial till on top of sandstone, siltstone and

conglomerate from the Upper Devonian Period. Soils are free draining with the water table in the underlying bedrock. Overburden depths are generally shallow ranging from 1.6m to greater than 4.5 meters.

- The solid geology comprises mudstones and sandstones.
- Rock outcrops are to be found in the sides of the river and would be expected to be at a relatively shallow depth over parts of the site.
- No karst features would be expected on this site, it does occur to the southwest and a karst feature is noted on the Geological Survey of Ireland database in that area.
- The bedrock is a locally important aquifer.
- The bedrock exposure and shallow depth of overburden means that the aquifer vulnerability is high.

5.7.5 Hydrogeology

The Geological Survey of Ireland has classified Irish bedrock aquifers in terms of regional importance and well productivity. The bedrock of the study area is classified as a locally important aquifer (LI), which is generally moderately productive in local zones.

The bedrock aquifer vulnerability within the study area ranges between high (H) to extreme (E). The regions of exposed bedrock near the western boundary and on the southern tip of the SDZ are noted as areas of extreme vulnerability (E) with the regions surrounding the exposed rock classified as extreme also. A large region of extreme vulnerability is recorded from the central to the eastern region of the SDZ. The Aquifer Vulnerability Map for the Monard SDZ is shown in Fig 5.7.2

In 2002 the Geological Survey of Ireland (GSI) prepared a report for Cork County Council called the 'South Cork Groundwater Protection Scheme'. This report provided details on the groundwater vulnerability and the groundwater protection zones for the South Cork region.

The groundwater vulnerability in the Monard area is divided into two categories - extreme vulnerability (E) and high vulnerability (H). The east of the Monard SDZ and the Blarney River valley is categorised as extreme vulnerability. The central area of the SDZ is categorised as high vulnerability.

5.7.6 Key (Significant) Environmental Issues

- The change of use proposed within the Planning Scheme will remove a quantum of lands in use for agricultural purposes; this will impact upon the existing soil structure following removal of soil for development.

- Soil sealing occurs where the soil surface has been covered with impervious materials as a result of development and construction of physical infrastructure leading to impermeability. The ecological and infiltration functions of sealed areas are impaired.

- Soil is recognised as a significant carbon reservoir by the Kyoto protocol and the proposed EU Soil Directive. Soil disturbance should be kept to a minimum during construction and tree planting should be encouraged.

5.7.7 Impacts on soil, geology & hydrogeology in the absence of Planning Scheme

In the absence of the Planning Scheme, it is likely that the lands would continue in their current agricultural role. However, having regard to the location of these lands close to the City's urban area, it is likely that development pressures would arise in an uncoordinated fashion. The preparation and adoption of a Planning Scheme towards a sustainable new town, allows for impacts to be minimised and beneficial opportunities to be exploited.

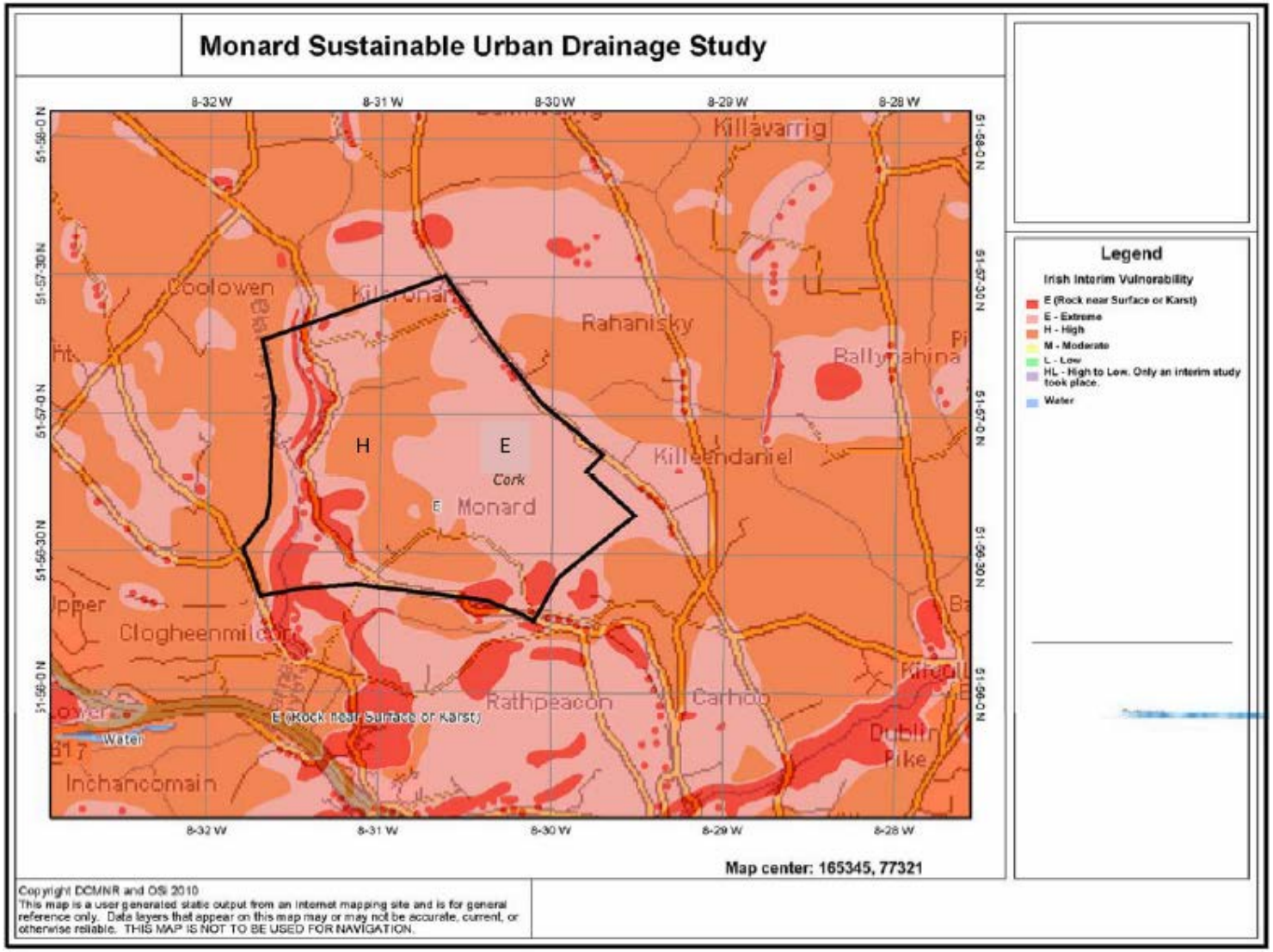


Figure 5.7.2 Aquifer Vulnerability Map

5.8 Air, Noise, Climate & Sustainability

5.8.1 Air Quality

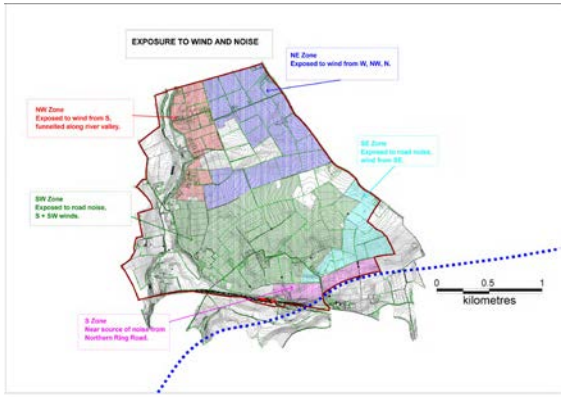
In order to protect human health and the health of our ecosystems air quality monitoring is carried out in Ireland and all EU members states. The EU directive on air quality sets out the standards for a variety of pollutants, air quality monitoring is carried out to assess compliance with these standards. The directive introduced the principle of dividing the county into zones for the purposes of monitoring and assessment. The EPA is responsible for the implementation of EU air quality legislation, it collaborates the results of air quality monitoring and measurements.

The Cork Urban Area is zone B and the non urban area is Zone D. The Monard site is located just within Zone D, which is an unrestricted coal area. The back Whitechurch road is the boundary of Zone B and Zone D, it also forms the eastern boundary of the Planning Scheme. Limit values are set for each individual pollutant monitored which need to be met by a specific attainment date. There are five air quality monitoring stations in Cork City and County. The location closest to Monard is Blackpool, Cork City Centre and Glashaboy are short distance away. The latter would be classified as Zone D. The other two locations are within Zone B. Monitoring has stopped at Blackpool however historical data suggests the air quality was very good. The other two monitoring locations are Heatherton Park (close to Turners cross) and Cork Harbour. The air quality in Cork is considered generally good with a mild climate and almost a continuous movement of air. All monitoring stations in Cork have reported very good air quality measurements with exception of Glashaboy which is reported as good. There are no IPPC licensed activities in the vicinity of the Monard site.

5.8.2 Micro Climate & Noise

Monard is located in an exposed landscape, the SDZ area includes most of Monard Hill, and the south west part of Rahanisky Hill. The prevailing winds are predominately from the South, South West, West and North West. Development could be quite exposed to winds and noise in addition to being visually prominent. The Planning Scheme has outlined a variety of ways to lessen the impact of development in this hilly location. The general means of softening the visual impact and improving shelter includes grouping of buildings, landscaping and tree planting. The creation of wind breaks in areas exposed to south west winds is an integral part of the design for the West Village. High quality house insulation will provide an additional layer of protection to reduce energy loss.

Fig 5.8.1 Exposure to Wind and Noise



Noise

The Environmental Noise Directive defines a common approach intended to avoid, prevent or reduce the effects of exposure to environmental noise. The Environmental Noise Regulations transposed the EU directive into law. The directive does not set any limit values, Ireland does not have any statutory limit values. Monard is a rural agricultural area apart from local traffic noise and distant traffic noise from the N20 the background noise levels are low. The intermittent noise levels from the Cork to Dublin rail line would also be quite low. The greatest potential for traffic noise is from the proposed Northern Ring

Road, the route of which skirts the South Eastern boundary of site. A noise and vibration assessment was conducted as part of the Environmental Impact Assessment for the proposed route. Baseline noise levels were recorded at Monard village and Rathpeacon close to the Monard site. The background noise levels recorded in the area of Monard Village were between 42 and 46 dB(A) which is considered low.

5.8.3 Climate Change

Climate change refers to any change in climate over time, whether it's natural variability or as a result of human activity. Climate change normally refers to changes in global temperature and long term trends in weather. It is widely accepted that the impacts of climate change present significant challenges for water management in Ireland. It is likely that more extreme weather patterns will emerge, with increased incidences of flooding resulting in greater impacts. This is relevant to Monard, in particular lands and settlements downstream of Monard.

Flood Risk Assessment and mapping was undertaken by Cork County Council in conjunction with the OPW in response to the EU Floods Directive and obligations under section 28 of the Planning and Development Act. A number of sources were utilised to create indicative flood maps which informed the 2011 Local Area Plan Process. The Draft River Lee Catchment Flood Risk Assessment and Management Study (Lee CFRAMS) was commissioned by the OPW as a pilot study, the key output of the study was the creation of flood mapping for both current and future scenarios. The indicative flood extent maps produced by Cork County Council represent the areas likely to be inundated at some point during a flood event The OPW have since commenced a National Catchment Flood Risk Assessment and Management (CFRAM). The South West CFRAMs is largest river basin district within County Cork, the Lee /Cork Harbour is one of five management units of management with the SWCFRAMS. Flood Risk is discussed separately in the SFRA contained in the appendix.

The greenhouse effect and the increase in green house gas emissions is a well documented contributor to climate change. A total of six gases comprise the basket of green house gas emissions. The greenhouse effect provides a natural warming which captures the suns radiated heat from the planet, the amplified warming caused by increased carbon into the atmosphere has a measurable impact on the temperature. After carbon dioxide, methane emissions are the second largest contributor to the green house effect, methane gas is associated with agriculture and landfills.

Agriculture is considered the largest contributor to greenhouse gas emissions within Ireland's overall emissions. The primary land use within Monard is agriculture, namely dairy, beef and cereal. However data for greenhouse gas emissions are aggregated on a national level. Therefore, no baseline emissions data exists for Monard or at Cork County level.

5.8.4 Sustainability and Energy Conservation

The creation of sustainable neighbourhoods has been the underlining philosophy in the preparation of the Planning Scheme. The challenges faced by climate change have been acknowledged internationally. At a government policy level The National Climate Change Strategy 2007-2012 includes energy efficiency measures aimed at reducing greenhouse gas emissions from residential development. Emissions from the residential sector accounted for just over 10% of total emissions in 2005, based on direct energy consumption for space and water heating[4].

At European level the EU adopted the Energy Performance of Buildings Directive 2010/31/EU in 2010. It is the main legislative instrument to reduce the energy consumption of buildings. It lays down a number of requirements to be

[4] DoEHLG, 2009, Sustainable Residential Development in Urban Area

implemented by the Member States. The Directive requires Member States to ensure that by 2021 all new buildings are so-called 'nearly zero-energy buildings'. This will have direct implications for developments granted permission within this decade. It will affect the future development of Monard and the planning applications seeking permission within the SDZ site. Developers will be required to demonstrate their compliance with the directive and outline how energy considerations have been addressed within the scheme when submitting an application. The "Sustainable Residential Development in Urban Area" guidelines outline the suitability in particular for Strategic Development Zones to create sustainable neighbourhoods.

On a broad scale, sustainable residential development involves settlement patterns that help minimise transport-related energy consumption and encourage energy-efficient housing layouts. The rationale for Monard was to create a new town with access to sustainable modes of transport. The creation of sustainable neighbourhoods within the Scheme is achieved on a number of levels by way of a multi facetted approach which is discussed in section 8 of this report.

5.8.5 Key (Significant) Environmental Issues

All sections of society contribute to greenhouse gas and carbon emissions, human activities affect our climate by land use change and burning of fossil fuels which contribute to increased emissions and the amplified warming effect. Transport is the third largest contributor to emissions and the trend is growing due to the increase in car ownership. The reliance on the car in Monard and surrounding areas is discussed in the section on Transport. It is now regarded by the EPA that road traffic is considered the biggest threat to air quality in Ireland. A systematic shift in the way we live into the future will reduce emissions and carbon output. Land use planning can directly impact on the number and extent of journeys. The provision of this rail based settlement will provide for more sustainable levels of mobility, noise, air emissions and energy consumption.

Ireland is among the top 10 global emitters of carbon per capita, larger countries may have higher emissions but as individuals our carbon footprint remains very high. An increase in the modal shift to public transport with a coordination of land use and transportation will greatly improve the quality of life for the population based on sustainable travel patterns. Public transport will lead to a reduction in journey times and an improved residential environment not dominated by the car. This future rail based settlement is a small step in the right direction.

5.8.6 Evolution of air quality, noise and climate in the absence of Planning Scheme

In the absence of the Planning Scheme agriculture would remain the dominant land use, the reliance on the car will continue to contribute to green house gas emissions. The noise levels would remain akin to a rural area, until or unless the proposed Northern Ring is constructed. The South Westerly winds would prevail as the dominant winds on the exposed hillside.

5.9 Archaeological, Architectural & Cultural Heritage

Heritage by definition, encapsulates inherited properties, artefacts, characteristics and intangible attributes. It is anything inherited and left on the landscape from past generations, maintained in the present and bestowed for the benefit of future generations. Cultural heritage also includes our history, language, folklore, customs and traditions that make us feel connected to our home place, townlands, parishes, villages, towns and County. Our heritage is constantly evolving and being created by us the current generation.

This section was prepared in conjunction with the council's archaeologist who carried out an Archaeological, Architectural and Cultural Heritage assessment of the Planning Scheme site. This document provided an excellent source of baseline information.

5.9.1 Archaeological Heritage Legislative Framework

Archaeological heritage is protected primarily under the National Monuments Acts (1930-2004) and provides a statutory basis for:

- Protection of sites and monument*s* (RMPs)
- Sites with Preservation Orders
- Ownership and Guardianship of National Monuments
- Register of Historic Monuments (pre-dating 1700AD)
- Licensing of archaeological excavations
- Licensing of Detection Devices
- Protection of archaeological objects.
- Protection of wrecks and underwater heritage (more than 100 years old)

5.9.2 The Existing Environment

The entire Monard area is currently in private ownership with the exception of the road network and the Cork- Dublin rail line. The agricultural landscape consists of a network of fields around the farmhouse divided by narrow connecting roads. It contains part of or all of the townlands: Monard; Kilcronan; Rathpeacon; Coolowen. The general aspect is to the West and South West. The quality of the land varies from good well drained soil on the higher ground to the east with wet marshy rush covered ground on the lower slopes to the south west. The townland name Monard – translates into English as Mon – turf, Ard - High to mean 'high bog', the name is indicative of the wet nature of this townland particularly on the lower South West slopes.

It is bounded to the west by the down graded N20, the late 18th/early 19th century 'New Cork Mallow Road'. There is a natural Blarney River valley to the West and to North-East a narrow 18th century or older Mallow Cork road (L6965). The development area is crossed by two minor roads. The Cork Dublin railway line bounds the southern part of the site. There is a scatter of rural dwellings with some 19th century houses but mainly late 20th century houses, adjacent to the roads.

5.9.3 Archaeological Assessment

The preliminary archaeological assessment identified the archaeological, architectural and cultural baseline within the SDZ site and surrounding area. It also identified potential impacts of the proposed development on the existing environment and general mitigation measures in this broad context. The methodology comprised of a detailed desk top assessment together with a site survey extending over a six month period. The desk top assessment comprised a review of the following documents and maps;

- Record of Monuments and Places as published 1998 (RMP)
- Sites and Monuments Records (SMR) (www.archaeology.ie)
- Archaeological Inventory for Mid Cork Vol3
- 1st ,2nd and 3rd edition OS maps
- Aerial photographs – OSI Ireland
- Cork Post Medieval Survey
- Data base of excavation reports

- Topographical Files of the National Museum
- Relevant Documentary Sources
- Cork County Development Plan 2003-2009

The *Records of Monuments and Places* (RMP) was established under the National Monuments Act 1994, any structures, features or objects in this record are known as recorded monuments. All archaeological sites are shown in the *Sites and Monuments Record* (SMR) (www.archaeology.ie) including all newly identified archaeological sites discovered since 1998. There are three recorded monuments within the site boundary.

Table 5.9.1 Recorded Monuments

Monument	Number	Location
Standing stone	RMPCO063-050	West of Blarney River
Fulacht fiadh	RMPCO063-108	West of Blarney River
Railway bridge	RMPCO063-097	Southern Boundary

The topographical files of the National Museum were checked for a record of any finds recovered from the townlands within the SDZ. No finds were recorded in the townland of; Kilcronan, Rathpeacon, Coolowen, similarly no finds were recorded for Monard townland within the SDZ. However, there is a record in the Glen of the Monard Spade Mills. A find of 21 Kushan coins were discovered in 1998. According to the National Museum the coins are copper alloy decorated on both sides and similar to the coins of Vima Kadphises, Emperor of Kushan (today's countries of Afghanistan and Pakistan, among others).

5.9.4 Site Survey

A survey of the entire site was conducted in between the months of October 2008 and April 2009 by the Council's archaeologist. The site was assessed in terms of landscape, landuse, vegetation cover, presence or lack of archaeological sites and potential for undetected archaeological sites/ features. Individual fields were numbered and detailed recordings were taken, local knowledge was acquired from landowners. The field survey work identified six potential archaeological sites. The sites are as follows;

Site No 1 Levelled fulacht fiadh
Site No 2 Possible fulacht fiadh
Site No 3 Standing Stone
Site No 4 Linear features
Site No 5 Possible burial ground
Site No 6 Standing stone.

A map outlining the location of new sites is contained in Fig 5.9.1 The details of the possible new sites are located in Table 5.9.1.

5.9.5 Recorded Monuments within 2km of SDZ Boundary

A total of seventy six Recorded Monuments were identified within 2 kilometres of the study area. Blarney Castle and Blarney Woollen mills are outside the 2km buffer. However there is an inter visibility between the Monard site and Blarney Castle, an important cultural, archaeological, architectural and internationally famous tourist attraction.

There are two Recorded Monuments at the edge of the SDZ – Monard Spade Mills and Monard Railway Bridge. Waterpower was the main driving force for industrial process throughout the 18th and 19th century in Ireland. The fast flowing Blarney River was harnessed to power a succession of watermills at Monard Spade Mills CO063-052 just outside the SDZ to the South-West. The mills are the unique remains of a 'succession of four self-contained water powered spade, shovel and general iron mill on an impounded and canalised section of the Blarney River on Monard Glen' (Power et al 1994 Archaeological Inventory Vol. 2, East & South Cork). It was in the area of transport that steam power made a substantial contribution and this can best be seen in the extensive network railway lines built through out Ireland. One of the earliest to be built, and still in use today, was the Dublin Cork line and today forms the southern boundary of the SDZ. The railway line is

carried across the steep glen of Monard just above the Spade mills by a fine example of 7 arched railway bridge (RMP CO063-097) built in 1849 for the Great Southern and Western Railway by William Dargan.

5.9.6 Archaeological Screening for Infrastructure Projects

An Archaeological and Cultural Heritage assessment was carried out on behalf of the RPS consultants by Tobar Archaeological Services for the preferred and alternative water supply routes and reservoir sites to serve Monard. The route corridors were assessed for their archaeological landscape potential by way of a desktop and field survey, no new sites were located along the route of the proposed pipeline. The discovery of potential monuments by the council's archaeologist close to the route of the water main was also considered in the above assessment.

An Archaeological Assessment was carried out on the proposed waste water pipeline route by Nicholas O' Dwyer consulting engineers by way of a desk top assessment. The route of proposed twin rising main is largely on the public road. The archaeological assessments for the external infrastructure are supporting documentation to this environmental report, further details can be found within these reports.

5.9.7 Context of Archaeological Sites

Cork with its diverse range of environments has been an attractive place to live since prehistoric times. This is evident by the wide range of archaeological monuments remaining in the Cork Landscape. The area around Monard provides evidence of prehistoric and later medieval settlement. These monuments are tangible physical remains of the past, they survived because of their physical make up and nature of the sites.

Prehistoric Period

The Planning Scheme has a significant number of **Bronze Age** sites, these are mainly fulacht fiadhs, standing stones and standing stone pairs. The Bronze Age begins in Ireland circa 2500BC when Irish society moved from the Stone Age into the new revolution of Bronze technology to make bronze tools and weapons. One of the most frequent monuments of the Bronze Age period is a site type known as a *fulacht fiadh.* These archaeological features are most commonly interpreted as ancient cooking-sites, which usually survive as small horseshoe-shaped mounds of charcoal-enriched soil packed with fragments of heat-shattered stones. They are also frequently located close to a water source. Site No. 1 is a fualacht fiadh and its monument designation is confirmed, however Site No. 2 was not located and can only be assigned a potential archaeological status, further archaeological investigations are required to determine its status.

Standing stones on the other hand served many and varied functions through the ages; as prehistoric burial markers, commemorative monuments, indicators of route ways or boundaries and some were erected in the recent past as scratching posts for cattle. Given that two similar standing stones occur in reasonably close proximity may suggest a late date for the stones. However, standing stones are strongly associated with the Bronze Age period, and the alignment of the two standing stones in the SDZ is an important feature as it is similar to other standing stones and ritual monuments erected in the Bronze Age such as; stone rows, pairs and stone circles. These have been given the title of Potential archaeological site and await further investigations to determine their nature and date. The SDZ and surrounding area contained examples of Bronze Age monuments which indicate a significant presence of Bronze Age Activity in the area and within the SDZ.

Medieval Period

The second major phase of archaeological evidence in the area is during the **medieval period.** Although no known medieval monuments were found within the SDZ itself,

there is substantial evidence for occupation in the early medieval and medieval period in the surrounding area, with over 25 examples of Early Christian Ringforts. The discovery of Kushan coins in Monard Glen is intriguing given the proximity of the large Monard Spade Mills complex. It is likely that they were buried in recent times. The **later medieval period** is represented by moated sites and rectangular enclosures which provided protected settlement in the centre of the Norman manor from which the Anglo-Normans landowners controlled the feudal system of agriculture.

Immediately outside the 2km study area but visible from Monard is Blarney Castle. Blarney Castle is a Recorded Monument CO062-177 and in the Record of Protected structures (RPS No. 00382). The castle was the principal residence of MacCarthys, Lords of Muskerry and now an internationally famous tourist attraction. Blarney Castle is an interesting medieval complex dominated today by the tower house/s (two tower house one added to the other).

The final phase of activity from a heritage perspective is during the 18th and 19th century when the entire country witnessed a major rebuilding period using new styles and technology. The buildings that survive from this period in the area are mostly rural vernacular houses and associated farm buildings, formal houses, mills, bridges etc. The linear earthworks features identified in the North East of the SDZ site adjacent to 19th century farm complex are likely to be associated with it – however the nature and date of these features is unclear and has been assigned Potential Archaeological status and will require archaeological investigations to determine their nature and date.

5.9.8 Previous Archaeological Fieldwork Excavation Data base

A review of the Excavations data base has revealed that no archaeological investigations were recorded within the SDZ site. However, three have been recorded in the study area, two occur immediately outside the boundary in the townland of Monard.

The first is adjacent to the ringfort (SMR 63:54) where test-trenching by John Purcell in 2004 (04E0911) was carried out in advance of development, no features or finds of archaeological significance were revealed. The second is an excavation (99E047) of a fulacht fiadh in the Monard Townland immediately outside the SDZ and identified in the SMR as CO063 113. The site was exposed during monitoring of topsoil-stripping along the route of a Bord Gáis Éireann pipeline that extended from Caherlag to Ballincollig, Co. Cork. The spread was approximately 15mx10m, the trough and a possible hearth were identified during the excavation. As part of the same pipeline Bord Gáis Éireann also carried out test trenching (99E0352) adjacent to the site of standing stone CO063-055 in Rathpeacon to south of SDZ but no archaeological remains were identified.

Summary of Previous Archaeological Fieldwork

04E0911	Adjacent to Ringfort, no archaeological remains found
99E047	Excavation of a fulacht fiadh. No archaeological remains found.
99E0352	Adjacent to standing stone. No archaeological remains found.

5.9.9 Architectural Heritage

The architectural heritage of the site examines the upstanding architectural structures of the SDZ which post date 1700. The desk top assessment comprised a review of the following sources:

- 1st ,2nd and 3rd edition OS maps
- National Inventory of Architectural heritage (NIAH)
- Record of Protected Structures (RPS)
- Cork Archaeological Surveys Post-Medieval Survey
- Cork County Development Plan 2009

- Record of Monuments and Places (RMP) 1998
- Sites and Monuments Records (SMR) (www.archaeology.ie)
- Archaeological Inventory of County Cork Vol. 3: Mid Cork

Architectural heritage is provided for under the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999 and the Planning and Development Acts (2000-2001). The acts provided a forum for the creation of a National Inventory of Architectural Heritage (NIAH) which is used by Local Authorities for compiling the Record of Protected Structures (RPS), thus providing protection for suitable structures. There are no Protected Structures as listed in the Record of Protected Structures in Cork County Development Plan 2009 within the SDZ. The National Inventory of Architectural Heritage (NIAH) has recently uploaded the survey for this area, no buildings are included within the townlands of the SDZ.

A field survey was undertaken to identify any architectural or cultural features within the SDZ. The survey identified 16 buildings of architectural importance, the locations of these buildings are outlined in Fig 5.9.2. The details of the buildings of architectural importance are contained in the Archaeological, Architectural and Cultural Heritage assessment report. The majority of the heritage buildings surviving today are associated with farming, either directly or indirectly. Vernacular architecture or local traditional architecture is usually simple in form and symmetrical in design. The buildings that survive within the SDZ are part of the vernacular heritage and serve as an important link to the people who lived and worked here in the past. The existing dwelling houses can be divided into four main categories of house type namely; single-storey farmhouses, two-storey farmhouses, a formal country house (Monard House) and finally late-19th/early 20th century labourer's cottages.

Monard house is the only example of a more formally designed house within the SDZ (No6). It no longer survives and as such is a cultural heritage feature, however its architectural style is important in the overall context of architectural heritage in the area. It is marked on 1842 OS map with small landscaped demesne. Monard house was a modest version of formal houses built during the 18th /19th century by wealthy landowners throughout Ireland. The house, according to the owner was a two storey, 3 bay, weather slated gable ended with chimneys on the gable. This house demolished in the early 1980's and replaced with a modern house nearby. Some stone built farm buildings and walls remain. A detailed account of these house types can be found in Archaeological, Architectural and Cultural Heritage Assessment report which forms a supporting document to this environmental report.

There are some heritage structures associated with the roads network and the railway line. The building of the Dublin-Cork railway line in the mid 19th century has left a legacy of good architecture and industrial heritage within the Monard SDZ. There are two railway structures including the railway bridge carrying a farm road on the south side of the SDZ and a substantial Viaduct over Monard Glen on the southern boundary of the SDZ. The impressive remains of the seven-arched railway viaduct over Monard Glen (No. 15) will form a backdrop to the proposed new town. The Kilcronan Bridge (AH No. 17) is a three-arched road bridge over a tributary of the Blarney River, it is an 18th century structure and part of the 18th century \turnpike road.

5.9.10 Cultural Heritage

The cultural heritage features outlined in this section have no statutory protection. However, policies with regard to protecting such features are contained in the County Development Plan 2009. The desk top assessment comprised a review of the following sources:

- 1st, 2nd and 3rd edition of the OS six-inch maps

- The Cork Archaeological Survey's post-medieval survey
- Relevant Cartographic Sources
- Cork County Development Plan 2003-2009

The cultural heritage of the SDZ is defined as those buildings and features which are not defined as archaeological heritage or as architectural heritage. It is predominately associated with agricultural activity and communication infrastructure. A field survey was carried out, a total of 10 cultural features were identified these are outlined in Table 5.9.3. The table describes the features in a summarised form. A more detailed description of the cultural features is contained within the Archaeological, Architectural and Cultural Heritage assessment. The townlands and field systems are discussed below.

Irish townlands are one of the ten cultural features identified in the list of features. Townlands are a unique feature of the Irish landscape, one of the most ancient land divisions in the County. They are the basic administrative unit and their origins date back to the **Early Christian** times. There are four townlands in the SDZ: Monard, Kilcronan, Coolowen (western edge of) and Rathpeacon (northern edge of). The main townland boundary crossing the SDZ is that between Monard and Kilcronan. It appears larger in size than the other field boundaries in the area and may therefore be older. Townland names can contain information relating to a wide range of heritage such as archaeology, history, folklore, ownership, topography, social history. A translation of the townland within the SDZ is provided below.

Table 5.9.2 Townland Translation

Townland Name on six inch OS Map	Translation
Coolowen	Back-land or Hill of Owen
Kilcronan	Cronan's church
Monard	High bog
Rathpeacon	Fort of Peacon

Kilcronan townland name suggests that there was once a church in this townland of which there is now no other record. This information in addition to the burial ground in the same townland increases the archaeological potential of this area. There is a known fort in Rathpeacon (CO063-061) from which the townland name probably derives. The name of Monard – high bog- ties in with the boggy nature of the higher ground in this townland.

Individual field names are another area of interest. The following is a list of those collected from two local informants: John Ahern's, Pairce na nonirí, Quinn field, Quarry field, Bottom field, Long field, Pet field, Humphries', Sweeney's field, Lawn field, Lodge field, Pond field, Pump field. These names should be incorporated into new developments.

The SDZ site is dominated by a network of field systems. The enclosing of land by permanent boundaries defined a landscape of dispersed farmsteads surrounded by fields. This is essentially the nature of the present rural landscape in the SDZ. The fields are predominately bounded by dry stone faced earthen bank with a variety of typical mature hedging. The fields are connected be some fine examples of stone gate piers of the North Cork/South Limerick tradition. Few contained examples of wrought iron gates probably made in the local forge as shown on 1902 OS map such as the example near Monard house on the 'Old Cork Mallow Road'

The Monard Glen located with its cascading waterfalls and mill ponds, and the back drop of the spectacular Monard railway viaduct is a pretty place and a wonderful haven for wild life.

5.9.11 Key Significant Environmental Issues

- The discovery of a number of potential archaeological monuments could signify the presence of additional monuments; further investigations will be required prior

to development including a combination of non intrusive geophysical survey and licensed archaeological testing. The service corridor was rerouted following the discovery of a fulacht fiadh close to the town centre.

- A number of the dwellings of architectural importance are vacant within Monard and therefore vulnerable and likely to fall into disrepair. These buildings provide important links to the past and should be retained and sympathetically restored.

- The cultural heritage features are important non structural elements of the built heritage that have survived. Future planning applications should incorporate features such as; townland boundaries, piers, field names etc into the design of their schemes. The retention of the townland boundaries particularly between Monard and Kilcronan is of paramount importance.

- Monard Glen adjacent to the SDZ boundary is a valuable industrial heritage site as well as an ecological rich amenity area. It is a valuable asset immediately adjacent to the SDZ that could possibly be developed in the future.

5.9.12 Impacts on Archaeological, Architectural & Cultural Heritage in the absence of Planning Scheme

In the absence of the Planning Scheme, it is likely that the lands would continue in their current agricultural role. However, having regard to the location of these lands close to the City's urban area, it is likely that development pressures would arise in an uncoordinated fashion. The preparation of the Planning Scheme allows for discovery of previously unknown links to the past to be recorded and also provides for any adverse impacts on the archaeological, architectural and cultural heritage of the SDZ site to be minimised.

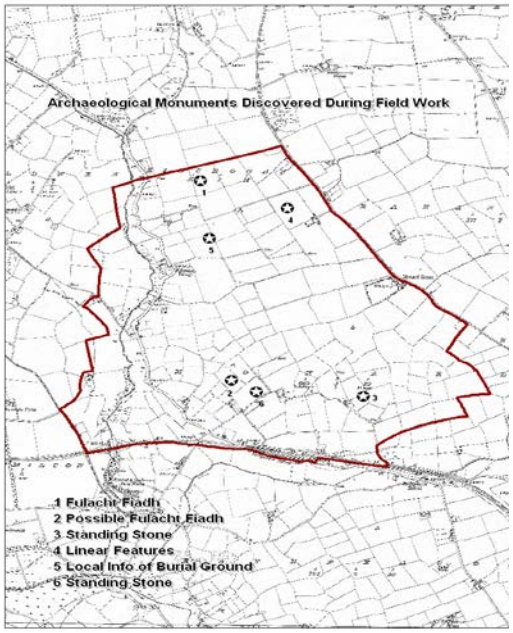


Fig 5.9.1 Potential Archaeological Monuments

Fig 5.9.2 Architectural Heritage Within Monard

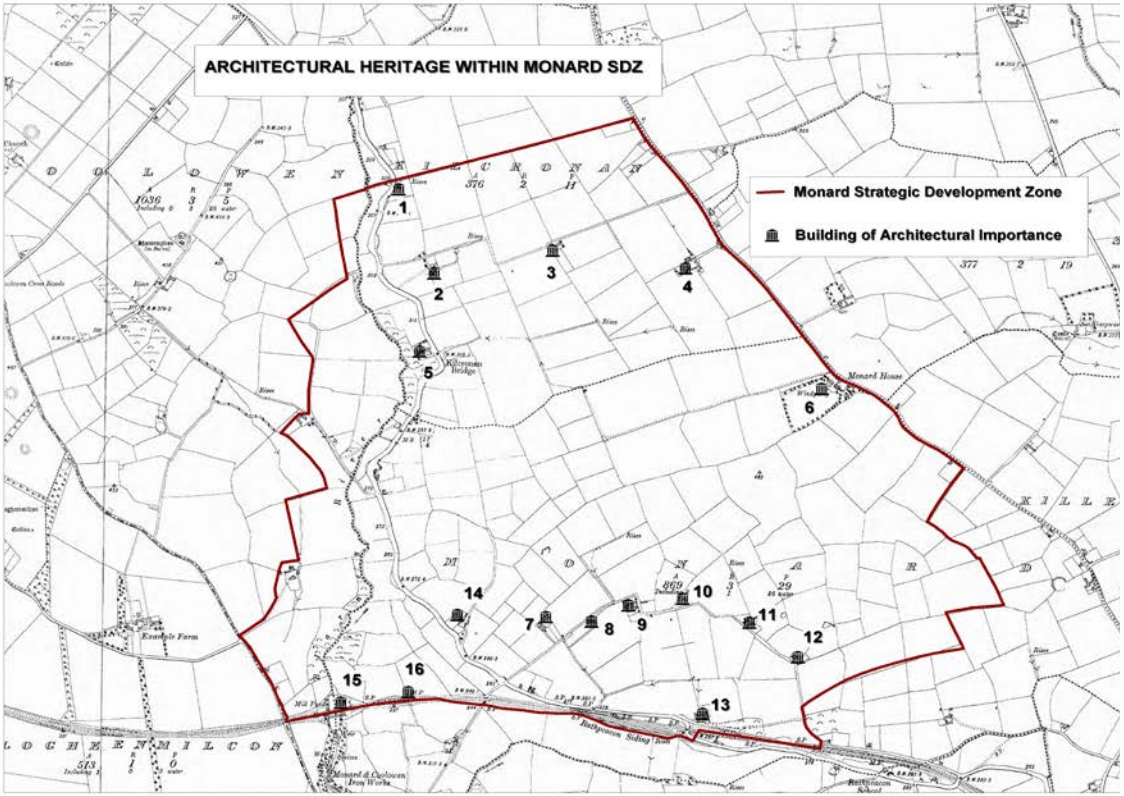


Fig 5.9.3 Cultural Heritage Features within Monad SDZ

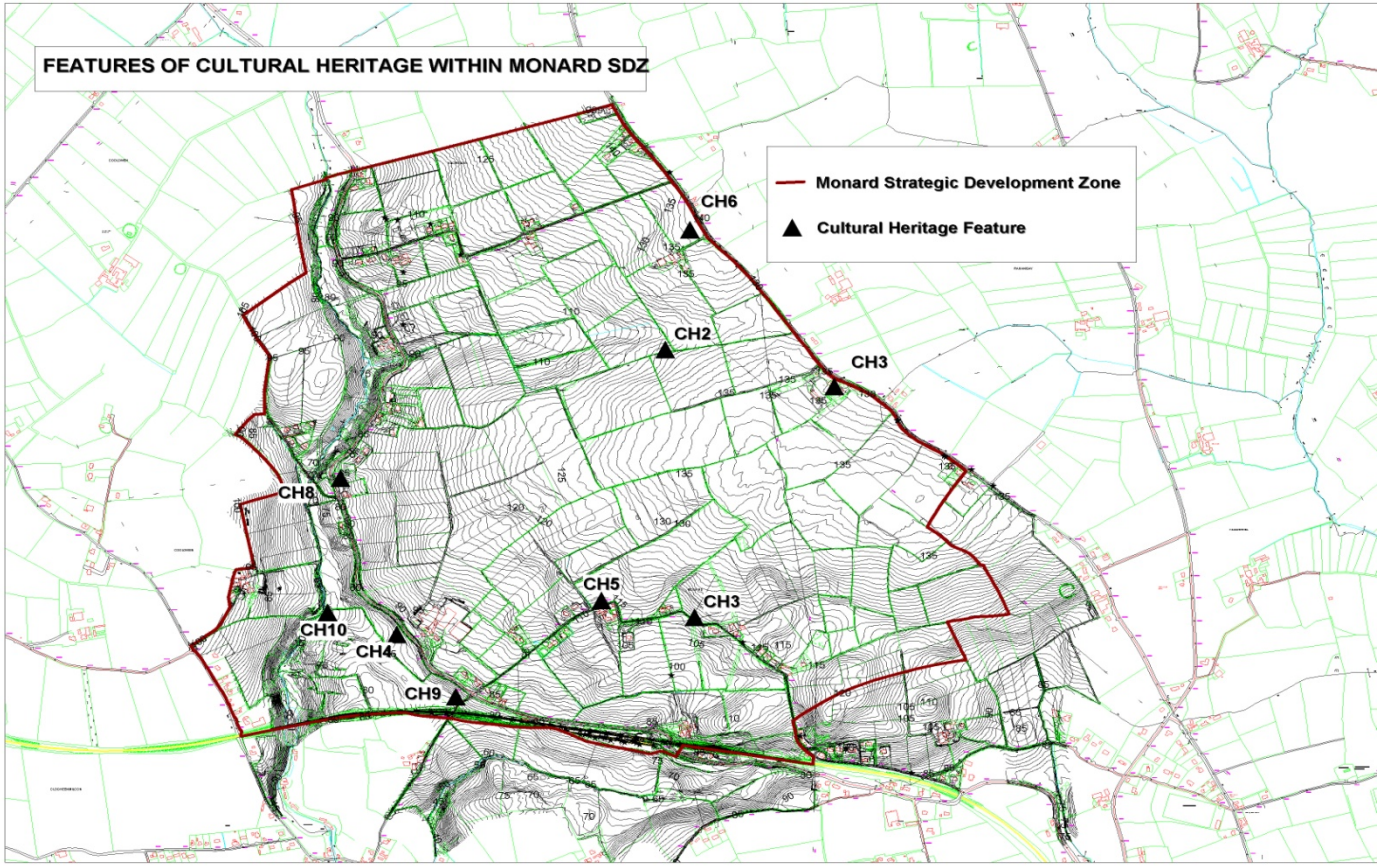


Table 5.9.3 Cultural Heritage Features within Monard

Cultural Heritage	*Feature*	*Description*
CH1	Field system	Network of fields enclosed by dry-stone-faced earthen banks. In general the present layout is as shown on 1842 OS Map, with reasonably large paddocks laid out in a regular pattern. Some retain their original gateways, with masonry stone piers and locally forged iron gates. The masonry piers are of a style distinctive to the north Cork/south Limerick area: rectangular in plan, the inner sides bulging to accommodate a rebate to hang the gate on one side and create a gate stop on other side.
CH2	Townlands	Boundaries and place names. The townland system in Ireland largely pre-dates the Norman period and the names are often Early Christian in origin.
CH3	Old road	Old road from Cork to Limerick via Whitechurch
CH4	Turnpike Road	The Old road CH3 replaced in mid 18th century by the Turnpike road which was authorised in 1731. However its generous width which can accommodate two way traffic and genteel gradient suggests it was built in mid/late 18th century for the increased coach traffic. It in turn was replaced in the late 20th century with the N20 Cork Limerick Road
CH 5	Monard clay work	Landowner John Ahern pointed out an area on his land where clay was reputedly taken from for the Youghal & Monard Clay Works.
CH 6	Schoolhouse	Shown on 1842 OS Map, gone by late 19th century as not shown on 1900 25" map. Referred to in Lewis Topographical Dictionary as a large and handsome school house built in 1835
CH 7	Houses on 1st edition OS six-inch map	22 houses shown on 1842 OS map which no longer survive today. Many of these houses correlate with those described in Griffith's Valuation.
CH 8	Forge	Forge shown on 1842 OS map on west side of the Turnpike Road, marked Smithy on late 19th century 25 " OS map. The structural element of a forge may survive incorporated into a modern structure. Further investigation is required.
CH 9	Limekiln	A limekiln shown on 1842 OS map in Monard townland does not survive. Not shown on late 19th century 25" map.
CH 10	Pump house & Sluice gates	Needs further study

6.0 Environmental Protection Objectives

6.1 Introduction

Environmental protection objectives are not a statutory requirement, however they do fulfil the obligations set out in Schedule 2B of the Planning and Development (Strategic Environmental Assessment) Regulations 2004. The establishment of environmental protection objectives (EPOs) for each environmental receptor identifies a desired direction primarily based on the results of the baseline study and the scoping process. The targets in particular reflect An Bord Pleanala's decision regarding the 2012 Planning Scheme. The indicative list of environmental protection objectives as contained in the SEA guidelines have been compiled with regard to National, European and International policy documents. This is the primary source used in formulating the EPOs, it has been amended to reflect those issues which are relevant and appropriate for Monard. The EPOs are grouped under the relevant environmental receptor. The environmental protection objectives are separate from the development proposals although they can influence each other and overlap.

6.2 Targets and Indicators

The use of targets for each of the environmental objectives identifies a more detailed achievable objective (to assess the impact of the Planning Scheme). The EPO's will be used to evaluate the environmental effects of the alternatives and to select the preferred option. The indicators are a measure of variables over time, to evaluate the achievement of the environmental protection objective. They act as a benchmark against which the planning scheme's performance can be measured. The selection of indicators has been informed by the assessment of the baseline environment and the scoping process. However, indicators are also influenced by the availability of information. The list of indicators is outlined in section 10.

Table 6.1 sets out a list of key environmental protection objectives and targets relevant for Monard.

Table 6.1 Environmental Protection Objectives and Targets

Environmental Objectives	Targets
B1 Protect and enhance the existing habitats and species within Monard, in particular along the Blarney River Corridor.	1. No significant adverse impact either direct, indirect or cumulative on species, habitats and their sustaining resources within the Monard site. Conserve the diversity of habitats and species of non designated sites. 2. Minimise loss of hedgerow habitats.
B2 Protect the integrity and hydrology of the proposed NHA at Blarney Bog, avoid adverse impact on the designated Natura 2000 sites in Cork harbour (direct, indirect and cumulative impact)	1. Maintain the present surface water hydrological regime of the Blarney River flowing into Blarney bog. 2. No significant adverse impacts, (direct, cumulative and indirect impacts) to annexed habitats, species or their sustaining resources within Cork Harbour.
B3 Protect all habitats from invasive species implement programme for control and removal of invasive species.	Removal of all alien species, ensure no new alien species. New planting to comprise native or naturalised species.
W1 Maintain the ecological status and water quality of all on - site water courses and ground water during and post construction to comply with the Water Framework Directive.	Improvement or at least no deterioration of water quality in the Blarney River, the streams and groundwater within the site.
W2 Incorporate the objectives of the Floods Directive into the development; manage the risk of flooding lands and settlements downstream by utilising sustainable urban drainage systems to manage surface water drainage.	Appropriate management of zones vulnerable to flooding along the Blarney River corridor and lands downstream of the Planning Scheme.
W3 Promote water conservation within the new water infrastructure network and future water usage within the new development.	Provision for reuse, recycling and conservation of water within individual houses.
S1 Protect local soil integrity and quality.	Soil management to inform detailed designs within the Planning Scheme and future planning applications.
A1 Maintain and protect good air quality standards, minimise emissions and promote use of public transport.	Air quality to remain within acceptable limits as provided by the air quality standards regulations.
T1 Promote a good quality of life for existing and future communities based on sustainable travel patterns. This should include access to rail, bus, cycling and walking with provision for park and ride facilities at the train station.	1. Prioritise the train as the primary mode of transport for the proposed population. Ensure early provision of the station as per the threshold framework. The projected target was set as 24% in favour of rail on the Cork – Mallow corridor in the Suburban Feasibility Study. 2. Ensure a frequent rail service to Kent Station. 3. Ensure provision of extensive cycling and walking routes with direct links to the train station, reducing the need for a car in Lower Monard. 4. Provide a bus service to serve in particular Kilcronan and the West Village.

T2 Protect and upgrade the local road network and provide access to the strategic road network.	1.Ensure no additional congestion of local and surrounding road network and junctions as result of new development. 2.Ensure provision of a junction to access the proposed Northern Ring Road from the new town at Monard.
P1 Provide existing and new residents access to a range of services and community infrastructure including useable public open space and amenity areas within the new town.	Ensure sufficient community services are provided including education, childcare, primary health care, accessible open space including the provision of a country park and sports pitches to support the future population.
P2 Protect the residential amenity of existing residents, ensure adequate buffers are provided adjacent to existing residents.	House designs contiguous to existing residents should be of an appropriate scale to protect residential amenity of residents.
P3 Minimise the impacts of construction on local residents, utilise construction management plans	Preserve the residential amenity of the existing community members, limit disturbance and disruption to a minimum.
C1 Protect the existing and newly discovered archaeological sites and their context within Monard and surrounding areas.	No adverse impact on recorded monuments that are to be retained, careful recording of those to be removed or altered.
C2 Protect the local cultural identity and associated cultural features within Monard.	Retain the townland boundaries within the Draft Planning Scheme in so far as possible.
L1 Preserve the natural and historic landscape features within Monard.	Integrate natural landscape features and landscape assets into design of the villages and their neighbourhoods, retain good quality tree cover and hedgerows as per landscape framework.
L2 Protect the most visually sensitive locations within Monard, minimise the visual impact of the development within and adjacent to the Draft Planning Scheme.	1. Limit development in locations which have been identified as sensitive in the potential zone of visibility analysis which forms part of the Landscape report. 2. Establish early on extensive screen planting in advance as per landscape framework to soften the overall visual impact and to ensure development does not detract from the character of Monard and surrounding area.
E1 Reduce waste generation in the new town and promote the use of sustainable energy sources.	1 Use waste management plans to promote reuse and recycling as an ethos within the new town. 2 Implementation of energy efficiency at the level of the individual building accomplished through orientation, insulation and the use of water conservation measures. All homes should be of sustainable building design, compliant with the building regulations. District heating and geo thermal energy to be utilised within the town centre.

7.0 Alternatives

The development and assessment of reasonable alternatives is a requirement un Article 5 of the SEA directive. The selection of the preferred option was based on the minimisation of environmental impacts. The preferred option was also considered the most sustainable approach for the implementation of Planning Scheme.

Once again the potential options for the site are not presented as composite options, this approach was not considered appropriate for the Scheme. The consideration of alternatives should be realistic and at the level appropriate for the implementation within the planning hierarchy. The Strategic Development Zone was framed within a policy context set by the plans above it. The Cork Area Strategic Plan 2001-2020 was the context in which the concept for Monard emerged. The examination of alternatives during the formulation of CASP is discussed in the next section.

The potential options have been assessed against the environmental protection objectives established for the key environmental aspects of the environment likely to be significantly affected. The reasons for selecting the preferred option have been documented, as are the reasons for eliminating the other alternatives/options.

7.1 Consideration of Alternative Strategies

The site selection process for a new rail based town originated in CASP (Cork Area Strategic Plan 2001-2020) in 2001. Monard/Rathpeacon was identified as the location for a new rail based town with further assessment required. CASP also recognised that other locations within the catchment of the rail corridor from Blarney to Midleton could accommodate the planned growth for Monard /Rathpeacon, possibly around existing development centres[5]. However this would reduce the viability of the proposed rail service North of Cork. The suburban rail network was endorsed by the Faber Maunsell Cork Suburban rail feasibility study.

Alternative strategies for the direction and scale of growth in the Cork City region were examined during the preparation of CASP. All of the strategies were capable of implementation. The following is a brief description of alternatives considered:

Strategy A: Maximising the potential of Cork City as the main economic driver with a large part of development located in a Southern arc from Ballincollig to Carrigaline and Cobh.

Strategy B: Similar to strategy A with focus on the City as main economic driver for the region but with strong public private partnership and major investment in local rail network. A large part of development would be in a Northern arc along the line of the existing and then former rail line between Blarney and Midleton.

Strategy C: The focus of strategy C was on a stronger role for ring towns with a lower rate of growth for Cork City.

The strategies were evaluated against the project goals. In choosing between the dominant metropolitan Cork options of A and B, Strategy B was preferred for a number of reasons. The main reason was the spatial distribution of households and jobs within the rail based public transport system which would lead to less congestion and car use. Other reasons included lesser impact on the green belt and landscape constraints, promotion of urban generation and social inclusion. A balance between Strategies B and C was considered the best option with the population for ring towns set mid way between the target of Strategies A and B. This set the basis for the preferred alternative strategy.

[5] CASP, pg 34

7.2 Limitations to Alternative Options

In 2003 extensive public participation was undertaken in relation to the distribution of growth along the CASP rail corridor. The suitability of the Monard /Rathpeacon site together with the extent of the new town and scale of development were under consideration. The Blarney- Kilbarry Special Local Area Plan emerged from the above process and was adopted in 2005. The SLAP identified the broad planning principles of the site including: numbers of housing units, number of primary and secondary schools, list of sporting and recreation facilities including the provision for a county park. The pre determination of key components of the new town limits the scope for consideration of alternatives within the site.

Furthermore, the Planning framework as outlined in *section 2* of the Planning Scheme outlines the complexity of issues in Monard (challenging topography, fragmented ownership, existing housing, energy transmission way leaves, decisions taken for the location of rail station and Northern Ring Road). This adds a further layer of difficulties, these issues were addressed in the planning framework in a step by step manner.

The Strategic Environmental Assessment Directive requires an environmental report to consider "reasonable alternatives taking into account the objectives and geographical scope of the plan or programme". The strategic decision for a rail based town was taken in 2001 and the scale of the town was decided in subsequent plans preceding the SDZ designation, namely the Blarney- Kilbarry Special Local Area Plan. Therefore it would be unreasonable to include an alternative site outside of the designated SDZ boundary. The alternatives proposed are at project level, within a defined geographical area and represent the realistic options which the site presented.

An Bord Pleanalas refusal reasons relate to specific issues which were addressed in the revised 2015 Scheme. Therefore the reasonable alternatives are limited to the parameters of the revised scheme. The alternatives examined in the 2012 Planning Scheme were broad ranging. The main issues identified by An Bord Pleanala were; Transportation, Density Implementation and Urban Design.

7.3 Methodology

The options selected for the site must be realistic and capable of implementation. Following analysis of the scoping report, baseline environment, site constraints and the development proposals for the site, the key issues were identified and the alternatives proposed. The potential options have been assessed against the environmental protection objectives in a matrix format. The environment impacts are discussed and the preferred option is selected. The reasons for selecting the option are discussed.

7.4 Alternatives /Options and their implications

The following issues were considered of primary importance in the formulation of the revised Scheme: Transportation, Design and Density of development and Implementation of the Scheme. The categories were based on the issues highlighted by the Bord's decision. The preferred alternative is a combination of options. The evolution of Monard without the implementation of the Planning Scheme was considered for comparison purposes, namely the "Do Nothing" scenario.

The options under consideration were:

Density and Design of Residential Development

The Planning Scheme comprises four interlinked villages namely; Lower Monard (including town centre), Upper Monard, West Village and Kilcronan. The concept of interlinked villages originated in the Blarney-Kilbarry SLAP. The apportioning of the

increased number of residential units within the four villages, town centre and adjacent neighbourhoods was a significant decision within the scheme. The Bord considered the approach to urban development unduly low in the 2012 Planning Scheme. There were three alternative approaches regarding density and design of residential development within the overall town.

- Maintain the density of the 2012 Planning scheme of approximately 5,000 units (max 5, 300) with higher densities closer to the station. Predominately comprising conventional housing with an average density of 28 per hectare. The topographical constraints of the site as a key determination in the selection of house typologies or densities, the steeper ground was more suited to higher densities and duplex arrangements. Conventional housing was not suitable for steeper ground.

- Increase the range of densities across the Scheme. Densities of 50 -60 per hectare within 0.5km of the station decreasing to 35-50 per hectare as the distance from the station increases. Apartments would comprise a larger share of the houses type approximately 37%.

- Significantly increase densities in excess 40 to 50 per hectare across the site in line the guidelines "Sustainable Residential Development in Urban Areas."

The four villages each have differing topographical characteristics which have been considered in the location of development, section 3 of the Scheme outlines the approach to developing the steeper areas within the site. Mel Dunbar Associates produced a sample neighbourhood design, it included a house type which incorporated parking within the ground floor, the reduction of external parking greatly increased the overall density. A large proportion of the steeper land is located close to the rail station therefore the terrain is more suited to duplex units and the typologies of street, urban and multi level. The decreased densities in Upper Monard are more conducive to the hill top setting. The West village has steep slopes close to the Old Mallow road which will increase the density.

Transportation Options

The transportation proposals for the new town are multi modal. The existing rail line and new station are the corner stone of the development. However certainty regarding the strategic road network, specifically the Northern Ring Road and access to it was the primary reason for refusal by An Bord Pleanala. Furthermore lack of certainty on the operational rail links namely the provision of a train station and frequency to it was of concern to the Bord also. The Systra Transport assessment provided a detailed a strategic transport assessment and offered some alternatives to address the road transport concerns.

The options considered to address these issues were;

- Commence development at Monard with upgrades to the existing road infrastructure and junctions to facilitate development within the thresholds identified in the Arup report.

- Promote a two junction solution for the Northern Ring Road to serve lands North West of Cork City and Monard.

- Promote a single junction for the Northern Ring Road to serve lands North West of Cork City and Monard with a potential location.

- Promote a single junction for the Northern Ring Road to serve lands North West of Cork City and Monard with alternative location.

- Update the business plan in relation to 2002 Cork Suburban Rail Feasibility Study conducted by Faber Maunsell.

The transport solutions for the site are complex. However the creation of the new town close to a major urban centre is likely to take a considerable time with significant transport proposals to cater for a population of 13,000 persons. The construction of the Northern Ring Road and the provision of a junction is not within the remit of Cork County Council, however discussions regarding access arrangements to a future ring road have proved fruitful.

Implementation Options

The implementation of the Scheme is complex. Coordinating the provision of access, infrastructure, community facilities with multiple landowners will be complicated. A conventional approach to phasing in terms of a set sequence of development was discounted in the 2012 Environmental Report for the above reasons. The possible options to overcome the difficulties are as follows:

- Acquisition of land and provision of the main infrastructure and facilities by the local or public authority.

- Agreement amongst the landowners/developers, and between them and the local authority.

- Incentives and controls which encourage developers and landowners to act in a way which results in the provision of the necessary infrastructure and facilities.

The implementation mechanism should ensure that infrastructure, services, facilities and amenities are provided in tandem with residential and employment development in a coordinated manner. There is provision for four development corridors running North from the Services Corridor Road corridor, this is a new feature of the 2015 Scheme. The phasing of the local road improvements is defined by thresholds as set out in the Arup Transport Assessment rather than the provision of extensive road infrastructure. This will contribute towards the achievement of sustainable mobility. The principle of contiguous development (i.e. development must adjoin land already developed) will allow for development to proceed in an orderly manner particularly if constructed over a long time scale.

Do Nothing Scenario

This alternative is based on the evolution of Monard in the absence of a new town. The rural character and agricultural landscape would remain largely unchanged. The addition of one off sporadic houses along the very poor local road network would most likely continue.

The current environmental resources such as good water quality in the Blarney River and agriculturally productive soils would remain reasonably static.

However, the Rathpeacon sidings along the rail line would become redundant. The main disadvantage would be the failure to take advantage of the proximity of public transport. Without Monard the critical mass required for the success of the rail corridor may not be realised.

7.5 Environmental Assessment of Options

The three categories and multiple options within those categories are assessed against the environmental protection objectives in a matrix format in Table 7.1. The table provides an over view or summary of the assessment. A number of the options will have a potentially neutral effect on environmental protection objectives, however the matrix does also highlight some positive and negative impacts. An overview of the matrix evaluation of the site options is provided in a grouped format.

Biodiversity

Most of the options have a neutral impact on the flora and fauna within and adjacent to the site. The transportation options have the potential for a negative impact outside of the site boundary.

Population

The effects on the population are a combination of positive, with neutral and some negative. A substantial increase in densities could have a potential negative impact on the existing population given the dispersed settlement pattern, the quantity of open space available would be reduced.

Water

The overall effect on water resources is neutral. Water quality should potentially be unaffected as collection, treatment and disposal of waste water is proposed. No on site treatment will take place. Site specific SUDS should manage surface water, increased densities may potentially affect surface water disposal.

Landscape

The overall effect of the options on the landscape is negative, with some positives. The matrix highlights the negative effect of a substantial increase in densities. The scale height and design of buildings would greatly influence the impact on the landscape. The phasing of the road infrastructure in line with the development would reduce the scaring effect on the rural landscape, particularly if construction occurs in stages.

Transportation

The overall impact of the options on the local road network will depend on the early provision of the train station. The phasing of road improvements will encourage use of public transport. Accessibility to the strategic road network will have a positive effect on the town and the constrained road network leading to the City Centre. The number of junctions from the NRR is not as significant in terms of the impact, once access to it is provided.

Air, Soil, Archaeology, Architecture and Cultural Heritage

All of the options proposed will have an overall neutral impact on air and soil. The higher densities close to the station will support energy conservation measures including district heating. Mitigation measures will be required to ensure no adverse impact on recorded monuments, newly discovered monuments and features of cultural heritage.

7.6 Preferred Option – Reason for Selection

The preferred option is as follows;

A medium density approach combined with one intermediate junction to provide access to the proposed Northern Ring Road. Implementation will be based primarily on a system of incentives and control with some land acquisition. The principle of contiguity will apply (with exception of Southern part of the site). A system of thresholds will apply in the four villages with a requirement for facilities to be provided at neighbourhood level. The overall increase in density will be close to the station to deliver a more sustainable pattern of development. Topographical constraints are most prevalent close to the rail station.

The preferred location of the intermediate junction with the proposed NRR will have less of an impact on biodiversity and landscape then two junctions North of the City. The appropriate assessment of potential environmental effects for any junctions is at project level. A Draft EIS has been carried out in relation to the proposed Northern Ring Road. The approach to the sequence of development will be flexible requiring development to adjoin land already developed

with a threshold system defining development required before proceeding to the next phase. The provision of four development corridors from the main service corridor will ensure development isn't impeded by landownership issues. The incentive to development will be provided by the contribution scheme and the escalator clause.

Mitigation measures which attempt to prevent, reduce and as fully as possible offset any significant adverse effects of the environment of implementing the preferred alternative are identified in a later chapter.

7.7 Conclusion

The formulation of the land use proposals has been an iterative and systematic process which evaluated potential impacts. The site has complex inter related issues with some decisions obvious while others presented many options. Having regard to An Bord Pleanala's decision the options examined concentrated on the reasons for refusal. The options presented are higher order components of the overall Scheme, with further decisions required within each of the critical areas at the lower end of the hierarchy. The comparison of options as outlined in Table 7.1 identifies the preferred option with the least impact on the environment. The option selected is considered to be the most sustainable approach for the development of the site.

Table 7.1 Assessment of options for development within Monard

EPOS	Density of Development			Transport Options				Implementation Options			Comments
	Maintain Density	Moderate Increase	Substantial Increase	Two Junction	One Junction	Location 1	Location 2	Land Acquisition	Total Agreement	Incentives & Controls	
B1	o	o	-	o	o-	o	O	o	o	o	Potential reduction in ecological diversity with a substantial increase in density
B2	o	o	o	o	o-	o	o	o	o	o	
B3	o	o	o	o	o	o	o	o	o	o	
W1	o	o	o	o	o	o	o	o	o	o	
W2	o	o	-o	o	o	o	o	+	o	o	Reduction in open space could result in increased runoff
W3	o	+	+	o	o	o	o	o	o	o	
S1	o	-	-	o	o	o	o	o	o	+	
A1	o	+	+	-	o	o	o	o	o	o	Higher densities will reduce reliance on car.
T1	+	+	+	-	-	-	-	o	o	o	Junctions to the road network do not promote the rail service
T2		-	-	+	o	+	+	o	o	o	
P1			-					+	-	+	
P2			-	o	o	o	o	+	-	+	

P3	o	-	-	o	o	o	o	+	-	+	Incentives to ensure contiguous phasing would minimise disturbance to residents
C1	o	o	o-	o-	o-	+	-	o	-	o	
C2	o	o	0	0	-	+	-		o	+	
L1	-	-	-	-	-	+	-	o	+	+	The junctions and associated works could negatively impact on the landscape.
L2	-	-	-	-	-	+	-	0	+	+	
E1	o	o	+	o	o	o	o	+	0	0	Opportunities through land acquisition for more sustainable options.

8.0 Evaluation of Significant Environment Effects of planning scheme

The core of the SEA process is the prediction, evaluation and mitigation of the impacts of a strategic action[6]. This section assesses the likely significant environmental effects from the implementation of the Planning Scheme. In accordance with Annex 1 of the SEA Directive information is provided on the effects on: biodiversity, population, human health, flora, fauna, soil, water, air, climate, cultural heritage, landscape and transportation and the inter relationship between the above[7]. Annex II of the directive requires the evaluation to have regard to the cumulative nature of the effects in determining the likely significance. The summary of the effects are presented in a grouped format, the environmental receptors listed above are incorporated within the groups. The potential positive effects of the development are also highlighted.

The likely effects are categorised into potential positive, potential negative, no effect and uncertain. The potential negative effects are further disaggregated into negative and likely to be mitigated and negative unlikely to be mitigated as contained in Table 8.1 The impact of significant effects (positive or negative) have been categorised in terms of scale which is relevant for monitoring.

Table 8.1 Category of Effect

Type of Effect		Description	
Potential Positive		Likely to have positive effect on environment	
Potential Negative Mitigated	Potential Negative Unmitigated	Likely to have negative effect can be mitigated.	Likely to have negative effect cant be mitigated.
No effect		Neutral effect / No effect	
Uncertain		Likely effect is uncertain.	

8.1 Methodology

The methodology used to identify the likely significant effects on the environment relies on the evaluation of the specific development proposals for Monard against the environmental protection objectives for the site. The specific development proposals consist of the main elements extracted from the scheme for the purposes of evaluation. The environmental protection objectives were derived from the list of environmental receptors relevant to the development of Monard. The EPO's identify a desired direction for Monard based on the baseline study and scoping process. A matrix format is used to isolate the potentially significant environmental issues. The results of this exercise and the comments arising from the matrix evaluation are discussed in section 8.3. The matrix is contained in appendix A.

8.2 Significance

In determining the significance of the environmental issue, regard was had to the SEA guidelines. The level of significance is based on type or scale of development and the importance/ sensitivity of the receiving environment. The level of significance can also be determined by the cumulative nature of potential impact and the measures available to mitigate the impact.

8.3 Summary of Likely Significant Effects

The evaluation of the likely significant impacts on the environment is divided into groups. The relevant sections of the Planning Scheme are referred to in the environmental category. The specific development proposals are listed at the start of each section.

The environmental categories are:

- Landuse and Population

[6] Therival (2004)

[7] These effects include secondary, cumulative, synergistic, short, medium and long term permanent and temporary, positive and negative effects.

- Landscape & Visual Impact
- Transport
- Natural Heritage and Open Space
- Infrastructural services
- Sustainable Development Proposals
- Cultural Heritage

8.3.1 Landuse & Population

A Create a detailed land use plan for the development of a flagship rail based new town North East of Cork City whereby infrastructure, transport connections, public and commercial services will be provided in tandem with the housing to create a balanced form of development.
B Create a sustainable new town to comprise a town centre adjacent to a rail station with a further three village centres namely; Lower Monard, Upper Monard, West Village and Kilcronan. It is proposed to accommodate a range of approximately 4-750 – 5,850 new housing units, with a projected population of 13,000 persons, which includes generous provision for open space.
C Create four village centres to serve the adjoining neighbourhoods with the appropriate quantum of dwellings within each neighbourhood, with provision for an appropriate range of retail, commercial, community facilities, primary schools, crèche and amenities to support the new population and existing residents within Monard, while also maximising their accessibility and commercial viability. A secondary school will be provided close to the rail station.
D Construct a new mixed use town centre adjacent to the new rail station, it is envisaged that the town centre will support approximately 20,000 square meters of retail / commercial floor space.
E Employment uses will consist of local service employment with some offices located adjacent to the proposed Northern Ring Road, the settlement will rely on adjacent employment lands in Kilbarry and Blarney Business Park.
F Protect the residential amenity of existing one off dwellings within and adjacent to Monard, ensuring an adequate buffer to new development is provided.

The principle aim of the new town is to maximise use of the suburban rail line and rebalance the historic pattern of development within the Cork area. The overall aim is positive however the implementation of the development proposals could have a potential negative effect as highlighted in the matrix if unmitigated. It is difficult to decipher the environmental impacts at this broad level, therefore there is potential for negative impacts based on the precautionary principle. However the other environmental categories demonstrate how environmental considerations have been incorporated into the Planning Scheme in more detail. The impacts of the land use development proposals will be mixed, many of the potential impacts on the environmental protection objectives can be mitigated.

The breakdown of development for each neighbourhood with an overall maximum of 5,850 units allows for evaluation of the likely significant impacts on the environment. The represents a maximum of 10% increase on the number of units permitted in the 2012 Planning Scheme. However implementation of the Scheme including the quality of individual building design and quality of local open spaces will require more detailed environmental assessment in the form of an E.I.S.

Monard is an agriculturally productive landscape of tillage and pasture. The creation of the new settlement will result in a permanent loss of agricultural land which will impact negatively on the level of agricultural productivity. However the loss of agricultural land is not significant given the extent of farming in the wider area primarily North and West of the site. This development will not result in an uncontrolled and incremental loss of agricultural land as the site is defined. The Mallow Road will form the natural boundary to residential development, West of the Blarney River will remain undeveloped.

The Planning Scheme in section three outlines the design, layout and house typologies

appropriate for the sloping nature of Monard's topography. A good mix of house types are proposed, (semi rural, village, estate, street, urban and multi level and retirement) together with suitable density ranges. The addition of the retirement category in the Scheme caters for all senior citizens within the population and their respective housing needs. The house type proposed at the periphery of the site will reflect the rural nature of the site and the scattered low density of the population. This approach should meet the objective of P2 and protect the residential amenity of existing residents. The new town centre, village centres and community facilities have the potential to impact positively on existing residents with the provision of accessible services and amenities.

The four villages of Lower Monard, Upper Monard, West Village and Kilcronan are described in *section four* of the Planning Scheme. The location of the rail station and Northern Ring Road were determined prior to the SDZ designation. The scale of development within each of the village centres and adjacent 32 neighbourhoods is reflective of the characteristics of the site, the proximity to the rail station and concentration of services in the town centre. Kilcronan is located the furthest away, consequently has the lowest quantum of development. The lands in Lower Monard contain the higher densities in line with government policy and topographical constraints of the site. The landuse development proposals contribute to the promotion of the rail line as the most sustainable mode of transport. (T1).

The appropriate provision of primary schools and a secondary school has been discussed with the Department of Education, 4 primary schools sites have been allocated with one secondary school. Adequate provision of childcare facilities in close proximity to primary schools has been incorporated into the layout to reduce the number and distance of journeys. The development proposals involve a comprehensive range of community facilities. The provision of the above facilities will help achieve the environmental objective of P1.

This scheme is subject to outside influences including that of economic conditions which are currently unfavourable. Flexibility within the phasing sequence is a feature of the alternative option selected. The phasing and thresholds of the new settlement are discussed in *section 10* of the Planning Scheme. The contiguous nature of the sequencing will allow for the roll out of on site infrastructure in an orderly manner. Incentives will be provided to developers by way of the escalator clause in the contribution scheme. Lands developed earlier will be charged lower contributions. It will also minimise the nuisance and potential negative impacts to existing residents by limiting the extent of the area affected. The use of construction management plans would help minimise construction related impacts and contribute to the environmental objective P1. The effects will be short to medium term depending on the duration of construction. The implementation of specific mitigation measures will ensure no contamination of soil, surface water and also minimise the impact of dust and noise during the construction phases. The effects on archaeology are unknown, there is potential for discovery of additional archaeological monuments.

The employment proposals within the site are largely confined to local service employment, with provision for office development close to the proposed Northern Ring Road. There is a reliance on employment lands close to Monard which have capacity for growth, these include Kilbarry Industrial Park and the Blarney Business Park. The rail line will provide access to jobs in the City centre. The utilisation of underused existing nearby industrial lands for the employment needs of the settlement is a more realistic and sustainable use of lands.

The likely significant impacts on the future population of the new town, and the impact on the existing local population and adjoining areas are very different. The overall effect on the population is potentially negative, however the negative impacts can be ameliorated. Landscape is discussed in a later section. The range of purpose built community facilities, provision of a county park and sports pitches

will all contribute to a better quality of life for existing and future residents. The impact on human health is multi facetted with links to water quality, infrastructure provision and air quality which are dealt with in the following sections.

8.3.2 Landscape & Visual Impact

A Minimise the visual impact of the Planning Scheme by avoiding development in sensitive viewpoints and locations as identified in the Zone of Potential Visibility (ZPV).
B Retain a substantial proportion of existing landscape features including field banks, hedgerows and tree lines. Provide a landscape framework plan for each of the four villages with landscape components including trails. Provide for advanced mix planting of coniferous and broadleaf trees to ensure year round tree coverage and also create a sheltered microclimate on exposed lands.
C Residential development should be fine grained with houses of a particular type clustered in quite small groups avoiding continuous rows of development. House designs and layouts should be responsive to localised variations in their environment – including topography, orientation, retained features and recreational infrastructure. Avoid use of conventional house design with substantial use of retaining walls on sloping contours, house design should utilise the level difference within the site to an advantage.
D Building heights should be within the range of storeys identified for the eight categories of house type proposed within the Planning Scheme. The use of materials and finishes should be appropriate for different parts of the SDZ as indicated at village level, and in some cases at neighbourhood level.

The landscape and visual impacts were assessed separately for each village area on the basis that the SDZ would be developed according to demand and not all at once. The landscaping structure for the villages was prepared in tandem with the formulation of the Planning Scheme.

Landscape Impact

Landscape impact includes an assessment of the direct and indirect impacts of the proposed development upon the landscape elements and features as well as the effect upon general landscape character and quality of the surrounding area.

The landscape report was prepared by Nicholas De Jong Associates for the 2012 Planning Scheme. It documents the landscape impact of the four village development areas. The landscape Report has not been updated for the 2015 Planning Scheme. The landscape Impact Significance is depicted on a sliding scale from No Material Impact to Substantial Impact. In consideration of the extent and nature of the Planning Scheme within a predominately rural landscape context, the overall significance of landscape impact is assessed as moderate subject to realisation of substantial woodland screen planting to mitigate the impact. The assessment concludes that Upper Monard, West Village and Kilcronan will have a potential moderate impact, Lower Monard including the town centre is considered to have a major impact on the landscape. The lack of opportunities for substantial mitigation planting within the town Centre would result in permanent adverse impacts. The extension of green infrastructure to include trails from East to West of the site will have a positive effect on the landscape. The network of planted green spaces has increased when compared to the 2012 Planning Scheme, this will help reduce the overall magnitude of impact. The design and layout of neighbourhoods in Upper Monard are more focused on the zone of potential visibility map produced in the landscape report than in the 2012 Planning Scheme.

Visual Impact

Visual impacts relate solely to changes in available views of the landscape, and the effects of those changes on people. A total of twelve viewpoints were identified at varying distances from the proposed development through field visits and supported through the

mapping of the Zone of Theoretical Visibility of the site. The viewpoints are representative of where the development is most likely to be experienced by a variety of visual receptors. The method of assessing visual impacts is determined by identifying the sensitivity and approximate numbers of receptors and the likely magnitude of effect upon these receptors.

The highest magnitude of visual impact relates to Upper Monard, the lowest magnitude of visual impact relates to Kilcronan. The number of viewpoints with a high magnitude of effect is greatest in Upper Monard. Table 8.3 summarises the visual impact. The overall significance of visual impact will be high for much of the development, due to the prominence of the sloping ground in views from the South, West and North from both long and short distance viewpoints. Substantial woodland planting would only be partly effective in reducing the visual impact in the long term. Furthermore the design and layout of neighbourhoods in Upper Monard are more focused on the zone of potential visibility map produced in the landscape report than in the 2012 Planning Scheme.

The reduction of the visual and landscape impact of the new town was a key consideration during the preparation of the Planning Scheme. The design of each village entailed the consideration of; topography, exposure, orientation and specific views unique to the villages. The construction of conventional housing with substantial use of retaining walls was not considered appropriate for steep slopes within the site. The proposed layout and design of the blocks reflect the difficulties of the sloping contours and level differences within the site. These measures will reduce the visual impact however the magnitude of the impact will depend on the success of woodland planting and to a lesser extent the detail and design of the buildings. The extent of the landscaping structure for the four village areas is outlined the Planning Scheme. The 2015 Planning Scheme has made specific proposals in relation to advanced planting with funds available to landowners prior to the commencement of development. Planting in the field boundaries and dispersed planting throughout the site will help soften the visual impact over time and create shelter in an exposed location.

The visual and landscape impact of the Planning scheme will result in a permanent change to the appearance and character of the site and its surroundings. The quality of individual spaces and the appearance of individual buildings cannot be predicted at this level. However, on the basis of the Planning Scheme as it is currently prepared it can be ascertained that the residual landscape impact will be moderate with a major impact for Lower Monard. (Lessened to an extent by the increased planting and extension of the linear park.) The overall residual visual impact will be high.

Cumulative Impact

The lands at Monard although in a predominantly rural setting are located in close proximity to the Northern suburbs of Cork City and the emerging development corridor focussed on the Cork-Mallow rail line. Prominent ridge lines have already been encroached by recent large scale development at Fair Hill and Ballyvolane, diminishing the desired visual envelope of the City. New development is also prominent at Killeens and Whitechurch from higher vantage points and extending eastwards from Blarney (including the Blarney Business Park). Elsewhere in the northern environs of the City, sporadic housing and farm complexes are common place. Other urban influences include; the N20 National Primary Road, the railway line and overhead transmission cables.

Change in all rural areas in close proximity to urban centres is inevitable and can alter the landscape character making it more or less typical of its landscape type or even changing it to another landscape type altogether. The cumulative assessment of landscape and visual impact should include the likely effects of combined development, in relation to the

adopted strategic planning policies that aim to guide long term development.

In addition to the proposed development of Monard, major infrastructure proposals include:

- Additional housing provision at Blarney.
- Reconstruction of the road network around Monard
- Provision of new infrastructure, including railway station, power supply, drinking water supply and waste/surface water disposal.
- Construction of the proposed Northern Ring Road.

When considered in combination with these developments, it is clear that the character of the landscape will change, with a greater concentration of urban features within a setting that needs to remain essentially rural. Due to the surrounding ridgelines, many of the proposed developments will be visible from long distances, extending urban influences well beyond the existing built-up area of Cork City, partly impinging on the setting of the City itself and views out of its built-up area to the countryside beyond. The resultant cumulative impact on landscape resources is expected to be moderate (with the exception of the town centre which will be moderate) and the visual impact will be high. However, the proper planning can ensure development is accommodated in a sensitive manner as possible, while respecting the separate identities of nearby settlements (Blarney, Rathpeacon, Killeens and Whitechurch) and their visual relationship with the existing built-up area of Cork City. A wider planning strategy can offer opportunities for developing an improved landscape setting. A reinforced structure of hedgerows, woodlands, country parks, amenity areas and linear wildlife corridors interspersed with productive farmland, would considerably enhance the overall landscape character and visual qualities for the benefit of the metropolitan area and its relationship with Cork City.

Table 8.2 Summary of Vsual Impact

Viewpoint	Receptor Sensitivity/ Quantity[1]	Magnitude of Impact[2] Upper Monard	Magnitude of Impact[2] West Village	Magnitude of Impact[2] Lower Monard/Town Centre	Magnitude of Impact[2] Kilcronin
A. Meadows Estate	High/Numerous	High	Moderate	High	Low
B. Clogheen	High/Several	High	Moderate	Moderate	Low
C. Fair Hill	High/Numerous	High	Moderate	Moderate	Low
D. Blarney Castle	High/Several	Moderate	High	Negligible	Negligible
E. Carhoo, Old Mallow Road	Moderate/Several	Moderate	Negligible	High	Negligible
F. Rathpeacon Lane	Moderate/Several	Moderate	Low	High	Low
G. Lower Coolowen	Moderate/Several	High	High	Moderate	Moderate
H. Coolowen Cross Roads	Moderate/Several	Moderate	High	Moderate	High
I. Tullig Cross Roads	Moderate/Several	Moderate	Moderate	Negligible	Moderate
J. Whitechurch	High/Numerous	Moderate	Moderate	Negligible	High
K. Killavarrig	Moderate/Limited	High	Negligible	Negligible	Moderate
L. Ballincrokig	Moderate/Several	Low	Negligible	Moderate	Low

Village Area	Direct Impacts[1]	Sensitivity of Landscape[2]	Impact on Landscape Character[2]	Mitigation[3]	Resultant Impact Significance[4]
Upper Monard	Low	High	High	Reasonably effective	Moderate impact
West Village	Low	High	High	Reasonably effective	Moderate impact
Lower Monard/Town Centre	Medium	High	High	Partly effective	Major impact
Kilcronan	Low	High	High	Reasonably effective	Moderate impact

Table 8.3 Summary of Landscape Impact

8.33 Transportation

A Provide a rail station at Monard with provision for park and ride facilities. The station configuration should provide access for pedestrians, cyclists, bus users and users with limited mobility. The opening of the station shall coincide with the first substantial block of development with a frequent train service to promote sustainable commuting patterns by rail.
B Provide sustainable transport connections to complement the existing rail line and proposed rail station with non motorised modes such as walking and cycling with direct routes to the station and the City (via Blackpool) for shorter movements and a bus service internal to Monard as the town expands.
C Construct a permeable built form with green routes to facilitate cycling and pedestrian movements within the site, with dedicated routes in locations with a shallower gradient. The route of the principal cycleway will be located along the western side of Monard hill serving the town centre, West Village and Kilcronan directly. The primary pedestrian link will be a covered route from the station to Upper Monard village centre, with additional cycling and pedestrian spurs.
D Upgrade access routes to and from Monard in a phased approach with the provision of additional road improvements at thresholds identified in the transport assessment. These include the service corridor, strategic southern

Link and strategic western Link roads which will provide capacity in the local road network to cater for up to 3,800 residential units in Monard. Improved access to the National Road Network is required to provide for additional housing units.
E Promote provision of a single junction North of Kilcully with the proposed Northern Ring Road to serve Monard and the IDA Industrial Estate at Kilbarry. This would greatly improve transport connections from Monard to the major concentrations of employment and services South West of the City.

The new town will have good rail access to Cork City Centre, thereby providing greater access to employment, services, amenities and a wider range of housing, achieving the critical mass for the new rail station. The reopening of the Midleton line in July 2010 has significantly enhanced the opportunities for those living in East Cork to avail of services in the City centre in a sustainable manner.

Section 5 outlines the transportation proposals for a multi modal integrated transport system.

The suburban rail line is an existing asset which will dictate the future growth of Cork from Midleton to Blarney. The early provision of a rail station with a frequent service will be the corner stone of the transport system. This upfront provision of a rail station and park and ride will establish sustainable commuting patterns in the new community (T1). This will help to meet national targets for smarter travel. The Planning Scheme proposes to implement an improved road network within the vicinity of the site to cater for increased traffic movements as a result of the development. The upgrade of local roads will be phased in line with the expansion of the town, the strategic links to connect with the N20 and Kileens will be provided at the appropriate thresholds as outlined in the Transport Assessment prepared by Arup for the 2012 Planning Scheme. The delivery of the full quantum of development i.e. in excess of 5,000 units is dependent on the Northern Ring Road to avoid severe traffic congestion. This was the primary reason of refusal highlighted by An Bord Pleanala when they decided not to accept the inspectors' recommendation for further information. Cork County Council commissioned a fresh Transport Assessment to address this issue.

Transport modelling has become a significant feature of transport assessments. A hierarchical approach to transport modelling is considered best practise. The National Transport Authority are presently creating National and Regional models which will inform all future transport models at a smaller scale. The Cork Northern Environs Transport Assessment was prepared by Systra in 2014. This report provided a strategic Transport Assessment of the proposed residential developments to the North of Cork City. The report recommended the provision of an interchange at two possible locations that would serve the North of Cork City (including proposed developments at Blarney, Monard and Ballyvolane) Following consultation with the NRA and further detailed design a location North of Kilcully was selected as the preferred location for a junction. Certainty regarding the construction of the proposed Northern Ring Road and the provision of a junction is not within the remit of the development agency. However provision of the Northern Ring Road would undoubtedly relieve congestion in Blackpool and close to the City centre. The provision of national road infrastructure is the responsibility of the national roads authority. Planning applications for development at Monard are unlikely to be submitted until such time as the road is being constructed. In any event provision of a Northern Ring Road and a junction to access it is required to allow for the settlement to expand to its maximum projected units if not before. A location for a junction has been selected and discussed with the NRA, the IDA and the City Council. Further transport assessments were recommended in the 2012 Planning Scheme at certain intervals in the process of developing Monard; with or without the Northern Ring Road and potential junction for Monard. The Scheme states that a Transport Assessment is required at 3,800. A number of local road improvements are required to facilitate development to the

threshold 3,800 units. At that stage it is a appropriate time to review both the transport strategy and implementation of the scheme. The regional transport model currently being prepared would provide a useful basis to assess Monard and the other developments including Stoneview (Blarney) and Ballyvolane which are likely to interact with it and the Northern Ring Road. The Systra report concludes that there is no single option which results in a congestion free environment on the Northern Fringes of Cork City. The regional transport model when completed will inform the review of the Cork Suburban Rail Network Feasibility Study. This would be beneficial, particularly in light of policy and demographic changes that have occurred since its creation e.g. the CASP update. More information on the commissioning of an economic appraisal in relation to the Feasibility study of proposed rail stations is required.

The internal movement framework will provide for green routes to facilitate cycling and walking, with provision for a bus route when the appropriate quantum of development has been reached. Cycle routes will be predominately located along the Western and Southern parts of the site. However additional spurs have been included in the 2015 Scheme. The site poses topographical limitations for cycle routes; it's not realistic for the entire site to be directly accessible to a dedicated cycle route. The residents of Upper Monard will reply on dedicated pedestrian route which will provide the shortest and most pleasant route to the train station. (A1, P1, T1, S1) The incorporation of cultural features including archaeological sites and sections of the townland boundaries into the routes will contribute to the protection of archaeological and cultural heritage sites. (C1 C2)

The main access road from the site to the City is via Blackpool, routes are likely to converge at Blackpool as the major access road from the site. Additional congestion at junctions will negatively impact on residents. The introduction of smarter travel initiatives in the City Centre i.e. improved public transport accessibility, bus priority, reduced car parking supply, etc or the introduction of local mitigation measures will improve conditions at junctions in the Blackpool area. The Scheme does include a number bus routes which remain an important part of the public transport provision. An increase in the projected public transport take up would reduced projected capacity constraints at junctions. Ultimately the provision of the Northern Ring Road will improve travel conditions in the Greater Cork Area.

The upgrade of access roads and the creation of new roads will have potentially a negative landscape and visual impact (L1 L2). The creation of new hard surfaces will increase the surface water runoff and reduce the quantity of green field land for absorption of run off. The road improvements outlined in the Transport Assessment are designed to upgrade the existing road hierarchy in line with the expansion of the settlement. The provision of an integrated transport system based on the rail line will have a positive impact on air quality, noise and it will also contribute to the improvement in the quality of life for new and existing residents. (A1, P1)

The phased and sequential approach to road improvements (southern and western strategic links) together with the use of reservations will reduce the scale of impacts on the surrounding environment, it will allow sustainable public transport commuting patterns to establish whilst also ensuring no additional congestion on the roads and junctions into the City centre. The above provision will directly contribute to the environmental objectives (T1 and T2).

The overall scheme objectives for transportation are positive with the exception of the up grade in the roads capacity within the local area, which has potential to be negative if unmitigated. The success of the scheme is dependant on the timing and delivery of the transport infrastructure i.e. provision of the rail station, cycle routes, local road up grades, junction with the proposed Northern Ring Road. The design of road upgrades including the provision of the Southern and Western strategic links will be

subject to a separate consent process. The design and detail of these roads will be more appropriately addressed at an Environmental Impact Assessment stage.

The provision of a train station will have a very positive permanent impact. The impact of the combined transportation proposals should have positive long term impact. They will allow for the creation of a sustainable development pattern providing a choice in transportation with a minimisation of carbon emissions and energy dependence in accordance with National Policy. The rail based town will contribute to the achievement of critical mass within the existing public transportation network as well as to a future integrated transportation network to serve the Metropolitan Cork Area, and thereby enhance the quality of life for all citizens.

8.3.4 Natural Heritage & Open Space

A Protect the natural heritage and wildlife corridors along the Blarney River and streams throughout the site to ensure movement of mammals within established ecological corridors.
B Protect and maintain the current hydro geological regime of the proposed NHA at Blarney bog which supports the wet grassland habitats and the breeding bird population within the site.
C Develop a multifunctional open space hierarchy to include the Country Park in the Blarney River valley down to the individual private garden. Create an ecological network by linking green areas to allow for movement of wildlife. All environmental resources should be incorporated from waterways to woodlands to adopt a green infrastructure approach within the site with links to the surrounding countryside.
D Maintain the status of the qualifying interests including the annexed habitats and species of the Natura 2000 sites within Cork Harbour.

The Planning Scheme in *section 7* outlines the location and structure of the major and local areas of open space within the overall site. The overall landscape structure has been developed with the intention of creating connections between the areas of open space and wider rural area. A landscape framework plan has identified the types of planting and a range of appropriate species. The creation of a country park along the Blarney River valley will form the pinnacle of passive open space hierarchy. It will provide primarily for a passive and visual amenity area with informal recreational areas. The creation of a pedestrian connection across the Old Mallow road using the viaduct will link the park to the main settlement. The green corridors including cycle ways within the villages will converge at the main access point to the country park, creating a multi functional use of the existing viaduct. The ecological corridors and the use of green infrastructure will contribute towards the minimisation of impacts upon visual sensitivities, archaeological heritage, the protection of groundwater status, protection of species, habitats and finally maintain the integrity of the soil. (W1 S1 B1 C1 C2 L1 L2.)
The Blarney River is one of the main landscape features of the site, it forms part of the extensive River Lee Catchment with coniferous and broadleaf bank side vegetation. It is a valuable resource which provides a habitat for flora and fauna, a future amenity area and the main component for the drainage of the site.

The agricultural landscape of Monard has generally a low level of biodiversity as a result of heavily grazed and cultivated grasslands. Opportunities to create new ecological habitats and enhance the biological diversity have been incorporated through the use of green infrastructure which will have a positive long term impact on the ecological diversity of the area.

The Otter is protected mammal under the Wildlife act, protection of the potential holts along the Blarney River has been identified in the specific development proposals. The millponds south of site are an area of high amenity value with the ponds acting as refuge for ducks, swans and other aquatic birds. The integration of the SUDS features will promote the creation of new areas of biodiversity, in

addition to the provision of advanced mix planting of trees which will provide habitats for bats and birds.

The protection of Blarney bog proposed NHA is one of the key environmental protection objectives. The bog is the closest nationally designated site to Monard, the main habitats are lowland wet grassland grazed and ungrazed and freshwater marsh/fen. Maintaining and protecting the existing hydrological flow regime of the Blarney River was paramount in the creation of the SUDS strategy. A continuation of the baseline situation will protect integrity of the pNHA downstream and the habitats and bird species it supports.

The protection of biodiversity in general is dependant on the effective disposal of waste water. The creation of the new town will undoubtedly impact upon the existing flora and fauna, however opportunities for the creation of new areas of biodiversity have been incorporated into the Planning Scheme. The development proposals relating to natural heritage, amenity and open space will have a potentially neutral /positive effect on the environment subject to appropriate mitigation measures.

8.3.5 Infrastructural Services

A Provide a service corridor in an East West direction with four development corridors running North to allow for flexibility in the implementation of the new town. The service corridor will include a new roadway within the site which will act as the primary route within the internal road hierarchy. It will also provide for water supply, waste water and utilities to service the adjoining lands. The internal road layout will facilitate a possible bus route when required.
B Provide a potable public water supply to serve the new development. The preferred options for source, supply and storage as outlined in preliminary report should be implemented. A site has been reserved within the SDZ boundary for a low level reservoir, a high level reservoir outside of the site is also required.
C Development of new sewerage infrastructure for the collection, treatment and disposal of waste water. The preferred option is for the treatment of waste water at Carrigrennan with discharge to Cork Harbour.
D Design an integrated approach to surface water management which considers land use, water quality, amenity and habitat enhancements. Thereby, replicating the current greenfield rate of surface water runoff post development to prevent flooding of lands and settlements downstream.

Monard is an unserviced rural area remote from services. The provision of a potable public water supply and new sewerage infrastructure are required to facilitate the new town. The Planning Scheme details the infrastructural services required for the new town in section 6. The options for both water supply and waste water disposal were examined in a separate process by external consultants. It is proposed to treat waste water in Carrigreannan WwTP, which has sufficient capacity to cater for the town. It is proposed to source water from Iniscarra via the City's water supply infrastructure to a new trunk main feeding Monard. An environmental assessment was carried out as part of selection process for the pipe line options and reservoir locations for the water supply by RPS consultants. Similarly all possible options were investigated for the treatment and disposal of waste water including an environmental analysis of the options by Nicholas O' Dwyer consultants. The location of the pumping station required for the waste water infrastructure was carefully selected within the site to protect the residential amenity of existing residents. This will contribute to the environmental objective P2.

The construction of a new water main and entirely new service network will provide an opportunity to include metering and conserve water loss during construction utilising a costly resource in a more sustainable manner. (W3)

The potential negative impacts in relation to water supply and waste water relate to the provision of external infrastructure to facilitate Monard, there is potential to conflict with various aspects of the environment. However an ecological and archaeological assessment was carried out for the source and route of the proposed water supply and the route and outfall for the waste water infrastructure in tandem with the preliminary reports. Mitigation measures have been outlined in the ecological impacts assessments relating to any potential effects on the environment outside of the SDZ boundary. The upfront provision of waste water infrastructure with sufficient capacity to cater for the proposed new town in Carrigrennan WwTP, will directly contribute towards the protection of the status of water bodies, soil function and ecology. (B1, B2, W1, S1,)

The provision of dedicated water services infrastructure both internal and external will ensure protection of the existing baseline conditions. The treatment of waste water off site will dramatically reduce the threat to the contamination of ground water. It will also protect the Q value status of the Blarney river ensuring protection of water quality and fish stocks including trout. The new infrastructure will contribute to the achievement of the environmental protection objective W1, B1 and B2.

There is a history of flood events downstream of the site; consequently the disposal of surface water for the new settlement is of paramount importance. A site specific Sustainable Urban Drainage System's strategy was developed by the external consultants, extensive site investigations were carried out across the entire site. The philosophy of this system is to replicate as closely as possible, the natural drainage from the lands prior to development thereby minimising the impact of the development on water quality in the receiving waters and quantity of runoff in the area and downstream of the site. The issue of surface water disposal is discussed further in the SFRA contained in appendix 2. The protection of hydro geological regime of Blarney bog pNHA is of paramount importance. The management of surface water run off will protect the recorded monument at the edge of SDZ boundary, namely Monard Spade Mills and ponds. The full implementation and maintenance of the SUDS scheme will ensure no flooding of downstream settlements, this would ensure compliance with the floods directive and contribute to the environmental objective (W2).

In conclusion the provision of new infrastructure internally and externally to provide a water supply, sewerage facilities and surface water management and disposal will have a positive long term impact on the environment.

8.3.6 Sustainable Development Proposals

A Implement a minimum of two sustainable urban drainage components within the Planning Scheme to protect the receiving waters of the Blarney River and promote achievement of good status of all waters to comply with Water Framework Directive.
B Integrate the sustainable urban drainage features into the landscaping structure and amenity areas to ensure SUDS features can be facilitated within useable areas of open which will also enhance the potential for biodiversity.
C Provision for energy efficiency and conservation measures into new development. These will include specific water conservation measures, use of recycled cement, the use of renewable energy sources and energy efficiency in the layout and individual houses. Compliance with building regulations shall be demonstrated.

On a broad scale, sustainable residential development involves settlement patterns that help minimise transport-related energy consumption and encourage energy-efficient housing layouts. The rationale for Monard was to create a new town with access to sustainable modes of transport. The creation of sustainable neighbourhoods within the Planning Scheme is demonstrated in a multitude of ways as outlined in the following paragraph.

The connections within the neighbourhoods promote direct access to community services and infrastructure through the use of green infrastructure. The overall design of the layout includes groups of buildings to create shelter and to facilitate solar use. However for design and visual reasons there is a need for street blocks which have buildings on all four sides, this limits the proportion of South facing houses. This combined with increased insulation will minimise the energy loss from buildings and also create a more favourable microclimate for residents (E1). The approach to surface water drainage management is to replicate as closely as possible natural drainage from the site by employing Sustainable Urban Drainage Systems with a menu of appropriate SUDS techniques at neighbourhood level (W2).

The area of energy efficiency within the neighbourhoods is partly implemented by the developer. The use of district heating systems and geothermal heating systems within urban areas is relatively new, the technologies are still largely in their infancy in Ireland requiring further development. The town centre area with the increased density ranges and contiguity of development would be most suited to the above systems (E1). The implementation of Monard will most likely be over a longer time frame when these technologies will be used in widespread practical application.

Energy efficiency at the level of the individual building can be accomplished through orientation, insulation and the use of water conservation measures. Houses with gardens can recycle rain water by utilising rain water butts with intensive green roofs suitable for larger commercial buildings. The construction standards and energy technology will be focused at the individual house, the Building Regulations are steadily enhancing the thermal performance standards for new buildings. Furthermore there is a requirement that renewable form a component of the heating system. The Scheme incorporates the concept of sustainability in many different aspects. Measures that are easy to implement are more likely to succeed than an exhaustive list. The concept of this new town is based on the principle of sustainable land use planning, new town served by a sustainable transport mode. The likely increase in traffic congestion and energy prices will promote rail travel in urban areas as a more attractive alternative. The implementation of this Scheme will begin when favourable economic conditions have been restored. The development and ongoing advancement of green technologies and renewable energy, will allow for more affordable and effective solutions to energy creation and conservation over the life time of the scheme.

These objectives will impact positively on carbon emissions and greenhouse gases and help maintain the good air quality in Cork (A1). The Planning Scheme will result in increased carbon emissions in excess of the baseline agricultural emissions, however promotion and establishment of the rail line will have a positive long term impact on air quality within the Cork area.

The incorporation of SUDS is a departure from the traditional management of surface water. The conventional method utilised combined sewers or large quantities of water stored in holding tanks, which often resulted in downstream flooding when large quantities of water was discharged. The SUDS methodology replicates natural drainage, flow rates and runoff can be managed. SUDS is an integrated approach which considers land use, planning, water quality, amenity and habitat enhancements.

The inspector recommended the inclusion of recycled or reused material to be used in the development with particular reference to 40% of cement in concrete to be a recycled product. This will be a more sustainable use of materials particularly given the scale of development envisaged in Monard.

The overall impact of the sustainable development proposals will have very positive long term effect, the benefits will not be apparent in the short term but will emerge over the longer time.

8.3.7 Archaeological, Architectural and Cultural Heritage

A Protect and integrate the built heritage; including archaeological monuments, newly discovered monuments and buildings of architectural merit in a sensitive manner to ensure integration of the historic landscape within the new built form.
B Protect existing architectural and cultural features within the site, retain where possible and record buildings of architectural merit particularly vacant dwelling houses. Retain where possible townland boundaries.

A number of potential archaeological sites were discovered following a preliminary archaeological assessment and survey of the site by the council's archaeologist. The SEA process has been operating in tandem with preparation of the Planning Scheme, the potential monuments were incorporated into the layout during the design stage. The discovery of potential monuments could signify the presence of additional monuments within the site or hot spots for archaeological monuments particularly sub surface archaeology. The potential monuments will require further investigation to determine their status. The impact on archaeological sites can be kept to the minimum by further investigation and the implementation of appropriate mitigation measures as discussed in the next chapter.

The architectural heritage of Monard is primarily associated with farming directly or indirectly, with others connected with the roads network and railway. The vernacular architecture of Monard consists of dwelling houses largely associated with farming in private ownership. The vacant dwellings of architectural importance which provide important links to the past should be retained as highlighted in the assessment. The visual impact from protected structures such as the important complex at Blarney Castle was considered in the landscape and visual assessment, it was one of the viewpoints selected. The maintenance of the baseline flows within the Blarney River through the implementation and maintenance of the SUDS strategy will minimise any adverse impact on the Monard and Coolowen Iron/Spade Mills located in Monard Glen. (C1 C2).

The identification of the cultural heritage features within Monard will help to minimise the impact of the development on cultural heritage features during this process. They largely relate to agricultural activity and communication infrastructure. Mitigation measures relating to archaeological, architectural and cultural heritage are identified in the next chapter. The use of effective buffers will ensure preservation of houses of architectural merit C1. Retention of the identifiable cultural features will fulfil the environmental objectives C1 and C2. The overall impact on archaeological heritage is unknown but with effective and appropriate mitigation the potential impact should be neutral. The discovery of additional monuments is tangible evidence of the past and is a positive outcome that has occurred from the preparation of Monard Planning Scheme.

8.4 Conclusion

The overall impacts remain broadly similar in this Scheme to the 2012 Planning Scheme. The impacts will be wide ranging and will include effects on all environmental receptors from biodiversity to material assets. This process of evaluation included the use of a matrix and analysis of the baseline environment. It highlighted the potential negative effects on the environment most of which can be ameliorated by the use of mitigation measures and are not significant.

However, the significant negative impacts highlighted though the SEA process are the same as the 2012 Planning Scheme. These include landscape and visual impact and Transportation. Landscape and visual impact is complex and in the case of visual impact more subjective. Also the need for access to the strategic road network is a priority to avoid congestion at junctions close to the City centre. The proposed Northern Ring Road and

a junction to access it is required to allow for the settlement to expand. The need for traffic assessments at certain intervals in the development of the scheme was highlighted in the 2012 Planning Scheme in order to minimise the impact on the environment. Ultimately an EIA of the road infrastructure will be required during the examine the impacts and appropriate mitigation measures if required.

Mitigation measures that address the likely significant impacts of implementing the Planning Scheme on the environment are discussed in section 9 of this environmental report.

9.0 Mitigation

This section outlines and reviews the measures that have been adopted to address the likely significant impacts of implementing the Planning Scheme on the environment.

The SEA process has been an iterative one, which has informed the preparation of the Planning Scheme. The environmental issues identified in the scoping process and baseline description (section 5) were incorporated into the Scheme. Therefore consideration has been given in the first instance to prevent negative effects on the environment. This reduces the need for extensive mitigation measures. The selection of the preferred alternative for the site has further reduced the potential for significant environmental effects. The evaluation of the Planning Scheme against the environmental protection objectives was considered broadly compatible (chapter 8). However, the evaluation revealed potential negative impacts if unmitigated, therefore some mitigation measures are required to reduce the magnitude of certain impacts and also to mitigate against potential adverse impacts on the environment.

Mitigation involves ameliorating significant negative effects via prevention and/or by reducing or offsetting such effects or enhancing the positive impacts. Mitigation measures can be described as those that; avoid effects altogether, reduce their magnitude or extent as much as possible, probability of occurrence or severity of effects, or putting in place measures to remedy effects after they have occurred, or to compensate for them by providing environmental benefits elsewhere.

The compatibility of EPO's is dependant on the implementation of the Planning Scheme e.g. impacts to water quality, hydrology of Blarney Bog, implementation and maintenance of SUDS to protect downstream lands, protection of sensitive viewpoints etc

The external infrastructure including water services, upgrades to the local road network and the implementation of sustainable urban drainage systems have been incorporated into the Planning Scheme to achieve the overall aim of creating a rail based settlement in Monard with the minimum impact on the environment. The mitigation stage aims to minimise any negative impacts, optimise positive impacts, enhance sustainability in other ways and also to ensure mitigation measures themselves do not impact negatively. (Therivel, 2004).

The mitigation measures are discussed under each environmental heading with reference to the specific development objectives and the relevant sections of the Planning Scheme. The following list of recommended measures were based on the Draft Planning Scheme. A number of the measures were integrated into the final Planning Scheme. The addendum to the environmental report and SEA statement will provide further up to date information in relation to this issue.

9.1 Population and Human Health

The specific development proposals as set out under landuse and population (LU A, LU B, LU C, LU D, LU LUE) are designed to minimise adverse impacts on the existing residents and promote a good quality of life for existing and future residents by providing a broad range of facilities.

The introduction of thresholds for the delivery of transport and schools as outlined within the Planning Scheme will only allow for development to proceed if the road infrastructure and school capacity can cater for increased capacity.

Mitigation Measure recommended:

The Planning Scheme should include:

The inspector's report for the 2012 Planning Scheme appeal recommended a number of points which should be incorporated into the Draft Scheme. The points are as follows;

- Consideration should be given to the development of existing residential plots in a manner which is consistent with the pattern and form of development proposed for adjoining lands within the scheme.

- The inspector also recommended a revised table for the sequence of development which consolidated the phasing of infrastructure and development including roads and transportation infrastructure. This will ensure implementation of the scheme assessment of planning applications and monitoring of the same.

The requirement for construction management plans outlined in chapter 6 will help to minimise impacts on existing residents during construction. The need for project implementation and community liaison during the development and implementation stage was highlighted during the oral hearing of the 2012 Scheme a revised wording was agreed which has been incorporated into the Scheme. This will be an important step in minimising impacts on the existing and future populations.

9.2 Landscape Impact and Visual Impact

The specific development objectives (LV A LV B LV C LV D) are designed to soften the visual and landscape impact through a multi facetted approach including design, layout, building height and avoidance of sensitive views. Woodland screen planting is proposed as the principal mitigation measure for addressing the largely moderate impact on landscape and the high visual impact from key vantage points. The landscape report prepared for the 2012 Planning Scheme outlines the extent of woodland screen planting required for each of the four villages, a substantial quantity of woodland screen planting is proposed for Upper Monard. The highest magnitude of visual impact relates to Upper Monard consequently a substantial quantity of woodland screen planting is proposed.

Other measures which were incorporated into the Planning Scheme to reduce the visual and landscape impact include:

- Layout of the four village relative to their topography, landscape features and potential visibility and sensitivity.
- Extensive Country Park along the Blarney River Valley.
- Green linkages, extensive open space provision and green fingers/corridors.
- Sports Pitches located along the back Whitechurch road.
- SUDS features – swales/attenuation basins.
- Public Squares.

The Scheme has included a financial incentive for advanced planting. (contained in chapter 7). A fund of €240,000 has been allocated for this purpose (chapter 9 of the scheme). Screen woodland planting remains the primary mitigation measure. The incentive of planting and establishing the trees in advance of the development construction programme will ensure that the landscape and visual benefits are fully realised. Fig 9.1 and 9.2 demonstrate the benefit of screen woodland planting at two different intervals.

The following mitigation measure is proposed in relation to the screen planting

- Provision should be made for the failure of some trees when considering the number of trees required per hectare, any trees that die should be replaced in the next seasons planting.

9.3 Transportation

The specific development objectives relating to transportation (TA, TB, TC, TD, TE) provide for an integrated sustainable transport system primarily focused on the rail line. The public transport provision will offset to a large extent the potential negative impact on air quality.

The upgrade of access routes outside the site boundary has potential to negatively impact on landscape and visual impact (L1 L2). The

provision of a reservation will reduce the visual impact and allow for the provision of the local infrastructure to be phased. Further transport assessments were recommended at two points in the development of Monard in the local transport assessment, at approximately halfway and at three quarters of the overall quantum of development. This has been discussed in the evaluation stage.

The creation of an integrated transport system for Cork City and Environs would greatly improve mobility within and around the city. This is not just a matter of providing a Northern Ring Route, but also the provision of the Bus Rapid Transit from Docklands to Ballincollig which if connected to the Suburban rail line would offer a very realistic public transport option for residents both for work and leisure. The logistics of coordinating time tables to ensure an alternative to the car will be crucial to its overall success.

The inspector recommended revised wording in relation to the threshold for transport assessments during the 2012 appeal which should be incorporated into the Scheme. As discussed in the evaluation section there are a number of transport related studies or reviews due in the coming year. They include the regional transport model, the review of the Cork Suburban Rail Network Feasibility Study and examination of the effectiveness of the BRT and the suburban rail network. The outcome of such studies would be of benefit in coordinating the transport strategy for Monard within the context of the City and metropolitan Cork.

Mitigation Measures recommended:

The Planning scheme should include:

- Revised wording stating that applications to the North of the threshold will not be granted until the traffic assessments have been undertaken.
- Reference to a threshold for the delivery the bus routes, it comprises a large proportion of the public transport element of the new town. The position of the bus routes should be linked to phases of development.
- The requirement for a further traffic assessment has been identified, the potential for cumulative effect of vehicular traffic on the local and strategic road network should be assessed.
- Reference to the point in the development at which the flagship cycle and pedestrian routes will be substantially complete to be effective and useful.
- Reference to the completion of the Regional Transport Model and review of the Cork Suburban Rail Network Feasibility Study in light of policy and demographic changes that has occurred since its preparation e.g. CASP update. The timeframe for the economic appraisal including the terms of reference and the bodies to be involved should be specified in the Scheme.
- A review of the Planning Scheme should take place within 5-7 years of adoption. A formal amendment could be made at this stage to the Planning Scheme if required. It would be particularly useful in the evaluation of the transport proposals and any policy changes or new additions to the transport infrastructure which may have emerged in the intervening years.

9.4 Biodiversity & Water Resources

The proposed new town will no doubt impact on biodiversity having regard to the rural nature of the area. However the heavily grazed and cultivated grasslands support limited diversity, the habitat mapping identified limited variety in habitats other than along the Blarney River corridor. The presence of alien species was recorded. However opportunities have been incorporated into the Planning Scheme, therefore implementation of the scheme will have a net benefit by creating new areas of biological diversity.

The implementation of the natural heritage and open space development proposals NH A,

NH B, NH C, NH D, will minimise any adverse impact on and enhance the biodiversity of the new town. Furthermore the implementation of development proposal in relation to infrastructural services IA IB IC and ID will minimise any adverse impacts on water resources in the Blarney River, the Blarney Bog pNHA, Natura 2000 sites in Cork harbour and also to minimise downstream flooding. A landscaping framework has been outlined in the landscape report including the species range and details appropriate for the site.

The ecological report carried out by Ecofact for the SUDS scheme concluded that the hydrological and hydrogeological flow regime of the Blarney River must be maintained in order to protect the integrity of the pNHA downstream. The design of the proposed SuDS scheme must reflect this.

Mitigation Measures recommended:

The Planning scheme should include:

- Specific objectives to protect the hydrological regime of the Blarney Bog particularly in relation to the parts of the site that drain into the Blarney River.

- The recommendations and mitigation measures outlined in the Ecological report prepared by Ecofact should form part of the Scheme. A brief summary of the measures contained in their report are outlined as follows:

- Any replanting within the study area should take account of the soil conditions and existing vegetation within the affected areas. Species for replanting of drier ground above the riparian corridor will differ from species recommended for within the floodplain.

- There should be no net loss of tree cover or riparian habitat within the affected areas required for the SuDS design. At detailed design stage the trees scheduled for removal will require enumeration and a projected failure rate of 50% added to the total number of trees to be replanted within the study area.

- Replanting must include for monitoring of the success of these compensation measures and if necessary additional replanting may be required within the identified habitat reinstatement sites.

- Native tree species will be planted to compensate for the removal of native and non-native tree species in selected areas. e.g. grey willow, alder, pedunculate oak , hawthorn and ash. Understory species including Elder, Hazel and Guelder rose are also recommended for drier ground. All replanted trees will be sourced from native stock.

Any works within, adjacent to or draining to these watercourses must take account of the following guideline documents ;

- Kilfeather (2007) 'Maintenance and protection of the inland fisheries resource during road construction and improvement works';
- Murphy (2004) 'Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites'; and
- NRA (2008) 'Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes'.

- For the protection of salmonids, no instream works shall be undertaken in the watercourses during the period October to May. This timing of works will also avoid fish spawning times.

- Under the provisions of the Wildlife Act (1976, amendment 2000), no removal of trees, scrub or reed-bed habitat should be carried out during the bird breeding season (1st March to 31st August); unless written permission is obtained from the NPWS.

- The mature trees within the study area all have potential as day roosts or summer night roosts and a bat survey of the affected areas is recommended. Trees identified for removal within the SuDS design are checked in advance for bats. Both the Kilcronan Bridge and the railway bridge on the Blarney River have bat potential; however, these are unlikely to be affected by the proposed scheme.

- A Construction Method Statement for the proposed works should be prepared in liaison with a qualified ecologist and in consultation with the National Parks and Wildlife Service (NPWS) and Inland Fisheries Ireland (Macroom). The statement will contain a Schedule of Environmental Commitments for the protection of environmental and ecological constraints which have been identified as being of high local value or key ecological receptors within the study area. This will require implementation on the site during the works phase and will be monitored and audited.

Soil and Geology

The change of use from an agriculturally productive environment to a new settlement will impact on ground formulation via construction activities. The effects on soil are inter-related with other environmental receptors. Construction management plans are beneficial to protect soil as a non renewable resource and also to protect the amenity of local residents. These have been included in the Draft Planning Scheme.

The Geological Survey of Ireland made a submission to the scoping letter. It relates to the construction phase and development management.

Mitigation Measures recommended:

The Planning scheme should include:

- The Geological Survey of Ireland have requested that Notification of ground excavations for infrastructure to undertake recording or rock sample gathering should be sent to the Geological Survey of Ireland.

- Construction Management Plans should include soil management and waste minimisation plans. Furthermore engineering measures to be put in place to ensure stability of slope faces and surrounding subsoil is maintained this should form part of the management plan. To minimise disturbance to residents city type noise suppressed rock breakers and “damping down” should be used to mitigate any significant noise, dust and vibration generation.

9.6 Archaeological, Architectural and Cultural Heritage

The specific development objectives relating to cultural heritage C1 and C2 are designed to protect the known and unknown Archaeological, Architectural and Cultural Heritage. Chapter 8 of the Draft Scheme includes cultural heritage measures that were recommended as mitigation measures in the 2012 environmental report. The measures largely relate to the development management stage and not directly related to the Scheme. The measures recommended are contained in chapter 8 of the Scheme.

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9.7 Sustainable Development Proposals

The specific development objectives relating to sustainable development proposals (SA SB SC) promote sustainable development in a multitude of ways.

Mitigation Measure recommended:

The Planning scheme should include:

- All Planning Applications shall be accompanied by a suitability statement, which shall identify the extent of recycled or reused material to be used in the development, in particular 40% of cement in concrete shall be a recycled industrial by- product or alternative acceptable to the planning authority.

Fig 9.1 Screen Planting after 10 years -West Village

Fig 9.2 Screen Planting after 25 years- West Village

10.0 Monitoring

The SEA Directive requires that the significant environmental effects of the implementation of plans are monitored in order to identify at an early stage unforeseen adverse effects and to be able to undertake appropriate remedial action. Monitoring can also be used to analyse whether the Planning Scheme is achieving its environmental protection objectives and targets, whether such objectives need to be re-examined and whether the proposed mitigation measures are being implemented.

It is the responsibility of Cork County Council to monitor the significant environmental effects arising from the implementation of the Planning Scheme. Indicators are used to measure change in the environment. The indicators identified in the following section will be used to monitor the predicted environmental impacts of implementing the Planning Scheme. Measurements for indicators should come from existing monitoring sources and no new monitoring should be required.

The following table shows the selected EPOs, targets and Indicators. These indicators allow quantitative measures of trends over time relating to the EPOs. The SEA statement introduced a new column which identified thresholds where appropriate. The threshold is defined in terms of time or quantity. The SEA statement clarfied the department responsible for data sources. Table 10.1 has been updated accordingly.

Having regard to the scale of this project witihin the Cork context and to ensure the effective implementaion of the Planning Scheme over it's life time a Monitoring and Review Group is recommended. This group should be established by Cork County Council and should include the Environmental Protection Agency and other relevant agencies to ensure the implementation of the plan does not compromise the environmental protection objectives identified for the area.
The collation of data to effectively monitor the development of the town will be the main focus of the group.
Please refer to the SEA statement for the latest in terms of monitoring.

Table 10.1 Summary of Proposed Monitoring Programme

Environmental Protection Objective	Target	Monitoring Indicator	Data Source	Thresholds- Quantative /Chronological
B1 Protect and enhance the existing habitats and species within Monard, in particular along the Blarney River Corridor.	1. No significant adverse impact either direct, indirect or cumulative on species, habitats and their sustaining resources within the Monard site. Conserve the diversity of habitats and species of non designated sites. 2. Minimise loss of hedgerow habitats.	The quantity of hedgerows removed. The quantity of trees removed. Retain integrity of existing habitats and species relative to the baseline and as identified in the habitat mapping.	Landscape report prepared by Nicholas De Jong Associates. (Hedgerows and trees quantified in the landscape report). Habitat Mapping, Heritage Department of Cork County Council, (produced by Atkins consultants).	Ongoing, quantity to be recorded every 250 units.
B2 Protect the integrity and hydrology of the proposed NHA at Blarney Bog, avoid adverse impact on the designated Natura 2000 sites in Cork harbour (direct, indirect and cumulative impact)	1. Maintain the present surface water hydrological regime of the Blarney River into input into Blarney bog. 2. No significant adverse impacts, (direct, cumulative and indirect impacts) to annexed habitats, species or their sustaining resources within Cork Harbour.	Monitor water levels within Blarney Bog using hydro-geological indicators. Retain integrity of annexed habitats and species within Cork Harbour.	Department of the Environment, Heritage and Local Government. National Parks and Wildlife Service is responsible for monitoring the ecological status of the SAC and the SPA. Irish Wetland Birds Survey and monitor bird populations on a monthly basis in the winter. SWRBMP & EPA	Record annually regardless of rate of progress of development. Environment Dept /Project Implementation Team.
B3 Protect all habitats from invasive species implement programme for control and removal of invasive species	1. Removal of all alien species, ensure no new alien species. New planting to comprise native or naturalised species. 2.Prevention of invasive species	New types of invasive species or increase in coverage of existing invasive species	National Biodivesity Centre Habitat mapping Project Implementation Team Cork County Council.	Every 2 years.
W1 Maintain the ecological status and water quality of all on site water courses and ground water during and post construction to comply with the Water Framework Directive.	Improvement or at least no deterioration of water quality in the Blarney River, the streams and groundwater within the site.	Monitor Water quality indicators and Q value of the Blarney River. Water quality sampling for a 6 month period. Achievement of the Objectives of the RBMPs	Enva Ireland – water sampling South Western River Basin Management Plans Environmental Protection Agency Project Implementation Team	Record annually regardless of rate of development

W2 Incorporate the objectives of the Floods Directive into the development; manage the risk of flooding lands and settlements downstream by utilising sustainable urban drainage systems to manage surface water drainage.	Appropriate management of zones vulnerable to flooding along the Blarney River corridor and lands downstream of the Draft Planning Scheme.	Compliance with "The Planning System and Flood Risk Management Guidelines 2009", amount of new developments within flood plain. (No development proposed in the Draft Planning Scheme) Monitor flows in the Blarney river at 1000 housing unit intervals.	Cork County Council Project Implementation Team	Monitor flows in the Blarney river at 250 housing unit intervals or annually whichever threshold is reached first.
W3 Promote water conservation within the new water infrastructure network and future water usage within the new development.	1. Provision of a new water infrastructure with minimal loss of water from the network. 2. Provision for reuse, recycling and conservation of water within individual houses.	The number of new houses that use water conservation methods and recycling of rain water within the neighbourhoods.	Cork County Council Project Implementation Team	Record every 2 years or when 250 houses are occupied.
S1 Protect local soil integrity and quality.	Soil management to inform detailed design for future planning applications. Protection of locally important aquifer	The provision of soil management plans for large applications within the Planning Scheme.	Cork County Council Project Implementation Team	Soil management plans for applications in excess of 250 units.
A1 Maintain and protect good air quality standards, minimise emissions and promote use of public transport.	Air quality to remain within acceptable limits as provided by the air quality standards regulations.	To remain within good air quality standards.	Environmental Protection Agency	
T1 Promote a good quality of life for existing and future communities based on sustainable travel patterns. This should include access to rail, bus, cycling and walking with provision for park and ride facilities at the train station.	1. Prioritise the train as the primary mode of transport for the proposed population. Ensure early provision of the station as per the threshold framework. The projected target was set as 24% in favour of rail on the Cork – Mallow corridor in the Suburban Feasibility Study. 2. Ensure a frequent rail service to Kent Station.	Percentage of population living within the Planning Scheme area travelling to work by public transport or on by a non motorised mode, to be recorded at 1000 housing unit interval.	Central Statistics Office Next census 2016, 2019 etc Project Implementation Team	Every 5 year intervals 2016, 2021, 2027 etc

	5. Provide a bus service to serve in particular Kilcronan and the West Village.	Percentage of population living within the Planning Scheme area travelling to work by public transport or on by a non motorised mode, to be recorded at 1000 housing unit interval.	Central Statistics Office Next census 2016, 2021 etc Project Implementation Team	Every 5 year intervals 2016, 2021, 2026
T2 Protect and upgrade the local road network and provide access to the strategic road network.	1.Ensure no additional congestion of local and surrounding road network and junctions as result of new development. 2.Ensure provision of a junction to access the proposed Northern Ring Road from the new town at Monard.	Provide road improvements in line with thresholds set out in the Draft Scheme. Record the number of units granted permission cumatively, no further units to be permitted in excess of 3,800 prior to Transport Assessment being carried out.	Cork County Council Transportation Assessments to be carried out by suitably qualified person(s) Project Implementation Team.	To be carried out at specfifed thresholds.
P1 Provide existing and new residents access to a range of services and community infrastructure including useable public open space and amenity areas within the new town.	1.Ensure sufficient community services are provided including education, childcare, primary health care, accessible open space including the provision of a country park and sports pitches to support the future population. 2. Avoid the location of inappropriate activities that impact on the quality of the town.	The quanity of community facilities provided within the new town to be catalogued at 1000 housing units intervals.	Cork County Council Project Implementation Team	The quantity of community facilities and area of open space within the new town to be quanitified and recorded at 1000 housing units intervals
P2 Protect the residential amenity of existing residents, ensure adequate buffers are provided adjacent to existing residents.	House designs contiguous to existing residents should be of an appropriate scale to protect residential amenity of residents.	The design of house types within the buffer areas should be carefully reviewed by development management during the planning application process**.**	Cork County Council Development Management	
P3 Minimise the impacts of construction on residents, utilise construction management plans	Preserve the residential amenity of the existing community members, limit disturbance and disruption to a minimum.	The number of construction management plans submitted with planning applications to minimise adverse impacts during construction.	Cork County Council Development Management	
C1 Protect the existing and newly discovered archaeological sites and their context within Monard and surrounding areas.	No adverse impact on recorded monuments that are to be retained, careful recording of those removed or altered.	The quanity of existing and newly discovered potential archaeological monuments affected by the new town to be reviewed at 100 housing unit intervals.	Cork County Council heritage section in consultation with DOEHLG.	

C2 Protect the local cultural identity and associated cultural features within Monard.	Retain the townland boundaries within the Draft Planning Scheme in so far as possible.	The quantity of towland boundary removed, to be reviewed at 1000 housing unit intervals.	Cork County Council Project Implementation Team	Quantity of towland boundary removed and replaced with new hedgerows, to be reviewed at 1000 housing unit intervals
L1 Preserve the natural and historic landscape features within Monard.	Integrate natural landscape features and landscape assets into design of the villages and their neighbourhoods, retain good quality tree cover and hedgerows as per landscape framework.	Percentage of landscape assets lost, hedgerows and trees as quantifed in the landscape report.	Landscape report prepared by Nicholas De Jong Associates. Cork County Council Project Implementation Team	Ongoing, quantity to be recorded every 250 units
L2 Protect the most visually sensitive locations within Monard, minimise the visual impact of the development within and adjacent to the Planning Scheme.	1. Limit development in locations which have been identified as sensitive in the potential zone of visibility analysis which forms part of the Landscape report. 2. Establish early on extensive screen planting in advance as per landscape framework to soften the overall visual impact and to ensure development does not detract from the character of Monard and surrounding area.	The quantity of screen woodland and mixed tree planting in place to be reviewed at 1000 unit interval or every 5 years whichever threshold is reached first.	Cork County Council Project Implementation Team	The quantity of screen woodland and mixed tree planting in place to be reviewed at 1000 unit interval or every 5 years whichever threshold is reached first.
E1 Reduce waste generation in the new town and promote the use of sustainable energy sources.	1. Use waste management plans to promote reuse and recycling as an ethos within the new town. 2. Implementation of energy efficiency at the level of the individual building accomplished through orientation, insulation and the use of water conservation measures. All homes should be of sustainable building design, compliant with the building regulations. District heating and geo thermal energy to be utilised within the town centre. 3.Optimal building energy ratings to be achieved for residential and non residential.	The number of Waste Management Plans provided. Compliance with the energy directive demonstrated by the developer for each planning application. The inclusion of energy management regime for town centre planning applications including proposals for district heating and geo thermal energy.	Cork County Council Development Management Environment Department	Review at planning applications. Recycling facilities to be reviewed every 1000 units

Non Technical Summary

1 Introduction

This is the non technical summary of the Environmental Report for the Planning Scheme 2015. The purpose of this summary is to provide a clear synopsis of the overall findings of the SEA process and the information contained within the Environmental Report. The primary aim of the summary is to provide a clear understanding of the likely environmental consequences in relation to decisions taken to create a rail based settlement on the Monard SDZ site.

Strategic Environmental Assessment

In essence, SEA is a systematic process of predicting and evaluating the likely environmental effects of implementing the Planning Scheme. It should commence at the earliest opportunity to inform the decision making process. The SEA process is also intended to facilitate the identification and appraisal of alternative options, identify environmental impacts of the plan and encourage the inclusion of measurable targets and indicators.

The SEA is being carried out to comply with the provisions of the SEA regulations, which require a Planning Scheme prepared under section 168 of the Planning and Development Act 2000 - 2010 to be accompanied or include an Environmental Report.

The Environmental Report details the methodology involved in carrying out the SEA. It reviews the Scheme's relationship with other plans at International, National, Regional and Local level. It establishes an environmental baseline identifying existing environmental problems and issues. It evaluates alternatives to the Planning Scheme and details the environmental assessment of the Scheme.

The findings of the SEA process are expressed in the Environmental Report which accompanies the Planning Scheme. An SEA statement detailing how environmental considerations have been integrated into the Planning Scheme will be produced and made available to the public following adoption of the Planning Scheme.

2 Methodology

The methodology was based on the SEA directive, EPA guidelines and the Department of the Environment, Heritage and Local Government guidelines. Screening was not required in this instance, SEA is mandatory for Strategic Development Zones. The scoping document identified the range of environmental issues and the level of detail to be included in the Environmental Report in consultation with the prescribed environmental authorities. In addition to the environmental authorities the report was sent to the South Western Regional Fisheries Board having regard to the Blarney River which flows through the site. The responses received are documented in section 2 of the environmental report. Their responses were taken into account during the formulation of the Environmental Report.

3 Relationship of Other Plans and Programmes

The planning context for the Scheme is set within a hierarchy of plans. The Planning Scheme must comply with higher level strategic actions and may, in turn, guide lower level strategic actions.

National Spatial Strategy

It sets out the strategic planning framework for a more balanced pattern of spatial development for the state. The strategy emphasises the critical role of 'Gateways' and 'Hubs' in delivering future economic growth and designates Cork as a 'Gateway' City. The creation of a new rail based town in Monard will contribute to the critical mass needed for the population and employment targets set for the Gateway City.

Smarter Travel – A Sustainable Transport Future (2009)

"Smarter Travel" is the Government's action plan to free towns and cities from traffic congestion, substantially cut CO2 emissions, encourage car based commuters to leave their cars at home, and encourage a shift toward walking, cycling and greater public transport usage. This philosophy is in keeping with the rationale for creating sustainable transport connections at Monard.

Regional Planning Guidelines – South West 2010

The guidelines set out the strategic plan for growth in the region in line with the key principles of the National Spatial strategy. The guidelines include specific policies and objectives including population targets for the Region for 2010-2022. The Regional Plan identifies the metropolitan towns comprising the settlements along the suburban rail corridors including Midleton, Carrigtwohill, **Monard**, Blarney and Cobh as the main gateway locations (outside Cork City) for future population growth. This new rail line is considered a major step in providing integrated public transport services to centres of high population growth.

Cork Area Strategic Plan

Prepared jointly by the City and County Councils in 2001 it set out a shared vision for the Cork area for the period up to the year 2020, the plan was updated in 2008. The plan establishes the concept of 'Metropolitan Cork' as an area embracing Cork City, its 'environs' (within the County) and the Metropolitan (or satellite) towns as an integrated unit.

CASP proposed a balanced spatial development pattern which includes developing the potential North of the City to maximise the use of the existing rail infrastructure. The plan favoured Monard / Rathpeacon as the location to accommodate some of the development between Blarney and Midleton subject to a detailed assessment.

Blarney- Kilbarry Special Local Area Plan 2005.

The primary aim of the Blarney- Kilbarry Special Local Area Plan was to prepare an agreed development framework for the rail corridor between Blarney and the edge of Cork City at Kilbarry. The SLAP established a planning framework for the creation of a new settlement at Monard. It identified the broad planning principles of the site including: numbers of housing units, number of primary and secondary schools, list of sports and recreation facilities including the provision for a county park. The process went through extensive public consultation and was adopted in 2005.

Cork County Development Plan 2014

The proposed rail based town is an important component of it's core strategy for growth and development to the year 2020. It remains an objective of the plan to establish a new town at Monard on the basis of the Blarney – Kilbarry Special Local Plan 2005, including provision for on and off site infrastructure necessary to service the new town. The Joint Retail Strategy hierarchy identifies Monard as fulfilling the role of a Metropolitan Town in this section of the rail corridor and seeks provision of retailing as part of the new settlement.

Blarney Local Area Plan 2011

The current *Blarney Local Area Plan 2011* sets out the strategy for the proper planning and sustainable development of the electoral area for the next six years (2011- 2017). It also includes the objective for a new town at Monard as originated in the Blarney- Kilbarry Special Local Area Plan 2005.

Monard Planning Scheme 2012

In 2012 the Monard Planning Scheme was adopted by Cork County Council. Unlike other plans, SDZ Planning Schemes are subject to

appeal by An Bord Pleanala. Following adoption two appeals were lodged. The Bord decided not to accept the inspector's recommendation which was to seek further information. The Bord decided to refuse to approve the Planning Scheme in September 2013. The 2015 Planning Scheme was prepared in response to the Bord's decision. This SEA process is broadly similar to the SEA process for the 2012 Planning Scheme.

Habitats Directive Screening

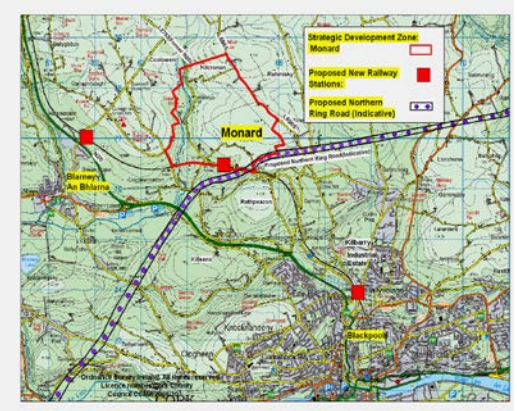
Appropriate Assessment Screening was undertaken to assess, in view of best scientific knowledge, if the Draft Planning Scheme was individually or in combination with other plans or projects likely to have a significant effect on any "Natura 2000" site. The stage one screening for the Monard Planning Scheme was completed by Cork County Council's Appropriate Assessment Officer. In addition to the overall project screening, two other stage 1 screenings were completed for the Water Supply and Waste Water infrastructure required to facilitate Monard. Screening is the first stage within the overall process of Appropriate Assessment required by the European Habitats directive (92/43/EEC).

The Habitats Directive Screening Statement states that there are no Natura 2000 sites located either within or adjacent to the Strategic Development Zone. However elements of the scheme associated with the provision of water and wastewater infrastructure could potentially give rise to impacts on a number of designated sites in Cork Harbour. The screening conclusion highlighted the requirement to assess trenchless technology at the Glashaboy River and its impact on Natura 2000 sites within Cork harbour. An addendum to the waste water preliminary report was prepared by Nicholas O' Dwyer consultants to address this issue. The screening conclusions state that potential effects can be screened out and that the effects are not considered significant. The Screening Statement including the requirements necessary to screen out any potential significant effects accompanies Planning Scheme.

4 Planning Scheme

Monard is located north west of Cork City approximately 3 km East of Blarney village. The extent of the site is 391 hectares /966 acres. The area is characterised by a rural settlement pattern concentrated along the poorly aligned local road network. The lands are primarily engaged in agriculture with a scattering of farm complexes. Landownership within the site is held by a sizeable number of landowners (23); however some holdings are of considerable size. The main Cork to Dublin railway line forms the southern site boundary. Much of the subject lands are elevated and exposed with long slopes down to the Old Mallow road, the upper parts of the site form the backdrop to Cork City.

The concept of creating a new town at this location originated in 2001 prior to the introduction of environmental legislation including the SEA directive (July 2004). The objective has subsequently been incorporated into the CASP 2008 Update, and the 2009 County Development Plan, which were subject to the SEA process. The planning history for the new town is outlined in section 4 of the environmental report.



Monard will be developed as a satellite town with an intended population of 13,000 persons upon completion. This current period of

unfavourable economic conditions allows for the necessary lead time to prepare the Planning Scheme and associated infrastructure. This Scheme allows for detailed design of the town, outlining the form, scale and nature of development which will be permitted. The town will be developed as a single entity and will provide for infrastructure, transport connections, public and commercial services, in tandem with housing to create a balanced form of sustainable development.

The Scheme comprises a written statement accompanied by maps. The chapters and related themes are listed in section 4 of the environmental report.

5 Environmental Baseline

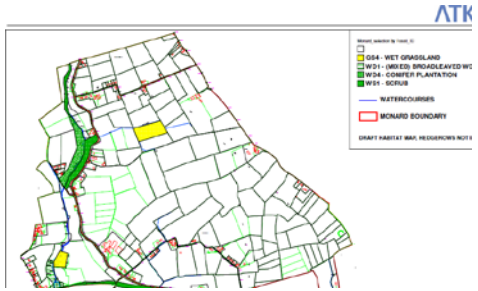
The SEA process is led by the baseline data, which establishes the current state of the environment and forms the basis to assess and predict potential impacts. The environmental baseline encompasses the components of biodiversity, population, human health, soil, geology, water, landscape, transportation and material assets, archaeological architectural and cultural heritage, air quality, noise and climatic factors.

Biodiversity

There are no sites or habitats designated under European or National legislation within or directly adjacent to the site boundary. Cork harbour is approximately 7.5km from the site, it has a concentration of natural heritage designations including two Natura 2000 sites namely Cork Harbour Special Protection Area (SPA) site code 004030 and the Great Island Channel Special Area of Conservation (SAC) site code 001058. Blarney Bog is located approximately 1 km South West of the site and is designated a proposed NHA site code 1857. Natural Heritage Areas are a national designation under the Wildlife Act 2000. The main habitats in Blarney Bog are lowland wet grassland grazed and ungrazed and freshwater marsh/fen. The pNHA is dependant to a large extent on the hydrological inputs of the Blarney River, in addition to the hydro geological inputs from the groundwater catchment. Maintaining and protecting the existing hydrological regime of the Blarney River is of paramount importance to protect the fen's hydrology.

The lands in Monard are in agricultural use with a mixture of tillage and pasture with improved grasslands. The habitats are generally of low ecological value, having regard to the disturbed nature of the ground. Hedgerows have been removed from two large farms, however most have been retained. Sod and stone banks are the dominant type of field boundary. The tree cover in Monard is relatively low. Habitat and survey mapping was carried out in Monard, no species of note were recorded in the survey. The predominance of mixed woodland and scrub along the slopes of the Blarney River Valley was identified. The habitat mapping recorded the presence of Japanese Knotweed, according to the National Biodiversity Data Centre it is the number one invasive species in Cork.

Monard Habitat Map



An ecological survey and assessment was carried out on the Blarney River corridor and the riparian corridor of the Kilcronan and Rathpeacon streams by Ecofact environmental consultants on behalf of the SUDS consultants T.J. O' Connor and Associates.

The field surveys included botanical, macro invertebrate, birds, mammal activity, and habitat surveys. No mammals protected under the Wildlife Act, 1976 (and Wildlife (Amendment) Act, 2000) were identified (i.e. otters, badgers, bats). The Blarney River has

populations of brown trout, and is also an extensive salmonid habitat. The water birds Mallard, Grey Heron, Moorhen, Dipper and Grey Wagtail were all recorded within the riparian corridor of the Blarney River.

Population and Human Health

The existing settlement pattern in Cork is concentrated to the South and West of the City. An important element of CASP strategy is to redress the imbalances in the historic pattern of development by providing a major growth corridor from Blarney in the West to Midleton in the East, served by a suburban rail network.

The existing rural population within Monard site is approximately[8] 150-200 persons. The population is low having regard to the rural and sporadic nature of the settlement pattern. Monard is located within the Whitechurch ED, the population in the 2011 Census was 2813 persons based on 2006 ED. In 2006 the population was 2477, which represents a 13.7% change. The large increase is most likely attributed to the new residential developments in Whitechurch. There is a scattering of farm complexes and stand alone commercial developments within the site. Agriculture is the predominant source of employment within the area including both tillage and pasture. The existing recreational and sports provision serving the population is low. Quality of life is linked to commuting patterns. The Monard site is located within the Whitechurch DED, according to data from Census 2006, there is only between 0 to 5% of the population commuting in a sustainable manner.

Humans are part of the environment, the effects on human health can be broad ranging. It is difficult to ascertain data for human health particularly at the geographical scale of Monard (391 hectares). The most likely direct effects include water quality, air quality, noise, waste management and quality of life.

The effects either direct or indirect will impact the quality of life for existing residents both positively and negatively. The physical changes and the magnitude of the landscape change are also a direct effect on humans and their quality of life. The residents are visual receptors their proximity to the site will dictate the likely scale of effect.

Water

The creation of a new settlement has the potential to cause deterioration in water quality. The EU Water Framework Directive promotes the protection of surface water, groundwater, coastal and estuarine water resources. Cork is located within the South Western River Basin District Plan, one of eight River Basin Districts in the Country. It is an objective of the Water Framework Directive to achieve "good water status" for all waters by 2015. The Blarney River is the most significant water body within the site, it runs along the entire western site boundary. There are a number of baseline sources for the biological water quality of the Blarney River these include: the SWRBD, EPA and recent sampling carried out by Ecofact Ltd as part of the site investigations for the SUDS strategy.

The South Western River Basin Management Plan provides details on the water quality status of all water bodies within the River Basin District. The quality of the Blarney River as outlined in the SWRBD WMU[9] for 2009 is Moderate, (the status was good in 2008). The macro invertebrate status of the Blarney River is 'good'.

Summary of Water Quality Results

Source	Results	Year
SWRBMP	Moderate	2009
EPA	Q4 (good)	2004 to present
Ecofact	Q4 (good)	2011

[8] Figure based on geo directory figure and average household size.

[9] Lower Lee/Owenboy Water Management Unit

The SWRBMP provides details on the quality of ground water bodies also. The Monard area lies within the Ballinhassig_1 groundwater body. The overall status of the Ballinhassig_1 groundwater body has been assessed as 'good'.

Monard is an unserviced rural area with a reliance on individual septic tanks and wells to serve a dispersed population. The provision of a public water supply to serve the new town is from a connection to Cork City WSS at Churchfield reservoir with water supplied from Inniscarra. Furthermore the collection, treatment and disposal of waste water to Carrigrennan WwTP has been recommended as the preferred option from an environmental perspective. The treatment plant in Little island has sufficient capacity to cater for the population equivalent of Monard. The options for the proposed water supply together with options for waste water collection and disposal were examined by external consultants.

Flood Risk

The consequences of flooding can be profound with environmental, economic and social consequences as well as a threat to human life. The introduction of systematic flood risk assessment as a result of the EU Floods Directive ensures a more consistent approach to flood risk assessment, in particular for land use planning.

A Strategic Flood Risk Assessment was prepared in parallel with the SEA process, the SFRA is located in appendix 2 of this report.

The SFRA is required to comply with the EU Directive on flood risk. Stage 1 consists of Flood Risk Identification, Stage 2 is the Initial Flood Risk Assessment A number of sources of information were consulted. There are a number of areas within the Blarney river valley which have a high chance of flooding in any given year. However, there are no residential properties at risk from flooding within the SDZ boundary. The locations at risk from flooding within the Planning Scheme are adjacent to the River which will not be developed for housing.

The draft Lee CFRAMS has identified locations of extensive flooding downstream of the SDZ lands. There is a history of flood events downstream of the site. Extensive site investigations and modelling of the Blarney River was conducted for the SDZ site which has resulted in the formulation of a site specific Sustainable Urban Drainage Strategy for Monard. The SUDS strategy is considered the optimal solution for surface water management.

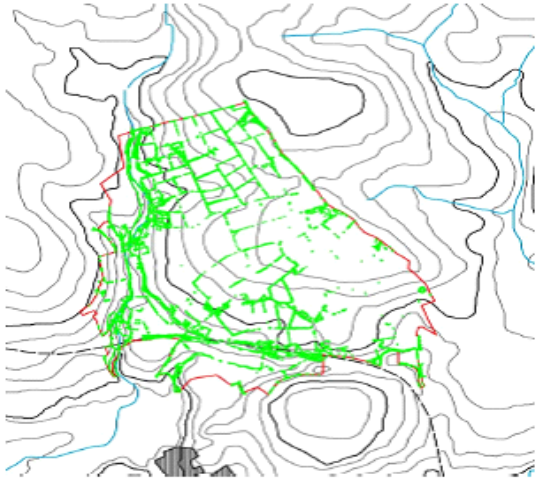
Landscape

The topography of the site itself is undulating within an active agricultural landscape. The site rises from levels of approximately 80 meters adjoining the railway line to a plateau-type hilltop in the Monard townland (c 140m OD). Monard has circa 50 hectares of land with a gradient between 1 in 5 and 1 in 12. The upper slopes form part of the backdrop from areas within Cork City. Away from the hilltop, level land is limited in Monard. This renders the site quite exposed to the elements and visually very open. The Blarney River is the dominant watercourse with some smaller streams within the site. The partially wooded steep slopes of the river valley, (mixture of broadleaf and conifer plantation) forms part of the distinctive character of the site, West of the Old Mallow Road.

The Draft Landscape Strategy prepared as part of the Landscape Character Assessment of County Cork was published with the Draft County Development in 2007. The Monard site is located at the juxtaposition of three landscape character types. The majority of the site is within the Broad Fertile Lowland Valley, the Northern section is within the Fissured Fertile Middle ground, and lastly the South Eastern corner is within the City Harbour and Estuary.

The vegetation on site is characterised by mature hedgerows that line the bordering roads and define the largely regular field pattern. Hedgerows are often raised on low earthen banks, which give form and definition

to an otherwise open landscape structure. They can be identified as a landscape asset, the trees surrounding the farm complexes and vernacular houses are also a landscape asset to be retained.

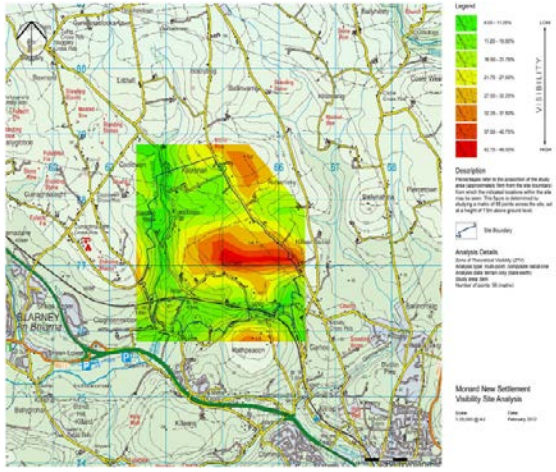


Vegetation Structure

The physical character of Monard within the wider context is of a recognisably rural landscape in close proximity to the Northern fringes of Cork City. The two hills at Rathpeacon and Killeens are prominent in most views and the combined topography tends to physically and visually separate the built up area of the City from Monard.

There is an existing 110kv ESB line which passes along the Eastern and Northern sections of the site. It has the potential to pose a visually unattractive corridor within the new settlement.

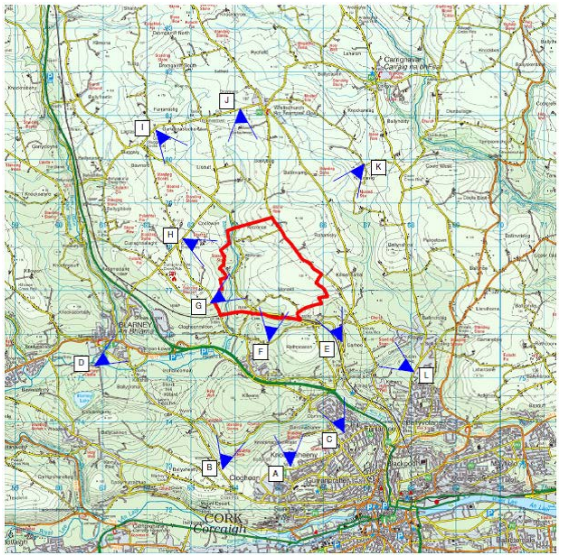
In order to help determine the potential visibility or *Zone of Potential Visibility* (ZPV) of Monard a digital information model was undertaken. This determined the visual sensitivity of the receiving landscape. The results are presented as a colour map, informing the overall visual sensitivity of the site. The process is helpful in determining the location of key viewpoints into the site from the surrounding area.



Zone of Potential Visibility Map

The principal views into the site were identified from the initial ZPV combined with appraisal of mapping (OSI discovery series) and on site investigations. The locations were chosen to represent potential vantage points from nearby communities or well known locations along with a range of distances and locations.

The viewpoints were almost entirely taken from the public road. The field work reinforced the importance of the topography and the existing vegetation pattern in determining the extent of visual influence of the site. The location of the selected viewpoints is shown on the adjoining map:



Location of viewpoints

Material Assets

Material assets are usually defined as infrastructure and utilities. These include: rail, road, water supply and wastewater treatment facilities. The existing utilities are limited, which is representative of a rural area. There is a strategic Bord Gáis gas line which traverses the site in an East West direction. Also, strategic in nature is the existing 110kv ESB line.

The site is not presently served by broadband, the roll out of broadband does extend to Blarney and along the main Dublin Cork rail way line which forms the Southern site boundary. There is no public water or foul sewerage in the area as discussed in the previous section. The primary material asset that pertains to this site is the existing rail line, maximising the capacity of this asset is the corner stone of the Scheme.

Transportation

The existing transport demand within the locality is low. The traffic movements are largely confined to peak times in the morning and evenings to locations such as the City, South West of City and further afield.

The local road network is poor with a myriad of narrow roads in the area. The Mallow road (downgraded N20) is the main road which links the site to Blackpool and Cork City with two skew bridges.

The primary access roads within the site follow a north south line with two very poorly aligned third class roads which cross the site. The route of the Old Mallow road follows the Western site boundary. The route of the proposed Northern Ring Road forms the South East boundary of the site, access to it via a suitably located junction will be important for Monard. The National Roads Authority is responsible for the Northern Ring Road.

Existing Road Network

The existing public transport provision is limited to an in frequent bus service. A bus line serves Cork City to Waterloo via Blarney, with a daily rural bus service to Whitechurch. The majority of the County's population travel to work by car. The key to increasing sustainable commuting and decreasing car dependency is to focus targeted population in areas well served by public transport. The timing of the new rail station is critical to encouraging the use of the train as a sustainable mode, before unsustainable commuting patterns become established.

A Transport Assessment was prepared in tandem with the 2012 Planning Scheme by the external consultants Arup. The aim was to identify the capacity of the existing road network and to determine the improvements necessary to facilitate development of the new town. Traffic counts were carried out as part of the assessment. The level of traffic increases as it approaches Cork City, with the N20 Cork to Mallow Road recorded as the busiest roadway in the vicinity of the site.

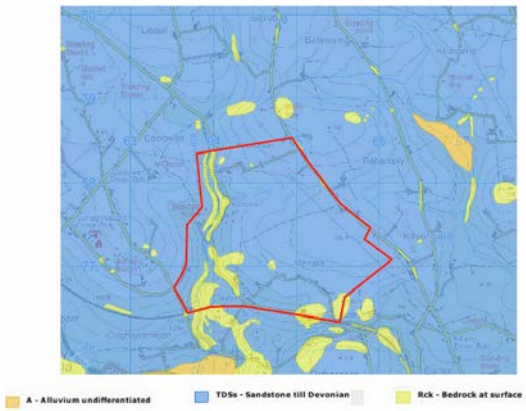
A number of thresholds have been identified in the transport assessment for the provision of road improvements in the locality. The provision or addition of road improvements increases with the number of housing units. In addition to local transport assessment a more detailed assessment a Strategic Transport Assessment was prepared in response to An Bord Pleanala's refusal reason. The primary refusal reason related to the uncertainty of the proposed Northern Ring Road and a junction to serve the new town. The Cork Northern Environs Transport Assessment was carried out by Systra in 2014. Two locations emerged as the best options for an intermediate

junction to serve the North of Cork City. A preferred location has been selected North of Kilcully This green field site represents the opportunity to provide public transport, pedestrian routes and cycle ways in a manner that allows for direct and attractive routes. The Scheme identifies an increased number of pedestrian and cycle routes from that outlined in the 2012 Planning Scheme.

Cycle & Pedestrian Routes
Source: Framework Plan

Soil, Geology, Hydrogeology

Soils are generally considered a non renewable resource. The predominant soil types within the site are Acid Brown Earths Brown Podzolics. This soil type is a deep well drained productive mineral soil, commonly used for cultivation of both crops and pasture. The subsoil is predominately sandstone till (Devonian), with several regions of exposed bedrock along the west side of the site with smaller pockets South East of Boreen Dearg.



General Geological Characteristics

- The solid geology comprises mudstones and sandstones.
- Rock outcrops are to be found in the sides of the river and would be expected to be at a relatively shallow depth over parts of the site.
- No karst features would be expected on this site, it does occur to the southwest and a karst feature is noted on the Geological Survey of Ireland database in that area.
- The bedrock is a locally important aquifer.
- The bedrock exposure and shallow depth of overburden means that the aquifer vulnerability is high.

Hydrogeology

The bedrock of the study area is classified by the GSI as a locally important aquifer (LI). The bedrock aquifer vulnerability within the study area ranges between high (H) to extreme (E). The groundwater vulnerability in the Monard area is divided into two categories - extreme vulnerability (E) and high vulnerability (H). The change of use proposed within the Planning Scheme will remove a quantum of lands in use for agricultural purposes, this will impact upon the existing soil structure following removal of soil for development.

Air, Noise, Climate & Sustainability

In order to protect human health and the health of our ecosystems air quality monitoring is carried out in Ireland. The EU Directive sets the standard for a variety of pollutants, air quality monitoring is carried out by the EPA to assess compliance with these standards. The county is divided into zones. The Cork Urban Area is zone B and the non urban area is Zone D. The Monard site is located just within Zone D, which is an unrestricted coal area.

There are five air quality monitoring stations in Cork City and County. The location closest to Monard is Blackpool, Cork City Centre and Glashaboy are short distance away. The latter would be classified as Zone D. The other two locations are within Zone B. Historical data in Blackpool suggests the air quality was very good. The air quality in Cork is considered generally good with a mild climate and almost a continuous movement of air. There are no IPPC[10] licensed activities in the vicinity of the Monard site.

Monard is located in an exposed landscape, the SDZ area includes most of Monard Hill, and the South West part of Rahanisky Hill. The prevailing winds are predominately from the South, South West, West and North West. Development could be quite exposed to winds and noise in addition to being visually prominent. The general means of softening the visual impact and improving shelter includes grouping of buildings, landscaping and tree planting.

Monard is a rural agricultural area apart from local traffic noise and distant traffic noise from the N20 the background noise levels are low. The intermittent noise levels from the Cork to Dublin rail line would be quite low. The greatest potential for traffic noise is from the proposed Northern Ring Road, the route of which skirts the South Eastern boundary of the site.

Climate change refers to any change in climate over time, whether it's natural variability or as a result of human activity. Climate change normally refers to changes in global temperature and long term trends in weather. It is widely accepted that the impacts of climate change present significant challenges for water management in Ireland. It is likely that more extreme weather patterns will emerge, with increased incidences of flooding resulting in greater impacts. This is relevant to Monard, in particular lands and settlements downstream of Monard.

The increase in green house gas emissions is a well documented contributor to climate change. After carbon dioxide, methane emissions are the second largest contributor to the green house effect, methane gas is associated with agriculture and landfills. Agriculture, which is the primary land use in Monard, is considered the largest contributor to Ireland's greenhouse gas emissions. However data for greenhouse gas emissions are aggregated on a national level. Therefore, no baseline emissions data exists for Monard or at Cork County level.

The creation of sustainable neighbourhoods has been the underlining philosophy in the preparation of the Planning Scheme. Emissions from the residential sector accounted for just over 10% of total emissions in 2005, based on direct energy consumption for space and water heating[11]. The EU Performance of Buildings Directive 2010/31/EU in 2010 is the main legislative instrument to reduce the energy consumption of buildings.

Transport is the third largest contributor to emissions, it is also a source of noise and consumption of energy. A systematic shift in the way we live into the future will reduce emissions and carbon output. Land use planning can directly impact on the number and extent of journeys. The provision of the rail based settlement will provide for more sustainable levels of mobility, noise, air emissions and energy consumption.

Archaeological, Architectural and Cultural Heritage

Cork County Council's archaeologist carried out an Archaeological, Architectural and Cultural heritage assessment of the SDZ site. Archaeological heritage is protected primarily under the National Monuments Acts (1930-2004) which provides a statutory basis for the protection of sites and monument*s* (RMPs). The *Records of Monuments and Places* (RMP) was established under the National

[10] Integrated Pollution Prevention Control

[11] DoEHLG, 2009, Sustainable Residential Development in Urban Area

Monuments Act 1994, any structures features or objects in this record are known as recorded monuments. All archaeological sites are shown in the *Sites and Monuments Record* (SMR) (www.archaeology.ie) including all newly identified archaeological sites discovered since 1998. There are three recorded monuments within the site boundary.

Monument	Number	Location
Standing stone	RMPCO063-050	West of Blarney River
Fulacht fiadh	RMPCO063-108	West of Blarney River
Railway bridge	RMPCO063-097	Southern Boundary

The topographical files of the National Museum were checked, no record of any finds was ever recovered from the townlands within the SDZ.

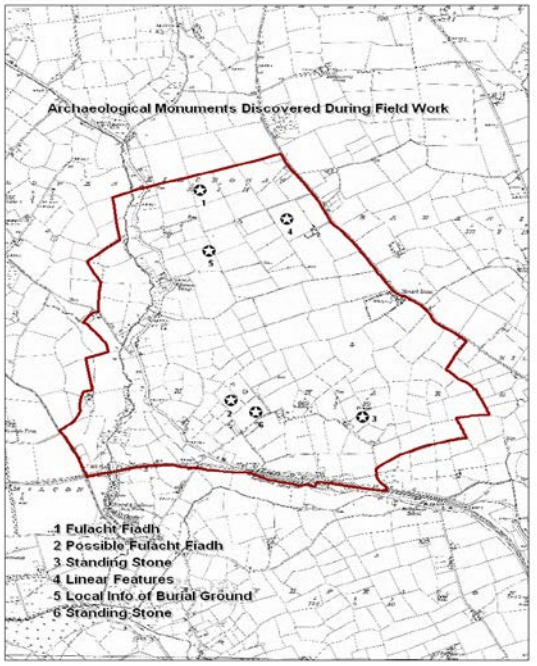
A survey of the entire site was conducted in over a six month period. The field survey work identified six potential archaeological sites. The sites are as follows;

Site No 1	Levelled fulacht fiadh
Site No 2	Possible fulacht fiadh
Site No 3	Standing Stone
Site No 4	Linear features
Site No 5	Possible burial ground
Site No 6	Standing stone.

The discovery of a number of potential archaeological monuments could signify the presence of additional monuments, further investigations will be required prior to development including a combination of non intrusive geophysical survey and licensed archaeological testing. There are two Recorded Monuments at the edge of the SDZ – Monard Spade Mills and Monard Railway Bridge. The SDZ site has a significant number of **Bronze Age** sites, these are mainly fulacht fiadhs, standing stones and standing stone pairs. The context of archaeological sites is outlined within the environmental report.

An archaeological and cultural heritage assessment was carried out for the preferred and alternative water supply routes and reservoir sites to serve Monard (by Tobar Archaeological Services on behalf of RPS consultants). The route corridors were assessed for their archaeological landscape potential by way of a desktop and field survey.

An archaeological assessment was carried out on the proposed waste water pipeline route (by Nicholas O Dwyer consulting engineers). The route of proposed twin rising main is largely on the public road. The archaeological assessments for the external infrastructure are supporting documentation to this environmental report, further details can be found within these reports.



Potential Archaeological Monuments

Architectural Heritage

The architectural heritage of the site examines the upstanding architectural structures of the SDZ which post date 1700. Architectural heritage is provided for under the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999 and the Planning and Development Acts (2000-2001). The acts provided a forum for

the creation of a National Inventory of Architectural Heritage (NIAH) which is used by Local Authorities for compiling the Record of Protected Structures (RPS), thus providing suitable protection for structures. There are no Protected Structures as listed in the Record of Protected Structures in Cork County Development Plan 2009 within the SDZ. There are no buildings listed in The National Inventory of Architectural Heritage (NIAH).

A field survey was undertaken to identify any architectural or cultural features within the SDZ. The survey identified 16 buildings of architectural importance. The majority of the heritage buildings surviving today are associated with farming, either directly or indirectly. Dwellings houses of vernacular architecture or local traditional architecture are the most common form of architectural within the site.

There are some heritage structures associated with the roads network and the railway line. These include a railway bridge carrying a farm road on the south side of the SDZ and a substantial Viaduct over Monard Glen on the southern boundary of the SDZ. The impressive remains of the seven-arched railway viaduct over Monard Glen will form a backdrop to the proposed new town. A number of the dwellings of architectural importance are vacant within Monard and therefore vulnerable and likely to fall into disrepair. These buildings provide important links to the past and should be retained and sympathetically restored to provide a new home for someone of this generation.

Cultural Heritage

The cultural heritage features outlined in this section have no statutory protection. However, policies with regard to protecting such features are contained in the County Development Plan 2009. The cultural heritage of the SDZ is defined as those buildings and features which are not defined as archaeological heritage or as architectural heritage. The features are predominately associated with agricultural activity and communication infrastructure. A field survey was carried out, a total of 10 cultural features were identified. Irish townlands are one of the ten cultural features identified in the list of features.

Townland Name on six inch OS Map	Translation
Coolowen	Back-land or Hill of Owen
Kilcronan	Cronan's church
Monard	High bog
Rathpeacon	Fort of Peacon

The cultural heritage features are important non structural elements of the built heritage that have survived. The retention of the townland boundaries particularly between Monard and Kilcronan is of paramount importance.

Maps outlining the architectural heritage and cultural heritage of the Planning Scheme area are contained within section 5 of the environmental report.

Impact in the absence of the Scheme

It is likely that the area would remain agriculturally productive with limited species or habitat variety, opportunities to enhance the biological diversity would be limited. Surface and groundwater is considered moderate and good in the area, which would remain largely the same. However the pressure for uncoordinated development would most likely continue close to the City boundary which would lead to an incremental rise of individual septic tanks which could threaten the quality of ground water in the area. The uncoordinated development pattern would impact incrementally on the existing landscape character of the area. The rail line asset would be underutilised; the rural area close to Blackpool would remain car dependant. Noise levels would remain akin to a rural area, until or unless the proposed Northern Ring is constructed. In the absence of the planning scheme it is likely that previously unknown links to the past would remain undiscovered and therefore not recorded.

6 Environmental Protection Objectives

The establishment of Environmental Protection Objectives (EPO's) for each environmental receptor identified a desired direction primarily based on the results of the baseline study and the scoping process. They were compiled with regard to the National, European and International policy documents. They are used as standard against which the contents of the Planning Scheme can be evaluated in order to identify areas where potential significant adverse impacts might occur. The environmental protection objectives are separate from the specific development proposals although they can influence each other and overlap.

The use of targets for each of the environmental objectives identifies a more detailed achievable objective (to assess the impact of the planning scheme). Indicators are a measure of variables over time, to evaluate the achievement of the environmental protection objective.

The final table of this non technical summary documents the selected EPOs, targets and Indicators used within the SEA process.

7 Alternatives

The development and assessment of reasonable alternatives is a requirement of the SEA process. The potential options for the site are not presented as composite options, this approach was not considered appropriate for the site. The consideration of alternatives should be realistic and at the level appropriate for the implementation of the Planning Scheme within the planning hierarchy. The Strategic Development Zone was framed within a policy context set by the plans above it. The context for Monard emerged from the Cork Area Strategic Plan 2001-2020. Alternative strategies for the direction and scale of growth in the Cork City region were examined during the preparation of CASP. These are discussed in section 7 of the environmental report.

The evolution of the Monard concept since 2001 placed limitations on the consideration of alternatives for Monard. The Blarney- Kilbarry Special Local Area Plan 2005, which emerged from a consultative process identified the broad planning principles of the site including; numbers of housing units, number of primary and secondary schools, list of sporting and recreation facilities including the provision for a country park.

The pre determination of key components of the new town limits the scope for consideration of alternatives within the site.

The following issues were considered of primary importance in the formulation of the Planning Scheme: Transportation, Design and Density of development and Implementation of the Scheme. The categories were based on the issues highlighted by the Bord's decision. The preferred alternative is a combination of options.

The above list is not exhaustive, however the above higher order categories offered a number of options for the preparation and design of the Planning Scheme. The preferred alternative is a combination of options. The "do nothing scenario" was also examined.

The four categories and options within those categories are assessed against the strategic environmental protection objectives in a matrix format in Table 7.1 of the environmental report. The table provides an over view or summary of the assessment. The environmental Assessment of options is contained within section 7 of the environmental report.

The preferred option selected for the site is as follows;

A medium density approach combined with one intermediate junction to provide access to the proposed Northern Ring Road. Implementation will be based primarily on a system of incentives and control with some land acquisition. A system of thresholds will apply in the four villages with a requirement for facilities to be provided at neighbourhood level. The preferred location of the intermediate junction with the proposed NRR will have less of an impact on biodiversity and landscape then two junctions North of the City. The appropriate assessment of potential environmental effects for any junctions is at project level. The approach to the sequence of development will be flexible requiring development to adjoin land already developed with a threshold system defining development required before proceeding to the next phase. The provision of four development corridors from the main service corridor will ensure development isn't impeded by landownership issues.

The option selected is considered to be the most sustainable approach for the development of the site.

8 Evaluation of Significant Environment Effects of planning scheme

In order to assess the impacts of the Planning Scheme a set of specific development proposals were identified from the Planning scheme itself. These specific development proposals were evaluated against the environmental protection objectives for the site. A matrix format was used to isolate the potentially significant environmental issues, indicating the positive effect, negative effect and no effect on the environment. The matrix results and the comments arising from the matrix were discussed in detail in section 8 of the environmental report. The summary of the effects are presented in a grouped format,

The environmental categories are:

- Landuse and Population
- Landscape & Visual Impact
- Transportation
- Natural Heritage and Open Space
- Infrastructural services
- Sustainable Development Proposals
- Cultural Heritage

Landuse and Population

It is difficult to decipher the environmental impacts at this broad level, therefore there is potential for negative impacts based on the precautionary principle. However the other environmental categories demonstrate how environmental considerations have been incorporated into the scheme in more detail. The impacts of the land use development proposals will be mixed, many of the potential impacts on the environmental protection objectives can be mitigated.

The implementation of the Planning Scheme including the quality of individual building design and quality of local open spaces will require more detailed environmental assessment in the form of E.I.S.

The house type and buffers proposed at the periphery of the site will reflect the rural nature of the site to protect the residential amenity of local residents. The new town centre, village centres and community facilities have the potential to impact positively on existing residents with the provision of accessible services and amenities.

The contiguous nature of the sequencing will allow for the roll out of on site infrastructure in an orderly manner. It will also minimise the nuisance and potential negative impacts to existing residents by limiting the extent of the area affected, construction management plans would also minimise construction related impacts and contribute to the environmental objective P1.

The likely significant impacts on the future population of the new town, and the impact on the existing local population and adjoining areas are very different. The overall effect on the population is potentially negative, however the negative impacts can be ameliorated. Landscape is discussed in a later section. The impact on human health is multifaceted with links to water quality, infrastructure provision and air quality.

Landscape & Visual Impact

Specific development proposals were established for landscape and visual impact in recognition of the likely significant impact of the new town on this elevated undulating rural landscape. The landscape and visual impacts were assessed separately for each village area. Landscape and visual impact is a complex area and in the case of visual impact is quite subjective.

In consideration of the extent and nature of the Scheme within a predominately rural landscape context, the overall significance of landscape impact is assessed as moderate subject to realisation of substantial woodland screen planting to mitigate the impact. The assessment concludes that Upper Monard, West Village and Kilcronan will have a potential moderate impact, while Lower Monard including the town centre is considered to have a major impact on the landscape. The lack of opportunities for substantial mitigation planting within the town centre would result in permanent adverse impacts on the landscape within this area. However in the 2015 Scheme the design and layout of neighbourhoods in Upper Monard is more focused on the zone of potential visibility map produced in the landscape report than in the 2012 Planning Scheme.

It will help to reduce the magnitude of impact on Lower Monard, the additional planting will reduce the overall landscape impact.

The overall significance of visual impact will be high for much of the development, due to the prominence of the sloping ground in views from the South, West and North from both long and short distance viewpoints. The highest magnitude of visual impact relates to Upper Monard, the lowest relates to Kilcronan. Substantial mitigation woodland planting would only be partly effective in reducing the visual impact in the long term.

The reduction of the visual and landscape impact of the new town was a key consideration during the preparation of the Planning Scheme. The design of each village entailed the consideration of; topography, exposure, orientation and specific views unique to the villages.

However, on the basis of the Scheme as it is prepared it can be ascertained that the residual landscape impact will be moderate with a major impact for Lower Monard. The overall residual visual impact will be high. The landscape impact and visual impact from the new town are likely to be a significant permanent effect on the environment.

The lands at Monard are located in close proximity to the Northern suburbs of Cork City and the emerging development corridor focussed on the Cork-Mallow rail line. Prominent ridge line developments have already been encroached by recent large scale development at Fair Hill and Ballyvolane, diminishing the desired visual envelope of the City. New development is also prominent at Killeens and Whitechurch from higher vantage points and extending eastwards from Blarney (including the Blarney Business Park).

The cumulative assessment of landscape and visual impact should include the likely effects of combined development, including long term development projects e.g. reconstruction of the road network around Monard, construction of the Northern Ring Road, provision of new infrastructure, including railway station. When considered in combination with these developments, it is clear that the character of the landscape will change, with a greater concentration of urban features within a peri urban setting.

Transportation

The overall Scheme objectives for transportation are positive with the exception of the up grade in the roads capacity within the local area, which has potential to be negative if unmitigated. The public transport objectives are likely to have a positive effect, objectives for road infrastructure which would promote the use of private transport would have the potential for negative effects and will require mitigation. The phased and sequential approach of the road improvements together with the use of reservations will reduce the scale of impacts on the surrounding environment, it will allow the establishment of sustainable commuting patterns based on public transport, provided the rail station is operational early on. The potential negative impacts to existing residents will be limited by the orderly roll of the road improvements. Additional congestion at junctions would negatively impact on residents.

The public transport provision combined with pedestrian and cycle routes will minimise carbon emissions and reduce the impact on air quality and energy dependence. Potential negative impacts to existing residents will be reduced by limiting the extent of the area affected, construction management plans would also minimise construction related impacts.

Having regard to the indications in the traffic assessment prepared for the 2012 Planning Scheme, further transport assessments are recommended in the Scheme at certain intervals in the process of development at Monard. The Scheme states a further transport assessment is required at 3,800 houses. The delivery of the full quantum. i.e. in excess of 5,000 houses is dependant on the Northern Ring Road to avoid serious traffic congestion. These thresholds still apply however a Strategic Transport Assessment was commissioned to address this issue. The Cork Northern Environs Transport Assessment recommended two possible locations for a junction that would serve the North of Cork City (including Monard, Blarney and Ballyvolane).

Following consultation with the NRA and further detailed design a location North of Kilcully was selected as the preferred location for a junction. The impact of the proposed Northern Ring Road is subject to a separate consent process, the NRA is the competent authority. The NRR would improve transport connections within the wider Cork area and undoubtedly relieve congestion at junctions close to the City. Discussions have been held with the relevant stake holders in relation to a junction with the NRR. The provision of the NRR is subject to funding similar to all large infrastructure projects. Development will not commence until economic conditions are sufficiently in place. The design of road upgrades including the provision of the Southern and Western strategic links will be subject to a separate consent process. The design and detail of these roads will be more appropriately addressed at the Environmental Impact Assessment stage. A number of road improvements are required to facilitate development to the threshold of 3,800 units. This would also be an appropriate time to review both the transport strategy and implementation of the scheme. The regional transport model currently being prepared would provide a useful basis to assess Monard and the other developments including Stoneview (Blarney) and Ballyvolane which are likely to interact with it and the Northern Ring Road.

The Systra report concludes that there is no single option which results in a congestion free environment on the Northern Fringes of Cork City. The regional transport model when completed will inform the review of the Cork Suburban Rail Network Feasibility Study. This would be beneficial, particularly in light of policy and demographic changes that have occurred since its creation e.g. the CASP update. More information on the commissioning of an economic appraisal in relation to the Feasibility study of proposed rail stations is required.

Natural Heritage and Open Space

The overall Scheme objectives for natural heritage and the creation of open space are positive or neutral. The agricultural landscape of Monard has generally a low level of biodiversity as a result of heavily grazed and cultivated grasslands. Opportunities to create new ecological habitats to enhance the biological diversity have been incorporated through the use of green infrastructure which will have a positive long term impact on the ecological diversity of the area. The protection of Blarney bog proposed NHA is one of the key environmental protection objectives.

Maintaining and protecting the existing hydrological flow regime of the Blarney River was paramount in the creation of the SUDS strategy. The protection of biodiversity in general is dependant on the effective disposal of waste water. The upfront provision of waste water infrastructure with sufficient capacity to cater for the proposed new town in Carrigrennan WwTP, will directly contribute towards protecting the status of water bodies, soil function and ecological diversity.

Infrastructural services

Monard is an unserviced rural area remote from services. The provision of dedicated water services infrastructure including both internal and external will ensure protection of the existing baseline conditions and will have a positive long term impact on the environment.

The potential negative impacts in relation to water supply and waste water relate to the provision of external infrastructure to facilitate Monard, there is potential to conflict with various aspects of the environment. However an ecological and archaeological assessment was carried out for the source and route of the proposed water supply and the route and outfall for the waste water infrastructure in tandem with the preliminary reports.
Also there is a history of flood events downstream of the site, consequently the disposal of surface water for the new settlement was of paramount importance. A site specific Sustainable Urban Drainage System's strategy was developed by the external consultants with extensive site investigations. The philosophy of this system is to replicate as closely as possible, the natural drainage from the lands prior to development.

Sustainable Development Proposals

The overall impact of the sustainable development proposals will have very positive long term effect, the benefits will not be apparent in the short term but will emerge over the longer time.

On a broad scale, sustainable residential development involves settlement patterns that help minimise transport-related energy consumption and encourage energy-efficient housing layouts. The rationale for Monard was to create a new town with access to sustainable modes of transport. The creation of sustainable neighbourhoods within the Planning Scheme is demonstrated in a multitude of ways as detailed in chapter 8 of the this report.

Cultural Heritage

The overall impact on archaeological heritage is unknown but with effective and appropriate mitigation the potential impact should be neutral. A number of potential archaeological sites were discovered following a preliminary archaeological assessment and survey of the site by the Council’s archaeologist. The potential monuments have been incorporated into the layout during the design stage. The potential monuments will require further investigation to determine their status. The impact on archaeological sites can be kept to the minimum by further investigation and the implementation of appropriate mitigation measures.

9 Mitigation

The SEA process has been an iterative one, which has informed the preparation of the Planning Scheme. Therefore, consideration has been given in the first instance to prevent negative effects on the environment which reduces the need for extensive mitigation measures.

However, the evaluation revealed potential negative impacts if unmitigated, therefore some mitigation measures are required to reduce the magnitude of the certain impacts and also to mitigate against potential adverse impacts on the environment.

The following is a list of recommended measures based on the Draft Planning Scheme. A number of the measures were integrated into the final Planning Scheme. The addendum to the environmental report and SEA statement will provide further up to date information in relation to this issue.

The Planning scheme should include the following measures or proposals:

Population and Human Health

The inspector's report for the 2012 Planning Scheme appeal recommended a number of points which should be incorporated into the Scheme. The points are as follows;

- Consideration should be given to the development of existing residential plots in a manner which is consistent with the pattern and form of development proposed for adjoining lands within the scheme.

- The inspector also recommended a revised table for the sequence of development which consolidated the phasing of infrastructure and development including roads and transportation infrastructure. This will ensure implementation of the scheme assessment of planning applications and monitoring of the same.

The requirement for construction management plans outlined in chapter 6 will help to minimise impacts on existing residents during construction. The need for project implementation and community liaison during the development and implementation stage was highlighted during the oral hearing of the 2012 Scheme a revised wording was agreed which has been incorporated into the Scheme. This will be an important step in minimising impacts on the existing and future populations.

Landscape

The Scheme has included a financial incentive for advanced planting. (contained in chapter 7). A fund of €240,000 has been allocated for this purpose (chapter 9 of the scheme). Screen woodland planting remains the primary mitigation measure. The incentive of planting and establishing the trees in advance of the development construction programme will ensure that the landscape and visual benefits are fully realised. Fig 9.1 and 9.2 demonstrate the benefit of screen woodland planting at two different intervals.

The following mitigation measure is proposed in relation to the screen planting

- Provision should be made for the failure of some trees when considering the number of trees required per hectare, any trees that die should be replaced in the next seasons planting.

The primary mitigation measure is screen woodland planting. It is proposed that the woodland screen should be planted well in advance of the development construction programme to ensure that the landscape and visual benefits are fully realised. Fig 9.1 in section nine of the environmental report demonstrates the benefit of screen woodland planting at two different intervals.

Transportation

- Revised wording stating that applications to the North of the threshold will not be granted

until the traffic assessments have been undertaken.

- Reference to a threshold for the delivery the bus routes, it comprises a large proportion of the public transport element of the new town. The position of the bus routes should be linked to phases of development.

- The requirement for a further traffic assessment has been identified, the potential for cumulative effect of vehicular traffic on the local and strategic road network should be assessed.

- Reference to the point in the development at which the flagship cycle and pedestrian routes will be substantially complete to be effective and useful.

- Reference to the completion of the Regional Transport Model and review of the Cork Suburban Rail Network Feasibility Study in light of policy and demographic changes that has occurred since its preparation e.g. CASP update. The timeframe for the economic appraisal including the terms of reference and the bodies to be involved should be specified in the Scheme.

- A review of the Planning Scheme should take place within 5-7 years of adoption. A formal amendment could be made at this stage to the Planning Scheme if required. It would be particularly useful in the evaluation of the transport proposals and any policy changes or new additions to the transport infrastructure which may have emerged in the intervening years.

Biodiversity & Water Resources

- The recommendations and mitigation measures outlined in the Ecological report prepared by Ecofact should form part of the Scheme. A brief summary of the measures contained in their report are outlined as follows:

  - Any replanting within the study area should take account of the soil conditions and existing vegetation within the affected areas. Species for replanting of drier ground above the riparian corridor will differ from species recommended for within the floodplain.

  - There should be no net loss of tree cover or riparian habitat within the affected areas required for the SuDS design. At detailed design stage the trees scheduled for removal will require enumeration and a projected failure rate of 50% added to the total number of trees to be replanted within the study area.

  - Replanting must include for monitoring of the success of these compensation measures and if necessary additional replanting may be required within the identified habitat reinstatement sites.

  - Native tree species will be planted to compensate for the removal of native and non-native tree species in selected areas. e.g. grey willow, alder, pedunculate oak , hawthorn and ash. Understory species including Elder, Hazel and Guelder rose are also recommended for drier ground. All replanted trees will be sourced from native stock.

Any works within, adjacent to or draining to these watercourses must take account of the following guideline documents ;

1. Kilfeather (2007) 'Maintenance and protection of the inland fisheries resource during roadconstruction and improvement works';
2. Murphy (2004) 'Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites'; and
3. NRA (2008) 'Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes'.

- For the protection of salmonids, no instream works shall be undertaken in the watercourses during the period October to

May. This timing of works will also avoid fish spawning times.

- Under the provisions of the Wildlife Act (1976, amendment 2000), no removal of trees, scrub or reed-bed habitat should be carried out during the bird breeding season (1st March to 31st August); unless written permission is obtained from the NPWS.

The mature trees within the study area all have potential as day roosts or summer night roosts and a bat survey of the affected areas is recommended. Trees identified for removal within the SuDS design are checked in advance for bats.

Chapter 8 contains environmental principles which address all other biodiversity concerns.

Soil and Geology

- The Geological Survey of Ireland have requested that Notification of ground excavations for infrastructure to undertake recording or rock sample gathering should be sent to the Geological Survey of Ireland.

- Construction management plans should include soil management and waste minimisation plans. Furthermore engineering measures to be put in place to ensure stability of slope faces and surrounding subsoil is maintained this should form part of the management plan. To minimise disturbance to residents city type noise suppressed rock breakers and "damping down" should be used to mitigate any significant noise, dust and vibration generation.

Cultural Heritage

- At development management stage it will be necessary to establish the nature and date of the sites identified as potential archaeological sites through archaeological investigation such as licensed testing and excavation.

- All archaeological sites (including potential archaeological sites) and buildings of architectural merit should be protected from any impact from the proposed development.

- Detailed specific archaeological and architectural assessments should be undertaken in advance of any future development. These should include non-intrusive surveys such as geophysical and intrusive investigations such as archaeological test trenching. The area and extent of these techniques will be determined by the nature and extent of the proposed development, areas with likely potential for unrecorded monuments, should be included.

- The colloquial field names used locally should be incorporated into new developments and utilised at the development management stage.

- The vernacular architecture of Monard consists of dwelling houses largely associated with farming in private ownership. The vacant dwellings of architectural importance which provide important links to the past should be retained

Sustainable Development Proposals

The specific development objectives relating to sustainable development proposals (SA SB SC) promote sustainable development in a multitude of ways.

Mitigation Measure recommended:

The Planning scheme should include:

- Reference to a menu of measures for energy conservation and efficiency to be incorporated into the new development. All future planning applications for development should demonstrate their compliance with the directive at development management stage.

- All Planning Applications shall be accompanied by a suitability statement, which shall identify the extent of recycled or reused material to be used in the development, in particular 40% of cement in concrete shall be a recycled industrial by- product or alternative acceptable to the planning authority.

10 Monitoring

The SEA Directive requires that the significant environmental effects of implementing plans are monitored in order to identify at an early stage unforeseen adverse effects and to be able to undertake appropriate remedial action. It is the responsibility of Cork County Council to monitor the significant environmental effects arising from the implementation of the Planning Scheme. Indicators are used to measure change in the environment. The following table shows the selected EPOs, targets and Indicators

Appendix A Summary of Environmental Assessment of Planning Applications

	Potential Positive	Potential Negative Likely to be Mitigated	Potential Negative Unlikely to be Unmitigated	Potential Neutral	Uncertain
LU A Create a detailed land use plan for the development of a flagship rail based new town North East of Cork City whereby infrastructure, transport connections, public and commercial services will be provided in tandem with the housing to create a balanced form of development.	**T1 P1 W2**	**L1 L2 S1 T2 P2 P3 B1 B2 W1 B3 C2**	**L1 L2**	**A1 W3 E1**	**C1**
LU B Create a sustainable new town to comprise a town centre adjacent to a rail station with a further three village centres namely; Lower Monard, Upper Monard, West Village and Kilcronan. It is proposed to accommodate a *range of approximately 4-750 – 5,850* new housing units, with a projected population of 13,000 persons, which includes a generous provision of open space.	**T1 P1 W2**	**L1 L2 S1 T2 P2 P3 B1 B2 W1 C2 B3**	**L1 L2**	**A1 W3 E1**	**C1**
LU C Create four village centres to serve the adjoining neighbourhoods with the appropriate quantum of dwellings within each neighbourhood, with provision for an appropriate range of retail, commercial, community facilities, primary schools, crèches and amenities to support the new population and existing residents within Monard, while also maximising their accessibility and commercial viability. A secondary school will be provided close to the rail station.	**T1 P1 W2**	**L1 L2 S1 T2 P2 P3 B1 B2 W1 C2 B3**	**L1 L2**	**A1 W3 E1**	**C1**

LU D Construct a new mixed use town centre adjacent to the new rail station, it is envisaged that the town centre will support approximately 20,000 square meters of retail / commercial floor space.	**T1 P1 E1 W2**	**L1 L2 S1 T2 P2 P3 B1 B2 W1**	**L1 L2**	**A1 W3**	
LU E Employment uses will consist of local service employment with some offices located adjacent to proposed Northern Ring Road, the settlement will rely on adjacent employment lands in Kilbarry and Blarney Business Park.	**P2 P3**	**B1 B2 B3 W1 S1 A1 T1 C2 L1 L2**		**W3 T2 E1 W2**	
LU F Protect the residential amenity of existing one off dwellings within and adjacent to the Monard, ensuring adequate buffer to new development is provided.	**P2 P3 C1 C2 L1**		**B1 B2 B3 W1 W2 W3 S1 T1 T2 P1 L2 E1**		
LV A Minimise the visual impact of the Draft Planning Scheme by avoiding development in sensitive viewpoints and locations as identified in the Zone of Potential Visibility (ZPV). .	**P2 C2 L1 L2, S1**		**L1 L2**	**C1, B1 B2 B3 W1 W2 W3, A1,T1,T2, P1, P3 E1**	
LV B Retain existing landscape features including field banks, hedgerows and tree lines. Provide a landscape framework plan for each of the four villages with landscape components outlined within. Provide for advanced mix planting of coniferous and broadleaf trees to ensure year round tree coverage and also create a sheltered microclimate on exposed lands.	**P2 , C1,C2, L1, L2, S1**			**B1 B2 B3 W1 W2 W3 A1,T1,T2, P1,E1 P3**	
LV C Residential development should be fine grained with houses of a particular type clustered in quite small groups avoiding continuous rows of development. House designs and layouts should be responsive to localised variations in their environment – including topography, orientation, retained features and recreational infrastructure. Avoid use of conventional house design with substantial use of retaining walls on sloping contours, house design should utilise the level difference within the site to an advantage.	**P2 L1 L2 S1 E1**			**B1 B2 B3 W1 W2 W3 A1,T1,T2, P1 ,C1,C2, P3**	

LV D Building heights should be within the range of storeys identified for the seven categories of house type proposed within the Draft Planning Scheme. The use of materials and finishes should be appropriate for different parts of the SDZ as indicated at village level, and in some cases at neighbourhood level.	**P2 L1 L2**			**B1 B2 B3 W1 W2 W3 A1,T1,T2, P1,E1,C1,C2,S1 P3**	
T A Provide a rail station at Monard with provision for park and ride facilities. The station configuration should provide access for pedestrians, cyclists, bus users and users with limited mobility. The opening of the station shall coincide with the first substantial block of development with a frequent train service to promote sustainable commuting patterns by rail.	**A1,T1,P1**			**B1 B2 B3 W1 W2 W3 T2, E1,C1,C2,S1 P2**	
T B Provide sustainable transport connections to complement the existing rail line and proposed rail station with non motorised modes such as walking and cycling with direct routes to the station and the City (via Blackpool) for shorter movements. and a bus service internal to Monard as the town expands.	**A1,T1,P1 C2**			**B1 B2 B3 W1 W2 W3 T2, E1,C1, ,S1 P2 P3**	
T C Construct a permeable built form with green routes to facilitate cycling and pedestrian movements within the site, with dedicated routes in locations with a shallower gradient. The route of the principal cycleway will be located along the western side of Monard hill serving the town centre, West Village and Kilcronan directly. The primary pedestrian link will be a covered route from the station to Upper Monard village centre. with additional cycling and pedestrian spurs.	**A1,T1,P1 C1 C2 L1 L2 S1**			**B1 B2 B3 W1 W2 W3 T2, E1,P2 P3**	
T D Upgrade access routes to and from Monard in a phased approach with the provision of additional road improvements at thresholds identified in the transport assessment. These include the service corridor, strategic Southern Link and strategic Western Link roads which will provide capacity in the local road network to cater for up to 3,800 residential units in Monard. Improved access to the National Primary Route is required to provide for additional housing units.	**T2**	**A1 T1 P2 P3 L1 L2**		**B1 B2 B3 W1 W2 W3 E1 P1**	**C1 C2**

T E Promote provision of a single junction with the proposed Northern Ring Road to serve Monard and the IDA Industrial Estate at Kilbarry. This would greatly improve transport connections from Monard to the major concentrations of employment and services South West of the City.	**T2**	**L1 L2 P1 S1 A1 P3**		**T1 P2 B1 B2 B3 W1 W2 W3 E1**	
NH A Protect the natural heritage and wildlife corridors along the Blarney River and streams throughout the site to ensure movement of mammals within established ecological corridors.	**B1 B2 W1 L1 C2**			**B3 W2 W3 S1 A1 T1 T2 P1 P2 P3 C1 L2 E1**	
NH B Protect and maintain the current hydro geological regime of the proposed NHA at Blarney bog which supports the wet grassland habitats and the breeding bird population within the site.	**B1 B2 W1 W2**			**B3 W3 S1 A1 T1 T2 P1 P2 P3 C1 C2 L1 L2 E1**	
NH C Develop a multifunctional open space hierarchy to include the Country Park in the Blarney River valley down to the individual private garden. Create an ecological network utilising all environmental resources from waterways to woodlands to adopt a green infrastructure approach within the site and links to the surrounding countryside.	**B1 A1 P1 P2 L1 L2 S1 W1 C2**			**B2 B3 W1 W2 W3 T1 T2 C1 E1**	
NHD Maintain the status of the qualifying interests including the annexed habitats and species of the Nautura 2000 sites within Cork Harbour**.**	**B2**			**B1 B3 W1 W2 W3 S1 A1 T1 T2 P1 P2 P3 C1 C2 L1 L2 E1**	
I A Provide a service corridor in an East West direction four development corridors running North to allow for flexibility in the implementation of the new town. The service corridor will include a new roadway within the site which will act as the primary route within the internal road hierarchy. It will also provide for water supply, waste water and utilities to service adjoining lands. The internal road layout will facilitate a bus route when required.	**T2**	**C1**		**B1 B2 B3 W1W2 W3 S1 A1 T1 P1 P2 P3 C2 L1 L2 E1**	

I B Provide a potable public water supply to serve the new development. The preferred options for source, supply and storage as outlined in preliminary report should be implemented. A site has been reserved within the SDZ boundary for a low level reservoir, a high level reservoir outside of the site is also required.	**W3 B1 W1 E1**			**B2 B3 W2 S1 A1 T1 T2 P1 P2 P3 C1 C2 L1 L2**	
IC Development of new sewerage infrastructure for the collection, treatment and disposal of waste water. The preferred option for the treatment of waste water as outlined in the preliminary report with discharge to Cork Harbour should be implemented.	**B1 W1 S1**			**B2 B3 W2 W3 A1 T1 P1 P2 P3 C2 L1 L2 E1**	
I D Design an integrated approach to surface water management which considers land use, water quality, amenity and habitat enhancements. Thereby, replicating the current greenfield rate of surface water runoff post development to prevent flooding of lands downstream settlements.	**W1 W2 B1 B2 S1**			**W3 B3 A1 T1 T2 P1 P2 C1 C2 L1 L2 E1**	
S A Implement a minimum of two sustainable urban drainage components within the Draft Planning scheme to protect the receiving waters of the Blarney River and promote achievement of good status of all waters to comply with Water Framework Directive.	**W1 W2 B1 B2 S1**			**W3 B3 A1 T1 T2 P1 P2 C1 C2 L1 L2 E1**	
S B Integrate the sustainable urban drainage features into the landscaping structure and amenity areas to ensure SUDs features can be facilitated within useable areas of open space which will also enhance the potential for biodiversity.	**B1, W1 W2 S1 L1 L2 E1**			**B2 B3 W3 T1 T2 P1 P2 C1 C2**	

Appendix B

Strategic Flood Risk Assessment

The EU Directive 2007/60/EC on the assessment and management of flood risks requires Member States to carry out a preliminary flood risk assessment by 2011 in order to identify the river basins and associated coastal areas at risk of flooding. The Directive requires the preparation of catchment based Flood Risk Management Plans (FRMPs) by 2015.

Legislative Framework

"The planning System and Flood Risk Management Guidelines" were issued by the DoEHLG and the Office of Public Works in November 2009. Local authorities are required to have regard to flood risk identification, assessment and management processes when preparing or varying development plans and local area plans and in consideration of applications for planning permission. In general the guidelines state that it is only necessary to undertake a detailed flood risk assessment if it is intended to zone land for development or identify the location of strategic infrastructure within flood risk areas.

The EU Floods Directive 2007/60/EC requires the preparation of catchment based Flood Risk Management Plans by 2015 which will set out Flood Risk Management Objectives actions and measures. The OPW have overall responsibility for the implementation of the Floods Directive. Following adoption of EU Floods Directive and in line with the subsequent guidelines for Planning Authorities, Cork County Council prepared a flood risk assessment of the Blarney Local Area Plan 2011 comprising a series of indicative flood maps.

SFRA of Monard SDZ

Flood Risk Assessment can be undertaken at a range of scales (regional, strategic and site specific). The Monard Draft Planning Scheme involves the creation of a new town with a population of approximately 13,000 persons. It could be considered equivalent to that of a Local Area Plan or masterplan. The following SFRA involves a 2 stage approach as recommended in the guidelines. The flood risk assessment prepared for the 2012 Planning Scheme was based on the same information.

Stage 1 – Flood Risk Identification

The aim is to identify any flooding or surface water management issues relating to the SDZ area that may warrant further investigation.

Sources of Flooding

The potential flood risk in the Monard area is fluvial flooding from the Blarney River and pluvial flooding from intense rainfall. The site is not at risk from coastal flooding.The Blarney River, the Kilcronan stream and the tributary stream are the water courses within the site itself. The Rathpeacon stream is located South of the site.

The flood risk information was collated from a number of sources. The list of recommended sources is contained in the technical appendices of the flood guidelines. The following are the lost of sources relevant to Monard.

– Draft River Lee Catchment Flood Risk Assessment and Management Plan (Lee CFRAM) commissioned and published by the Office of Public Works. The CFRAM is a catchment based approach which uses 'best international practice' for the assessment and management of flood risks. One of the primary outputs from the process was flood extent maps for fluvial and tidal flooding for the present and future scenarios. (Tidal flooding is not relevant to Monard) Climate change has been factored into the future scenario.

- Floodmaps.ie – The national flood hazard mapping website operated by the Office of Public Works, where information about past events is recorded and made available to the public. The flood maps were consulted, there are no flood reports recorded for the Blarney River upstream of the Gothic bridge. Flooding

was reported on the Martin River in Blarney in February 1990 and November 2000[12]. No affected lands were shown within the SDZ area.

- Draft Flood Hazard mapping for fluvial and tidal areas commissioned by Cork County Council from the Consultants JBA Associates. These indicative flood extent maps provide flood extent information for river catchments where a more detailed CFRAMS study is not currently available.

- The Draft Preliminary Flood Risk Assessment maps are currently on public display, they are due for completion at the end of the 2015. The maps were been produced in collaboration with the OPW, Matt Mc Donald and Cork County Council. The locations with the highest flood risk will be publicised first, then the medium etc. The aim is to identify areas at risk of significant flooding. The areas deemed to be at risk require more detailed assessment on the extent and degree of flood risk under the CFRAM studies. Monard is located within the South West CFRAMs which covers most of the County. On completion of the CFRAM study and the FRMP these publications will superseded all existing flood maps.
-Local Information

There have been a number of submissions on the Draft Planning Scheme with regard to existing periodic flooding near Killeens and Monard Glen. Both of these locations are south of the SDZ site.

-Preliminary Report for Sustainable Urban Drainage System conducted by TJ O' Connor & Associates.

As the Blarney River is the main collector for the existing run off within the Monard area, extensive on site investigations were carried out for the SUDS scheme. Topographical surveys were conducted for the channel and floodplains at approximately 50meter intervals and all bridges, weirs and culverts of the river. A 2 dimensional model of the Blarney River and its tributaries was carried out using the HEC-RAS River Analysis System software.

Flow monitoring was conducted across the entire site with the landowners consent to evaluate groundwater flows in terms of direction, quantity and quality. Monitoring of groundwater levels within piezometers was conducted over a 6 month period.

Appraisal of Existing Information

Firstly, the flood risk sources in particular the Draft PFRAs, CFRAMS and JBA flood maps are considered adequate for the identification of any potential flood risk within the site. The site is not within the boundary of the Lower Lee CFRAMS, other locations identified as having potentially a significant flood risk will require additional mapping, Monard is not one of these locations.

The site specific SUDS preliminary report is discussed in further detail in stage 2 and also in the appendices of the Planning Scheme. This is a valuable source of baseline information particular to the Monard site. The sources are considered adequate for the purpose of flood risk identification.

An appraisal of the relevant flood risk sources for Monard has identified a very limited area of land within Flood Zone A. It is confined to the Blarney River valley and a small section of the Kilcronan stream. This linear strip of 100yr (1% AEP) indicative flood event is contiguous to the Blarney River for the most part. There are also very small pockets of 100 yr (1% AEP) Pluvial Flood extent in Lower Monard as identified in the DPFRAs. The area at risk of fluvial flood follows the course of the Blarney River West of the Old Mallow Road. As per the Fig xxx the widest part of the flood extent map is in Kilcronan towards the North West of the site. There is only one point at which the flood extent map traverses the Old Mallow Road at Kilcronan stream. The 6 inch map illustrates that strips of land contiguous to the Blarney River are flood plains, no other area within

[12]TJ O Conor, Preliminary Report, Monard Sustainable Urban Drainage Systems

Monard has been outlined as liable to flood in the 6 inch map.

The locations south of the Monard site as highlighted in the submissions are identified as within Flood Zone A in the DPFRAs.

Stage 2- Initial Flood Risk Assessment

The 2011 Blarney Local Area Plan sets out the approach to flood risk management within the settlement network. The aim was to avoid development in areas at risk of flooding and where development cannot be avoided to adopt the sequential approach to flood risk management. An indicative Flood Extent Map was created for all the settlements including Monard.

The flood guidelines describe the two main areas of flood risk, as Flood Zone A (High probability of flooding) Flood Zone B (Moderate Probability of flooding). The fluvial flood risk identified in Monard is Flood Zone A similar to most areas within the County. Development in this location should be avoided /or only considered in exceptional circumstances. A justification test applies to proposals in this zone as per the ministerial guidelines. It is not proposed to locate any development within Flood Zone A.

The site of the new town is situated in a rural undulating countryside with a topographical range of approximately 80 meters. The highest point is 138m OD Malin to level of 60m OD where the Blarney River passes beneath the Cork Mallow rail line. The Blarney River rises 3 km north of the site and flows through a steep sided river valley along the Western site boundary. It is characterised by a well defined main channel. The overall river catchment is 25km², with 13.km² relevant to the catchment for Monard. The majority of the elevated lands drain to the Blarney River in a westerly direction. The Blarney River joins the Martin River approximately 8.5km downstream before joining the Shournagh River and ultimately the River Lee. The subsoil of the site is largely Sandstone Till Devonian with pockets of exposed rock.

The two flood risk maps namely the LEE CFRAMS flood extent map in Fig A3 and the DPFRAs in Fig A4 outline the areas at risk of flooding as contiguous to the Blarney River. The Draft Lee CFRAMS was the most detailed source for flood risk, it produced fluvial flood extent maps for the catchment of Blarney River for both the current and future scenarios. There are a number of areas within the Blarney river valley which have a 1 in 10 chance of flooding in any given year. However, there are no residential properties at risk from flooding within the SDZ boundary.

Sequential Approach

The locations at risk from flooding within the Planning Scheme are adjacent to the River. This area comprises the natural flood plain of the river. The river valley will not be developed for housing but will be reserved as a country park with the level flood plain land suitable for informal recreational areas. This is in keeping with the sequential approach which utilises flood risk assessment to direct development to lands with the lowest risk of flooding. Recreational areas are consistent with “water based development”.

The pockets identified as at risk of pluvial flooding within Lower Monard have been avoided and the curtilage of houses amended to avoid the risk. This is in keeping with the sequential approach as set out in the guidelines.

The site of the proposed post primary school is located West of the Old Mallow road close to the railway line. The site is not located with a flood zone. The Blarney River valley is located at a much lower level to the West of the site. The overall site is 12 acres, the area of the school site is sufficiently large to allow flexibility on selection of SUDs design features. A site specific SUDS assessment will be required, including specific proposals to cater for run off within the site. The SUDs preliminary report did not include the post

primary school site. The location of the site has been discussed with the Department of Education.

In relation to the existing problem caused by flooding of a stream at a road crossing near Killeens and Monard Glen, this will be addressed through the use of swales /filtration drains, detention basins/ponds along the new SW link road which will ensure no adverse impact on current peak flows in the rivers downstream of the SDZ. There is an existing flood risk identified at Rathpeacon stream South of the Monard SDZ. The catchment of this stream will be reduced though the implementation of the Monard SUDS strategy, the flows will be reduced proportionally.

The draft Lee CFRAMS has identified locations of extensive flooding downstream of the SDZ lands, including the weirs at the Monard spade mills. There is a history of flood events downstream of the site, the existing problem was identified in the scoping report at the start of the SEA process. Having regard to the topographical variations within the site, the disposal of surface water for the new settlement is of paramount importance. The Lee CFRAMS final report has identified areas of significant flood risk (ASPR), management objectives have been set out for these areas in Blarney and elsewhere. The potential option for Blarney and Tower is to be proactive in the maintenance of existing flood defence embankments. These options were based on hydraulic modelling that was substantially complete prior to the November 2009 flood event.
A comprehensive site specific SUDS strategy was developed in response to the existing flood risk identified downstream of Monard. The system is designed to ensure that the rate of discharge from the urban area to the receiving waters should be limited to the equivalent greenfield run off rate and volume. This is discussed in more detail in the next section.

Sustainable Urban Drainage System

The aim of the strategy is to ensure a sustainable approach to surface water management from all development within the SDZ lands and to ensure adequate land is available to accommodate its requirements.

The proposed SUDs strategy is a departure from the traditional approach of managing rainfall and the rate of runoff from larger storm events by using extensive pipes. Conventional systems can lead to excessive volumes of run-off discharging at uncontrolled rates resulting in flooding of areas further downstream of development. The SuDs strategy incorporates objectives for water quality protection, flood risk, amenity benefits, habitat creation and future maintenance obligations.

The philosophy of this system is to replicate as closely as possible, the natural drainage from the lands prior to development thereby minimising the impact of the development on water quality in the receiving waters and quantity of runoff in the downstream of the site.

The site specific approach required detailed modelling of the Blarney river channel to establish the baseline situation and to predict water levels within the river channel for each flood event. Flood risk was considered from the outset as an increase from 0% to 15% within the Blarney catchment as a result of urban development unless addressed as part of the scheme. Climate change was factored into the design calculations of rain fall by a factor of 10%.

The SUDs strategy is based on a hierarchy of solutions based on treatment at source. A surface water management train approach was adopted in the design by utilising suitable SUDs mechanisms which provide source, site and regional control. A minimum of two SUDS components is required in the scheme to protect the receiving waters of the Blarney River. The SUDs features will be incorporated in every development proposal, a menu of appropriate SUDs techniques has been identified. It is proposed that 60% of surface water attenuation would be provided within

the neighbourhoods. The developers will have to accommodate the balance of surface water attenuation in their individual applications. The implementation, day to day management of the SUDS features is critical to its success.

In summary the SUDS strategy when implemented will ensure existing Greenfield run off rates and volumes are not exceeded.

Recommendations for the Planning Scheme

These measures should be included in the Planning Scheme.

- A site specific flood assessment should be submitted for any planning applications in Monard that is located within Flood Zone A or B in the Blarney River valley and any other locations identified as at risk of flooding. This is in keeping with the guidelines "The planning System and Flood Risk Management" which require a site specific flood risk assessment for development within a flood zone. Only water compatible development will be permitted in such areas.

- All future planning applications should demonstrate compliance with the SUDS strategy. The "compliance with the SUDS Strategy document" should clearly outline the specific measures, their design capacity and location of such measures. The existing greenfield run off rates and volumes should not be exceeded.

- A separate site specific and detailed SUDs strategy will be required for the post primary school site. This should be compatible with the SUDS strategy outlined in the preliminary report. The site specific study should include the total predicted runoff rate and volume. Furthermore a breakdown of the attenuation measures required and the location of same shall be outlined in the proposal. The SUDS strategy should ensure that the current greenfield run off rates and volume are replicated. All SUDs features shall be accommodated within the overall site.

- The maintenance of the SUDs features e.g. swales, debris removal etc should be carried out by an agreed body at regular intervals until such time as the development is taken in charge by the council. This will ensure the features are working effectively and will not contribute to any downstream flood events in Killeens, Monard Glen and Blarney.

- Provision should be made for swales /filtration drains, detention basins/ponds along the new SW link road, to ensure no adverse impact on current peak flows in the rivers and streams downstream of the SDZ. The SUDS proposals for the link roads should be compatible with the SUDS strategy outlined in the preliminary report which accompanies the Planning Scheme.

- A review of the SFRA should be done in tandem with the 5-7 year review recommended in the Environmental Report. A number of sources of flood risk information are due to be finalised by the end of 2015. A review of the SFRA will ensure that the most up to date flood risk information is being utilised.

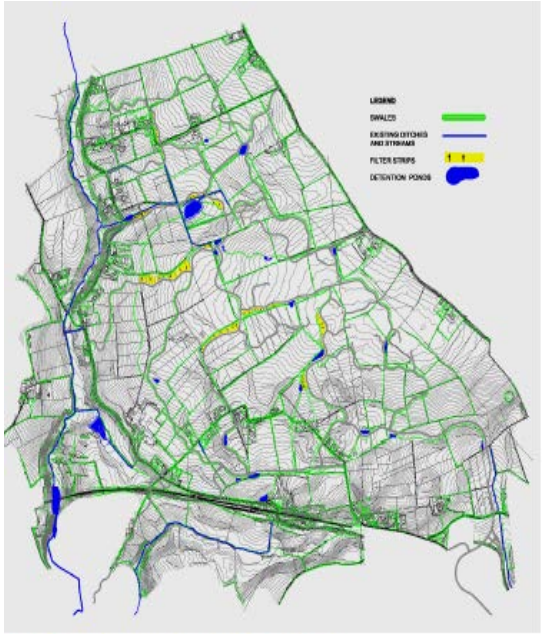


Figure 6.6 Proposed Swales, Detention Ponds and Filter Strips

Fig A1 Proposed System of Surface Water Conveyance Routes

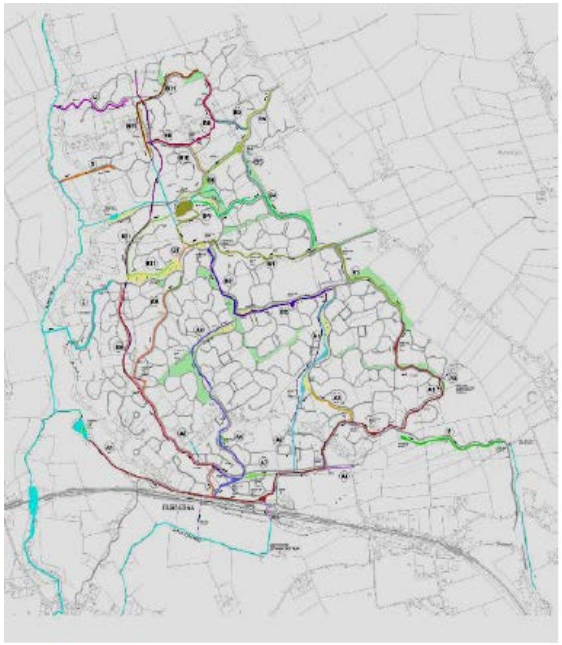


Figure 6.5 Proposed System of Surface Water Conveyance Routes for Monard

Fig A2 Proposed Swales, Detention Ponds and Filter Strips

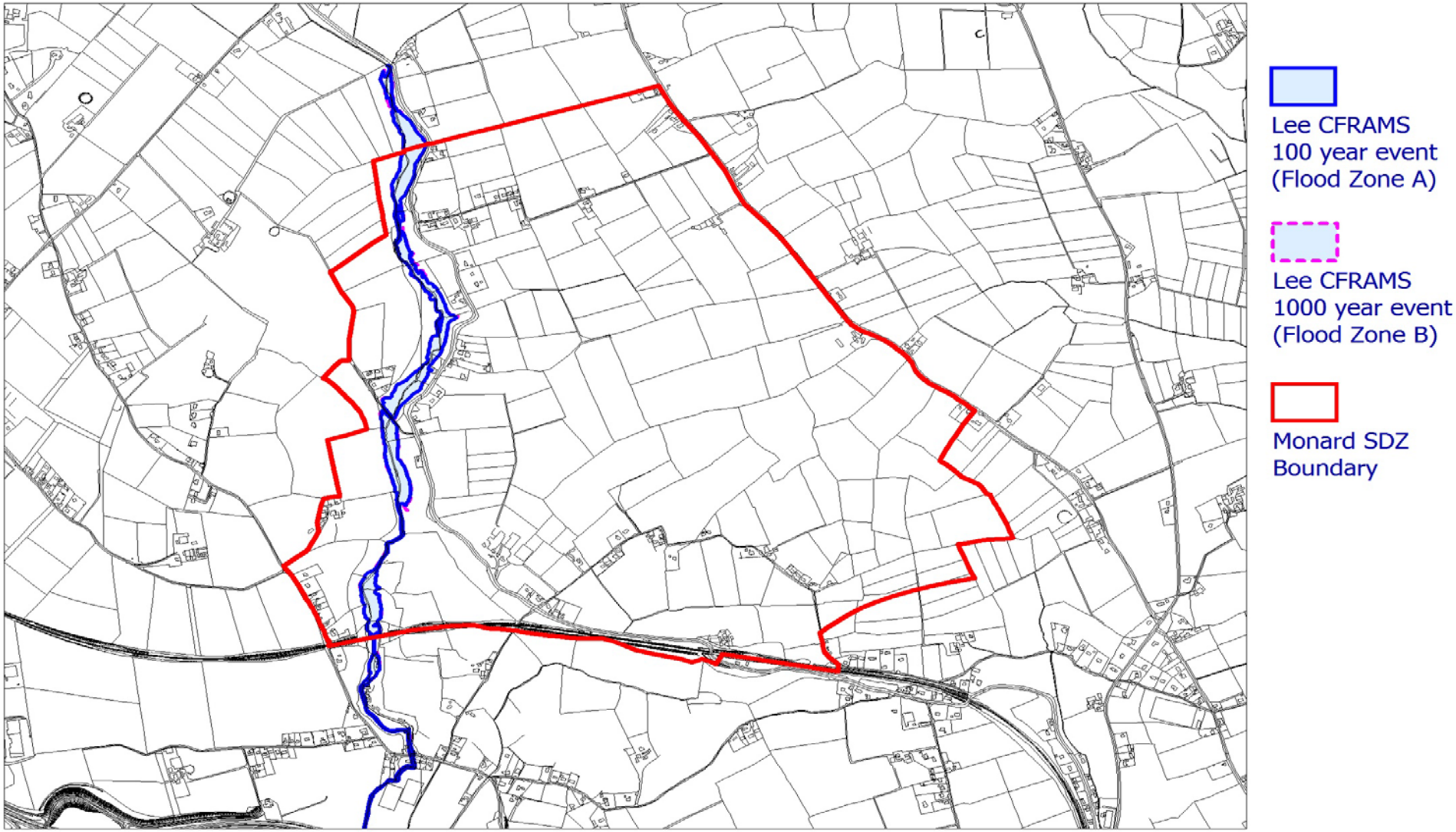


Fig. A3 Monard Flood Risk Map - Lee CFRAMS

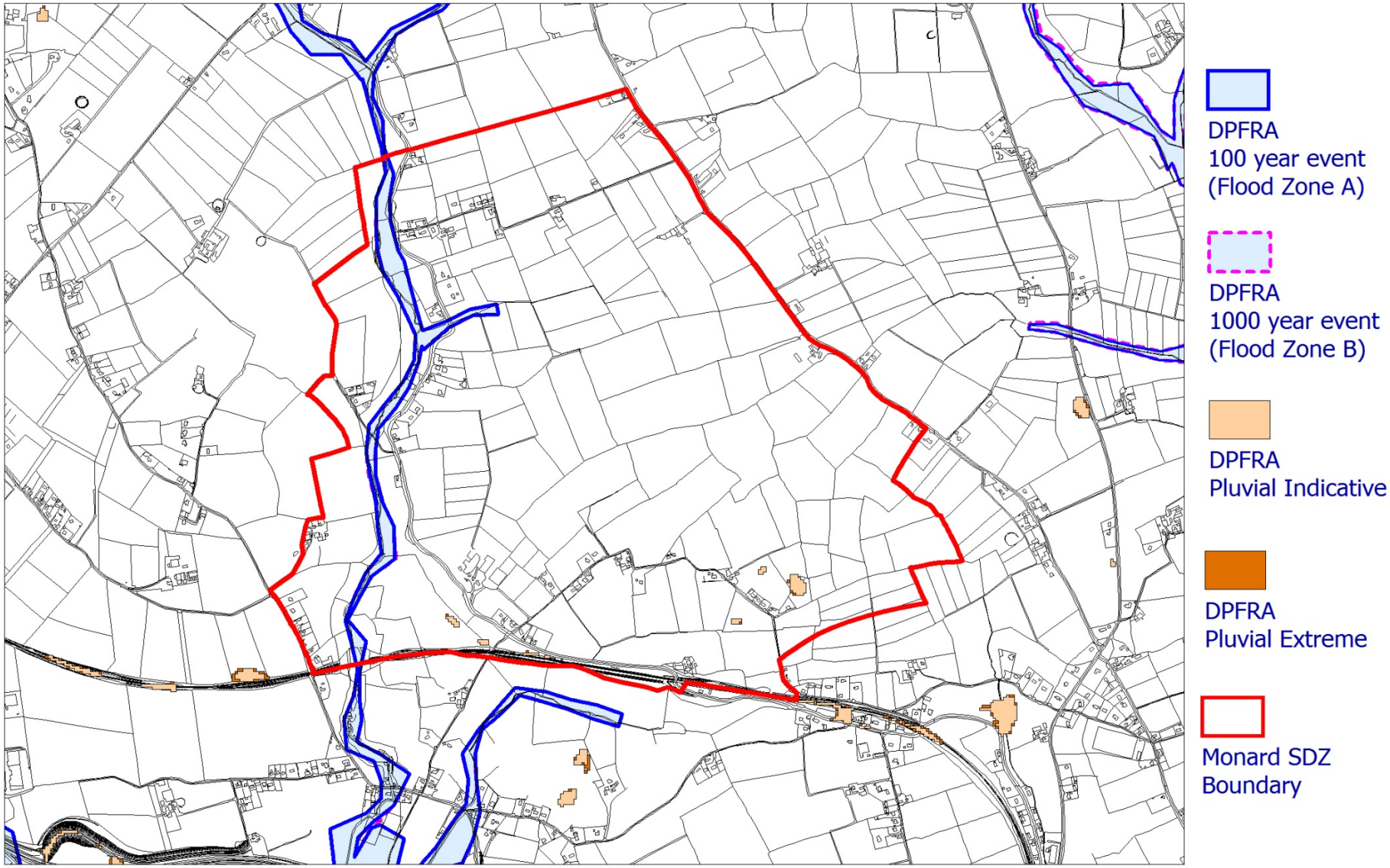


Fig. A4 Monard Flood Risk Map - DPFRA