

**MONARD STRATEGIC DEVELOPMENT ZONE  
PLANNING SCHEME 2015**

**Addendum to Environmental Report**

**August 2015**



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## 1.0 Introduction

A Strategic Environmental Assessment was carried out in tandem with the preparation of the Monard Strategic Development Zone Draft Planning Scheme. The Environmental Report is the main output of the SEA process which aims to integrate and evaluate environmental considerations into the Planning Scheme. This document provides an addendum to the Environmental Report.

This Addendum addresses the following issues:

- Brief overview of the issues which arose following public consultation on the Draft Scheme and Environmental Report.
- A review or screening of the amendments to the Draft Scheme.
- Assessment of whether or not amendments require a Strategic Environmental Assessment as per section 169, subsection 4 (ba) of the Planning and Development Act 2000 to 2010.
- The amended Strategic Flood Risk Assessment for the Monard site.

## 2.0 Progress to date

The Draft Planning Scheme was submitted to the elected members and commenced the period of public consultation on the 17<sup>th</sup> of April 2015 until the 2<sup>nd</sup> of June 2015. A Draft SDZ Contributions Scheme, Draft Environmental Report, Strategic Flood Risk Assessment and Habitats Directive Screening Statement were also submitted for public consultation. Submissions were received on the above documents from the public, including local residents and state bodies.

The issues raised in the submissions included:

- Transport related issues including noise reduction, modal split targets and railway safety.
- Other transportation issues in relation to the provision and timing of the rail station, bus services, uncertainty in relation to the proposed Northern Ring Road and possible junction for Monard.
- Concerns in relation to the implementation mechanism, monitoring, creation of a community liaison committee.
- Increased risk of flooding as result of the development.
- Environmental issues- integration of SEA and AA recommendations into the planning scheme.
- Specific issues relating to Sheehan's lane and Boreen Dearg.
- Flexibility in terms of commercial office space South East of the town centre.

- Specific issues relating to the secondary school site, definition of boundary, sloping contours, flood risk assessment.
- Concerns regarding density levels, flexibility needed.

Following the six week public display period the Chief Executive's Report was prepared. It listed the persons and bodies who made submissions or observations, summarised the issues raised ,provided a response to the issues raised and made recommendations for alterations to the scheme. A preview of the Chief Executive's Report was discussed at a Development Committee meeting. Cork County Council decided by resolution at the meeting on the 27<sup>th</sup> of July 2015 not to make a formal decision on the Monard Strategic Development Zone Draft Planning Scheme. As the council decided not to make the a formal decision under section 169(4) of the Planning and Development Act 2000, the scheme is deemed to be made on the 11<sup>th</sup> of August 2015 in accordance with section 169(3). This addendum is in response to the Chief executives report and agreed amendments to the scheme. It provides an assessment of the likely effects of implementing the agreed amendments on the environment.

### **3.0 Review or Screening of Amendments-**

This section of the Strategic Environmental Assessment Report details the effects on the environment of the amendments to the Draft Planning Scheme. The amendments included changes to text and maps. The SEA screening was carried out by evaluating the agreed amendments against the environmental protection objectives as set out in the Environmental Report and judged to have a potentially positive, negative, uncertain or neutral impact. The EPO's were derived from the list of environmental receptors relevant to Monard, they identify a desired direction for Monard. A matrix format was used. Table 1 contains a list of the EPO's contained within the environmental report. The outcome of the assessment is provided in the form of a matrix in Table 2 below. The results of the matrix are also discussed.

### **4.0 Assessment of Amendments in relation to further Assessments**

As the council did not make a formal decision on the Draft Scheme, there were no further amendments made at the council meeting. Subsequently there is no necessity to review or screen amendments with a few to further SEA assessment of amendments (Section 169, subsection 4(ba) of the Planning and Development Act 2000 to 2010) The recommended changes arising from the chief executive's report to members on submissions received are deemed to be the only changes. These changes are listed in Table 2 as previously stated and the results are discussed thereafter.

### **5.0 Amended Strategic Flood Risk Assessment (Appendix B of the Environmental Report)**

A number of submissions were received in relation to localised flooding and flood risk assessment in part from members of the public and one from a statutory body. (This last submission was received late). The SFRA was updated to include the secondary school site located at the most South West corner of the overall site, the requirements for a site specific SUDS strategy was outlined in the Planning Scheme (chapter 8) and in the accompanying SFRA. Furthermore, the mapping in relation to flood risk was updated, there was one minor change relating to Lower Monard. The layout of the most eastern section of the town centre was amended slightly. Also the boundaries of a number of the blocks in Lower Monard East were altered to reflect the potential pluvial flood risk identified in the Draft Preliminary Flood Risk Maps. This is in keeping with the sequential approach to flood risk management as outlined the Flood Risk Directive which utilises flood risk assessment to direct development away from areas with potential flood risk. The issue of localised flooding is dealt with in the amended SFRA also.

Additional information in relation to the details of the site specific SUDs strategy prepared by external consultants TJ O' Connor were included. The preliminary SUDs report accompanies the Planning Scheme and provides details on the modelling of Blarney River and extensive survey work completed on the Monard site. A copy of the updated SFRA is contained as an appendix to this document.

**Table 1 Environmental Protection Objectives**

<b>Environmental Protection Objectives</b>
<b>B1</b> Protect and enhance the existing habitats and species within Monard, in particular along the Blarney River Corridor.
<b>B2</b> 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)
<b>B3</b> Protect all habitats from invasive species implement programme for control and removal of invasive species
<b>W1</b> 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
<b>W2</b> 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.
<b>W3</b> Promote water conservation within the new water infrastructure network and future water usage within the new development.
<b>S1</b> Protect local soil integrity and quality.
<b>A1</b> Maintain and protect good air quality standards, minimise emissions and promote use of public transport.
<b>T1</b> 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.
<b>T2</b> Protect and upgrade the local road network and provide access to the strategic road network.
<b>P1</b> 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.
<b>P2</b> Protect the residential amenity of existing residents, ensure adequate buffers are provided adjacent to existing residents.
<b>P3</b> Minimise the impacts of construction on local residents, utilise construction management plans
<b>C1</b> Protect the existing and newly discovered archaeological sites and their context within Monard and surrounding areas
<b>C2</b> Protect the local cultural identity and associated cultural features within Monard
<b>L1</b> Preserve the natural and historic landscape features within Monard.
<b>L2</b> Protect the most visually sensitive locations within Monard, minimise the visual impact of the development within and adjacent to the site.
<b>E1</b> Reduce waste generation in the new town and promote the use of sustainable energy sources.

**Table 2 Environmental Evaluation of Amendments**

Chapter /Section	Amendment	Impact on EPO's				Conclusion
		Positive	Negative	Unsure	Neutral	
Ch 4 4.6	Changes to layout in Lower Monard, minor changes to North Eastern corner of the town centre layout which reflects the outcome of the revised SFRA in relation to pockets of potential pluvial flooding. Revised map in line with above.	W2,S1			B1, B2, B3, W1,W3, A1, T1, T2, P1, P2, P3, C1, C2, L1, L2, E1,	Screened Out
Ch4	Amendments which include inclusion of temporary open space , noise control measures close to the proposed NRR and the management of access along Boreen dearg.	P1, P2			B1, B2, B3, W1, W2 W3, S1, A1, T1, T2, , P3, C1, C2, L1, L2, E1	Screened Out
Ch 4 4.9	Kilcronan- change in the layout of Kilcronan lane in terms of access arrangements. New subsection D	P2			B1, B2, B3, W1, W2 W3, S1, A1, T1, T2,P1 , P3, C1, C2, L1, L2, E1	Screened Out
Ch 4	Kilcronan Summary Map amended, layout updated to accommodate existing houses.	P2			B1, B2, B3, W1, W2 W3, S1, A1, T1, T2, ,P1, P3, C1, C2, L1, L2, E1	Screened Out
Ch 5 5.2.31	Targets for Modal shifts included	A1,T1			B1, B2, B3, W1, W2 W3, S1, T2, P1, P2, P3, C1, C2, L1, L2, E1.	Screened Out
Ch 5	Figure 5.10- Map of Northern Ring	T2			B1, B2, B3, W1, W2 W3,	Screened Out

	Road and Junction revised				S1, A1, T1, P1, P2, P3, C1, C2, L1, L2, E1	
<b>Ch 6</b> 6.1.1, 6.1.4, 6.1.6	Slight changes to wording in these paragraphs relating to sewerage disposal and the technical detail.				B1, B2, B3, W1,W2 ,W3, S1, A1, T1, T2, P1, P2, P3, C1, C2, L1, L2, E1,	Screened Out
<b>Ch 6</b> 6.1.7	New wording relating to the addendum to the waste water preliminary report completed in June 2015. The report examines the techniques for micro tunnelling under the Glashaboy River. This issue was raised in the Natura Impact Screening Statement prepared for the Draft Scheme.	B2			B1, B3, W1, W2 W3, S1, A1, T1, T2, P1, P2, P3, C1, C2, L1, L2, E1	Screened Out
<b>Ch 6</b> 6.8-6.9	New section on energy efficiency	E1			B1, B2, B3, W1, W2 W3, S1, A1, T1, T2, P1, P2, P3, C1, C2, L1, L2	Screened Out
<b>Ch 6</b> 6.10	New text as recommended in of the Natura Impact Screening Statement. This section refers to waste management strategy for Cork Harbour and reference to commitment for additional measures that may be required to protect Natura 2000 sites.	B2			B1, B3, W1, W2 W3, S1, A1, T1, T2, P1, P2, P3, C1, C2, L1, L2, E1	Screened Out
<b>Ch 7</b>	This new section outlines	W2			B1, B2, B3, W1,W3, S1,	Screened Out

7.1.5-7.1.8	requirements in relation to schools (7.1.5-7.1.6). The other sections 7.1.6- and 7.1.8 outline requirements for the secondary school site including the need for a for SUDs assessment as per the SFRA recommendations outlined in chapter 8.4.				A1, T1, T2, P1, P2, P3, C1, C2, L1, L2, E1	
<b>Ch 8</b> 8.2.2. 8.2.3 8.2.4	Environmental Principles Sections 8.2.2 Biodiversity principle wording amended to include ;  - SUDS mitigation measures recommended by Ecofact. -Creation of 10meter riparian buffer.  8.2.3 Design and Construction principle wording amended in relation to notification of Geological Survey of Ireland  8.2.4 Energy principle wording amended in relation to compliance with Part L of the building regulations.  8.2.6 Cultural Heritage	B1,W2, S1, E1, C1, C2			B2, B3, W2, W3, A1, T1, T2, P1, P2, P3, L1, L2, E1	Screened Out

	<p>(Archaeological, Architectural and Cultural ) section amended to include :</p> <p>-Summary of the archaeological report contained in the Environmental Report.</p> <p>-Additional wording which lists additional requirements relating to archaeological heritage as per the Department of Arts submission.</p>					
<b>Ch 8</b> 8.3	8.3 Wording in relation to AA screening updated.	B2			B1, B3, W1, W2 W3, S1, A1, T1, T2, P1, P2, P3, C1, C2, L1, L2, E1	Screened Out
<b>Ch 8</b> 8.4	8.4 The amended Strategic Flood Risk Recommendations are listed in this section.	W2			B1, B2, B3, W1, W2 W3, S1, A1, T1, T2, P1, P2, P3, C1, C2, L1, L2, E1	Screened Out
<b>Ch 8</b> 8.5	<p>8.5 Mitigation Measures</p> <p>New summary section on mitigation measures added.</p> <p>Insertion of Table 8.1 Outlines the measures that have been fully and partially integrated into the scheme.</p>				B1, B2, B3, W1, W3, S1, A1, T1, T2, P1, P2, P3, C1, C2, L1, L2, E1	Screened Out
<b>Ch 9</b>	New table inserted - Table 9.6				B1, B2, B3, W1, W2 W3,	Screened Out

Table 9.6	outlines the category for developments exempt from contributions listed , schools and owner occupied apartments.				S1, A1, T1, T2, P1, P2, P3, C1, C2, L1, L2, E1	
<b>Ch 10</b> 10.0.3	New section which outlines the mechanisms of phasing and system of threshold controls.	P1, P2,P3			B1, B2, B3, W1, W2 W3, S1, A1, T1, T2, C1, C2, L1, L2, E1	Screened Out
<b>Ch 10</b> 10.1	This section has been revised and expanded, it relates to implementation and monitoring including environmental landuse and transport modeling. It also provides for further community engagement. Primary /land use monitoring should be every 5 years to coincide with census and up to date data.	P1,P2,T1, T2			B1, B2, B3, W1, W2 W3, S1, A1, P3, C1, C2, L1, L2, E1	Screened Out
<b>Appendix 1 of Draft Scheme</b> 1.7-1.10	New section relating to the suitability of SDZ legislation for controlling sequence in long term plan.				B1, B2, B3, W1, W2 W3, S1, A1, T1, T2, P1, P2, P3, C1, C2, L1, L2, E1	Screened Out
1.30 (b)	Change from content controls to contributions incentives for owner occupied apartments				B1, B2, B3, W1, W2 W3, S1, A1, T1, T2, P1, P2, P3, C1, C2, L1, L2, E1	Screened Out
1.93(d)	Shared bike cycle scheme included.	T1			B1, B2, B3, W1, W2 W3, S1, A1, T2, P1, P2, P3, C1, C2, L1, L2, E1	Screened Out

The evaluation table demonstrates that that the agreed amendments do not conflict with the Environmental Protection objectives. The nature of the amendments are largely concerned with additional commitments in the form of changes to the text with minor changes to the layout in Lower Monard.

The majority of the amendments have a neutral effect on the EPO's, with a number of the amendments having a positive effect on the environment. Most notably the addition to the environmental principles in chapter 8 will ensure environmental considerations form part of the development process. A number of proposed changes relate to submissions received from environmental authorities namely the Environmental Protection Agency and Inland Fisheries Ireland. Other changes not attributable to environmental authorities will nevertheless make a positive contribution to one of the main receptors in the environment i.e. the local population.

One of the mitigation measures recommended in the Draft Environmental Report was a review of the Planning Scheme every 5-7 years to evaluate transport proposals and policy changes in the intervening years. This was also recommended by the EPA. The commitments outlined in chapter 10 (phasing and thresholds) relate to monitoring at two levels, namely environmental monitoring and landuse and transport monitoring. The primary land use transport modeling would coincide with the census every 5 years. This will ensure accurate and up to date independent

statistics are used in relation to growth in Monard and in the wider metropolitan area.

The main environmental report recommended a monitoring and review group having regard to the scale of the project. The members of the multidisciplinary team will share some of the same members as this group, which would ensure consistency and avoid duplication. The SEA statement provides further information in relation to monitoring.

In chapter 4, the layout of the eastern section of Lower Monard was amended to reflect the potential fluvial flood risk, this is a positive change. Relocation of the units away from potential flood risk is in keeping with the Flood Risk Guidelines. The changes in chapter 6 reflect the recommendations of the addendum to the preliminary report on waste water. The rising main from Monard to Carrigrennan will need to cross the Glashaboy River. The possible effects of directional drilling to cross the Glashaboy river and the potential effect on Natura 2000 sites in Cork Harbour were discussed in the addendum. This issue was highlighted in the Natura Impact Statement. Please refer to the Natura Impact Statement for reference. The inclusion of a section of 5.6 - Target Shifts to sustainable transport modes and the promotion of the modal change to more sustainable forms of mobility has the potential for a very positive effect on the environment.

There are no amendments, additions or omissions which would present a significant negative impact on the environmental

protection objectives or consequently on the receiving environment based on the above evaluation. No new policies have emerged since the Draft Planning Scheme, the density and scale of development remain the same.

The amendments would not result in a change to the overall assessment or evaluation in the main environmental report. This report forms an addendum to the main environmental report and should be read in tandem with same. Furthermore an SEA statement as required by the SEA directive and SEA regulations has been prepared. This will detail how environmental considerations have been integrated into the Planning Scheme.

## **Appendix B of the Main Environmental Report**

### **Strategic Flood Risk Assessment – as amended**

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 in this assessment.

#### **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<sup>1</sup>. No affected lands were shown within the SDZ area.

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<sup>1</sup>TJ O Connor, Preliminary Report, Monard Sustainable Urban Drainage Systems

- 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 DPFRA's. 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 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 DPFRA's.

### **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 25km<sup>2</sup>, with 13.km<sup>2</sup> 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 DPFRA 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 within 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 arising from an increase in the proportion of the Blarney River catchment used for urban development from 0% to 15%, unless addressed as part of the scheme. Climate change was factored into the design calculations of rainfall, by increasing them by 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.

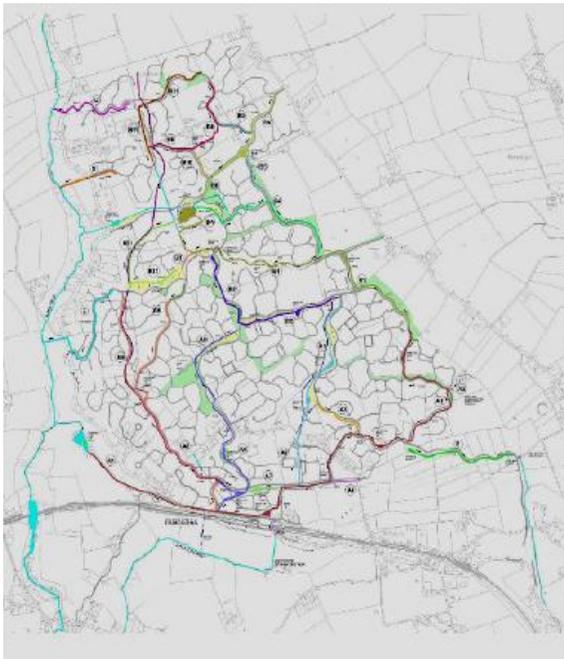
A site specific flood assessment should be submitted for any planning applications in Monard that is located within Flood Zone A or B in the Blarney River valley and any other locations identified as at risk of flooding. This is in keeping with the guidelines “The planning System and Flood Risk Management”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

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 6.5 Proposed System of Surface Water Conveyance Routes for Monard

**Fig A1 Proposed System of Surface Water Conveyance Routes**

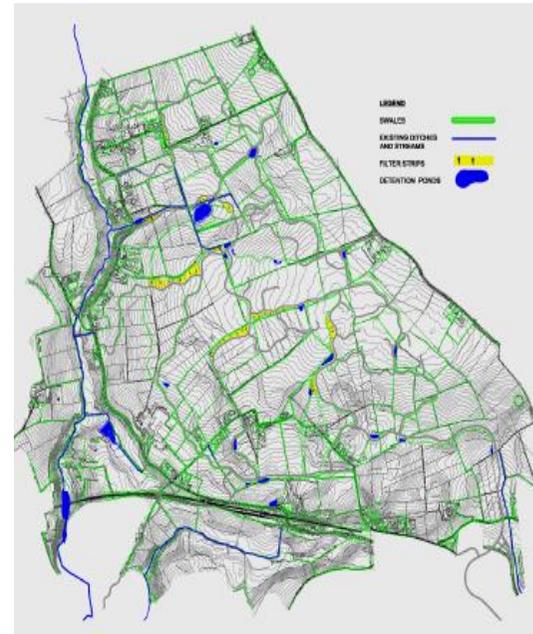


Figure 6.6 Proposed Swales, Detention Ponds and Filter Strips

**Fig A2 Proposed Swales, Detention Ponds and Filter Strips**

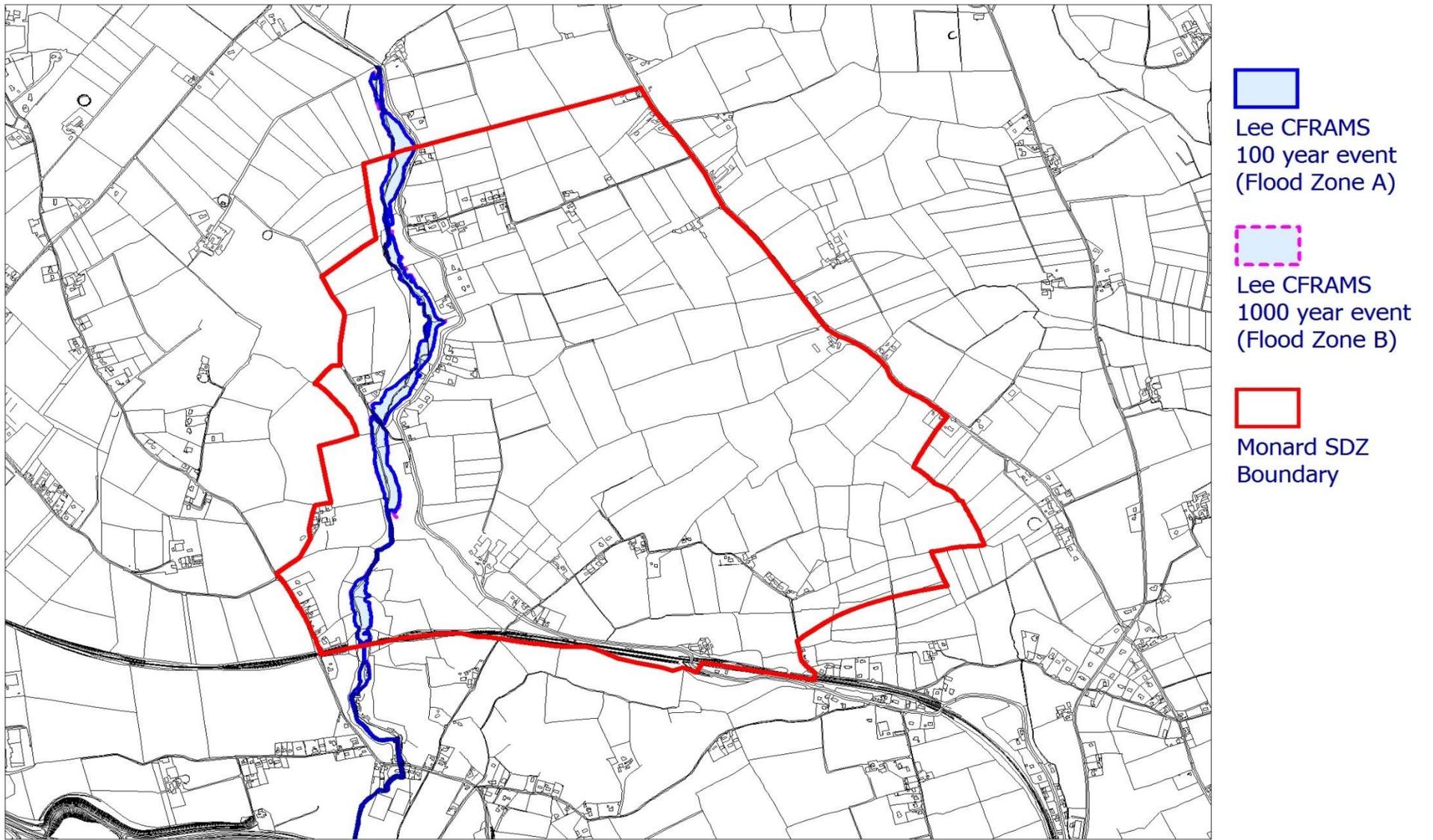


Fig. A3 Monard Flood Risk Map - Lee CFRAMS

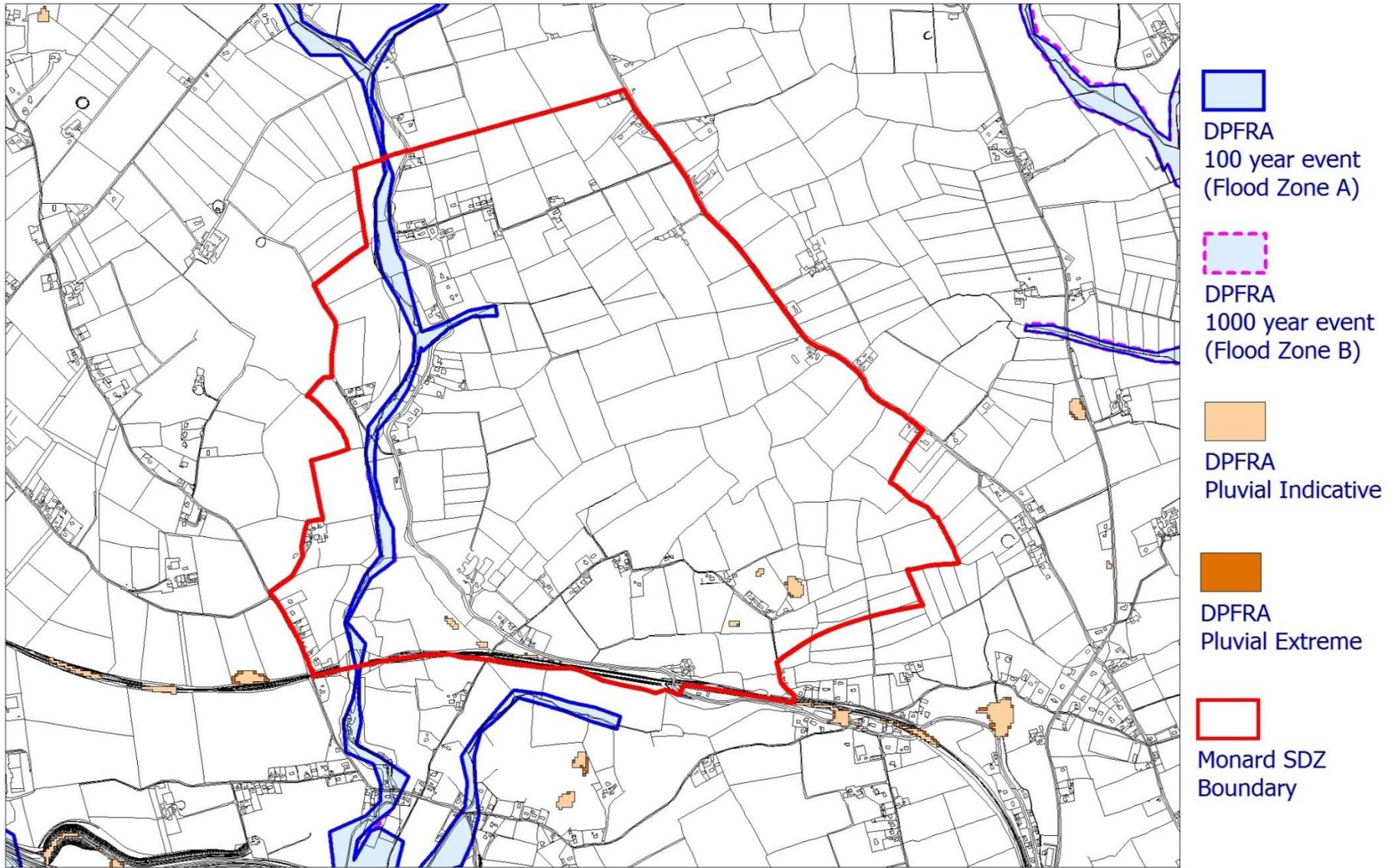


Fig. A4 Monard Flood Risk Map - DPFRA